

**AN EXPLORATIVE STUDY ON THE DEVELOPMENT OF A  
FRAMEWORK FOR THE MEASUREMENT OF PERFORMANCE AND  
TRUST**

**By**

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I declare that “An explorative study on the development of a framework for the measurement of performance and trust” is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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וְיִקְרָא אֲבִרָהֶם שֵׁם-הַמָּקוֹם הַהוּא יְהוָה יִרְאֶה אֲשֶׁר יֹאמַר הַיּוֹם  
בְּהָר יְהוָה יִרְאֶה

- Genesis 22:14

There are so many people who accompanied me on this journey that I cannot possibly name them all, but the following names in particular I wish to mention:

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## **ABSTRACT**

Based on literature, a theoretical model was developed for viable performance consisting of eight constructs whilst the trust model of Martins (2000) was used to measure four organisational trust constructs.

Exploratory factor analysis was used to extract the constructs, and structural equation modelling was employed to validate the models against the data. An empirical model for viable performance resulted in a solution with seven constructs and organisational trust with five constructs. The two empirical models were unified into a model of viable performance and trust resulting in a measurement model where all 12 constructs were shown. Significant levels of internal consistency were measured.

The resulting measurement model was tested for group differences, and no significant differences were found, indicating that the assessment can be used across different groups.

It was concluded that the aim to construct and test an integrated and comprehensive theoretical framework of viable performance and trust was achieved and the resulting Viable Performances and Trust Indicator (VPTI) was validated as an assessment to be used across groups.

Organisations can thus use the framework and VPTI assessment tool with confidence to assess performance and trust across different biographical groups.

Future researchers can build on this exploratory study to refine the scales and apply the measurement model within the wider context of South Africa or as a globally accepted model.

## **KEY TERMS**

Viable performance modelling, viability, organisational trust, managerial accountability hierarchy, proficiency, requisite organisation.

## LIST OF ABBREVIATIONS AND ACRONYMS

AGFI	adjusted goodness-of-fit index
CFA	confirmatory factor analysis
CFI	comparative fit index
CMIN/DF	the minimum discrepancy, $\hat{C}$ , divided by its degrees of freedom (DF)
CR	critical ratio
CSFs	critical success factors
EFA	exploratory factor analysis
GFI	goodness-of-fit index
HPCSA	Health Professions Council of South Africa
HRM	human resource management
IFI	incremental fit index
KPAs	key performance areas
KPI	key performance indicator
MAH	management accountability hierarchy
ML	maximum likelihood
NFI	normed fit index
NNFI	non-normed fit index
NQF	National Qualification Framework
OCBIs	organisational citizenship behaviours
PCA	principle component analysis
PGFI	parsimony goodness-of-fit Index
PMS	performance measurement system
RFI	relative fit index
RMSEA	root mean square error of approximation

SASSETA	Safety and Security Sector Education and Training Authority
SE	standard error
SEM	structural equation model
SMC	squared multiple correlations
SST	stratified systems theory
TLI	Tucker–Lewis index
VSM	viable systems model
VPI	viable performance indicator
VPTI	viable performance and trust indicator

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## **CHAPTER 1**

### **SCIENTIFIC OVERVIEW OF THE RESEARCH**

The focus of this study was performance measurement, which was conceptualised in a measurement model and operationalised by the researcher in a measure called the Viable Performance and Trust Indicator (VPTI). Organisational trust was measured in relation to the other components of the viable performance management and measurement system. The VPTI tool was developed by the researcher, standardised and evaluated to assess employee trust in relation to the viable performance measurement.

Chapter 1 provides the background and motivation for the conceptualisation of these variables and their relationships. Problem statements and hypotheses were formulated from the literature and tested in the work environment. Applicable paradigms are discussed, providing the context for the literature review, the research design and methodology. This chapter is mentioned in the chapter divisions and ends with a summary.

#### **1.1 BACKGROUND AND MOTIVATION FOR THE RESEARCH**

Smith (2016) emphasises the private security industry in South Africa is facing challenges, such as growing economic pressures, rising costs, increased crime levels, shrinking margins, and managing large workforces with the complexity that comes with it. Private security providers have to cut down costs whilst providing an ever-increasing level of quality service. To achieve these goals rigorous training and organisational development strategies are necessary.

The organisation where the research was conducted embarked on a comprehensive strategic and change journey to sustain viability and to establish a performance culture. One of the main focus areas is the change of mind-sets towards trust and teamwork, agility, empowerment, ownership and courage whilst new technology, innovative products, joint ventures and efficiency are crucial for the continued existence of the organisation.

The importance of organisational trust in innovation (Jones & George, 1998), change, partnerships and continued performance has been shown by various authors (such as

Dodgson, 1993; Zaheer, McEvily, & Perrone, 1998). Yilmaz and Atalay (2009) agree with Laschinger and Finegan (2005) that organisational processes should be established on the basis of organisational trust to ensure success in areas such as commitment, job satisfaction and performance. In the present study, organisational trust in relation to viable performance measurement was seen as a necessary part of organisational development.

McAllister (1995) defines interpersonal trust as an individual person's belief in and willingness to act on the words, actions and decisions of another person (McAllister, 1995). Gilbert and Tang (1998) define organisational trust as an effective state of confidence in and support for an employer, believing that the employer will be straightforward and true to commitments made.

The relationship between organisational trust and performance has been an area of interest to various authors such as Lewicki, Wiethoff, and Tomlinson (2005), Kramer (1999) and McAllister (1997). Paliszkievicz (2012) argues that, as the pace of change and uncertainty increases, the importance of trust (including the understanding and influencing of such) becomes more and more important.

Whitener, Brodt, Korsgaard and Werner (1998, p. 513) listed the behaviour needed for management to establish trust as follows:

- consistency in acts;
- honesty in acts;
- sharing and distributing control;
- correct and explanatory communication; and
- showing interest and concern.

If the creation of organisational trust is a key variable in management practices, it should be incorporated in the performance management and measurement systems as the organisation is embedded in a larger meta-system and comprises subsystems in terms of systems theory.

Kast and Rosenzweig (1985) compiled a system view of the organisation and differentiate between the following subsystems:

- the *strategic* subsystem, which refers to the sustainable relationship between the organisation and the environment;

- the *technological* subsystem, referring to the technology used and the way that the organisational goals are achieved;
- the *managerial* subsystem, which refers to the management style;
- the *structural* subsystem, which refers to the *organisational design*; and
- the *human-cultural* subsystem referring to the shared values and employee orientations towards work.

For the present study, a similar perspective of the organisation was used as follows:

The first subsystem, the *strategic subsystem*, refers to aspects such as performance, proficiency, strategic execution and correct focus on strategic themes. Proficiency and strategic execution were conceptualised and measured on an ordinal scale and nominal scale respectively. Performance in itself was implied in the present study and was not a separate construct in the measurement model and the VPTI.

The *technological subsystem* refers to the performance measurement system (PMS) itself, which was used to measure individual and organisational performance. This subsystem was conceptualised as a construct in the measurement model and the VPTI.

The *managerial subsystem* refers to the managerial accountability hierarchy (MAH) of Jaques (1996) as part of the requisite organisation. Constructs that will be operationalised in this subsystem are accountability, authority and contact frequency. The rest of the constructs of the requisite organisation that deal with time span of discretion fell outside the scope of the present study.

The *structural subsystem* refers to viable organisational design in terms of Beer's (1985) model and concept of recursion. The constructs that were operationalised were *operational management*, *top management* involvement, *autonomy* and *co-ordination* of teamwork. Recursion fell outside the scope of the present study.

The organisational structure comprises the different functions of the organisation as defined by Beer (1985). Beer (1985) refer to the hierarchical arrangements as unstable and argues that organisations should move away from hierarchical structures where information and decisions flow mainly from the top down to become very stable, and have the ability to adapt faster to a changing environment or to change the environment appropriately (Hoverstadt & Bowling, 2002). By using the viable systems model (VSM) (Beer, 1985) as a framework to understand the interrelationships of the functional parts

of the organisation, as well as where the focus of performance should be for certain individual, the principles of viability is incorporated in the performance management and measurement system.

The *human–cultural subsystem* refers to trust and the effect of organisational trust on the organisation and specifically individual and organisational performance. The trust construct was operationalised using the Trust Questionnaire of Martins (2000).

Organisational trust should exist at all levels of complexity in an organisation. Beer (1985) regards recursion as a means to deal with complexity. To deal with ever increasing complexity, Hoebeke (2000) conceptualised the levels of recursion along the levels of complexity in line with the stratified systems theory of Elliot Jaques (1996). Jaques proposed in terms of stratified systems theory that organisations be structured in seven levels (Jaques, 1970, 1996). The complexity increases up the levels as higher levels of conceptual skills are required to deal with uncertainty.

The hierarchical arrangement within the organisation as defined by Jaques (1996) in terms of the time span of discretion as well as the level of recursion (see Beer, 1985) fell outside the scope of the present research. The work of Jaques (1996) on the managerial accountability hierarchy (MAH), however, forms a subsystem in conceptualising the measurement model and construction of the VPTI. Both the theories of Beer (1985) and Jaques (1996) can be used to conceptualise performance and organisation diagnosis – especially around the structuring of systems within the organisation and the functioning of the system as a whole.

In the present research, the constructs *technological*, *managerial*, *structural* and *strategic subsystems* were conceptualised as comprising viable performance while organisational trust with its sub-parts (i.e. information sharing, work support, credibility and team support) as conceptualised by Martins (2000) comprises the second part in the measurement model and VPTI.

The theoretical framework of Lawrence and Lorsch (1967) conceptualises the organisation also as a system with certain subsystems. According to this view, organisations differentiate to specialise in specific areas and have different goals, different time frames, different interpersonal orientations and different structures. The integration of all these individual elements into a coherent whole is also necessary for a better performing organisation (Beer, 1985). The present study attempted to

investigate whether the postulated constructs were related to each other as part of the measurement model for performance and organisational trust. These constructs were shown through the literature study as important in their relationship to viable performance and organisational. Confirming their relationship as well as developing a measurement model and assessment, was therefore seen as a step in the direction of understanding the environment of the organisation better and how these constructs affect it.

## **1.2 PROBLEM STATEMENT**

Trust is a vital ingredient in effective performance management and measurement (Davis, Schoorman, Mayer, & Tan, 2000; Dirks, 1999; Karkatsoulis, Michalopoulos, & Moustakou, 2005; Robinson, 1996). The question remains as to the magnitude and the direction of this relationship between organisational trust and performance management and measurement systems.

The purpose of the present research was to contribute to the field of Industrial Psychology by developing an integrated and comprehensive theoretical framework for the effective assessment of organisational trust levels in relation to a viable performance management and measurement system. The following questions were addressed:

- What is the relationship between organisational trust, managerial practices (i.e. MAH [authority, accountability, span of control, number of employees reporting to a manager] and contact frequency), the strategic subsystem [strategic execution and proficiency], the structural subsystem (operational management, top management involvement, autonomy and co-ordination of teamwork) and the performance measurement system (PMS)?
- Should organisational trust be incorporated in the performance measurement practice?
- Jaques (1996) argues that individual employees function optimally with induced trust levels when they are utilised at the correct levels in organisations. The question here is, what is the relationship between MAH and organisational trust?
- The VSM of Beer (1985) has been applied by numerous organisations for better understanding of internal and external dynamics, including pathologies (Perez

Rios, 2010). The model has not been applied to performance management and measurement specifically. The question here is, will these new insights on 'pathologies' in the performance management and measurement domains prove beneficial to the field of Industrial and Organisational Psychology?

### **1.3 RESEARCH QUESTIONS**

In view of the foregoing problem statements, the research questions below were formulated in order to guide the literature review and empirical study.

#### **1.3.1 Research questions with regard to the literature review**

*Research question 1:* How does the literature conceptualise viable performance measurement?

*Research question 2:* How does the literature conceptualise trust in an organisation?

*Research question 3:* What are the elements and dimensions of a comprehensive and integrated theoretical model for viable performance and trust measurement in an organisation?

#### **1.3.2 Research questions with regard to the empirical study**

The empirical questions, which this research investigated, are set out below.

*Research question 1:* How can the statistical validity and reliability of the developed viable performance indicator (VPI) be tested?

*Research question 2:* How can a measurement model of viable performance be verified to test the theoretical model and to determine whether any new construct emerged?

*Research question 3:* How can the statistical validity and reliability of the Trust Questionnaire be confirmed for a security environment?

*Research question 4:* How can the measurement model of trust for a security environment be confirmed?



*Research question 5:* How can a combined model of viable performance and trust be developed to verify the theoretical model and to determine whether any new constructs emerged in a security environment?

*Research question 6:* How can it be determined whether invariance exists for the group variables (i.e. the PMS, autonomy, authority, accountability, operational management, top management involvement, co-ordination of teamwork and strategic execution)?

*Research question 7:* How can conclusions, limitations and recommendations be derived from the empirical study?

## **1.4 AIMS OF THE RESEARCH**

The general aim and specific aims were as follows:

### **1.4.1 General aim of the research**

The general aim of the present research was to develop and test an integrated and comprehensive theoretical framework of viable performance and trust. From the research questions, the specific research aims, as set out below, were formulated:

### **1.4.2 Specific aims from the literature review**

*Research aim 1:* to conceptualise viable performance management.

*Research aim 2:* to conceptualise organisational trust in an organisation.

*Research aim 3:* to identify the elements and dimensions of a comprehensive and integrated theoretical model for viable performance management and organisational trust in an organisation.

### **1.4.3 Specific aims with regard to the empirical study**

*Research aim 1:* to test the statistical validity and reliability of the developed viable performance indicator (VPI).

*Research aim 2:* to develop a measurement model of viable performance to verify the theoretical model and to determine whether any new construct emerged.

*Research aim 3:* to confirm the statistical validity and reliability of the Trust Questionnaire for a security environment.

*Research aim 4:* to confirm the measurement model of trust for a security environment.

*Research aim 5:* to develop a combined model of viable performance and trust to verify the theoretical model and to determine whether any new constructs emerged in a security environment.

*Research aim 6:* to determine whether invariance existed for the group variables (i.e. the PMS, autonomy, authority, accountability, operational management, top management involvement, co-ordination of teamwork and strategic execution).

*Research aim 7:* to derive conclusions, limitations and recommendations from the empirical study.

#### **1.4.4 Potential value-added**

The study contributed to the theoretical knowledge about the relationship between organisational trust and viable performance management, and a theoretical model was constructed with regard to the relationship of the variables.

Morlidge (2009) says the lag in the implementation of organisational and performance goals has increased in spite of the rate in change increasing in the environment. The principle that Morlidge (2009) adopts from cybernetic management is that variables of performance measure should not be restricted merely to financial variables but priority should be given to essential variables. Measures should also be relevant to organisational strategy. Time horizons, depending on time lags and regulatory acts, may vary from the level of the recursion cycle depending on the frequency of environmental change. This is also in line with the view of Hoebeke (2000), namely that recursion allows for variety and complexity in organisations and their environments.

The first aspect or construct, *cybernetic management*, was used by Beer (1985) in his work of viable systems modelling.

An organisation is subject to continuous change based on the need to maintain requisite variety (Beer, 1985). In terms of the view of viability, when variety (or change)

or complexity is handled by incumbents in an insufficient or inappropriate manner, the organisation is not achieving its viability. In other words, surviving and growing in a competitive ever-increasing complex and competitive environment is hampered by insufficient performance of its organisational parts. Viable systems modelling reduces complexity and puts the organisation on a course of sustainable success, with desired profit numbers along the way (Christopher, 2011).

The present research adds to the understanding how these concepts can be combined in a theoretical model with regard to organisational performance and trust. These concepts include:

- **Viability:** The concept viability refers to the ability to adjust appropriately to change in order to ensure the survival of the organisation as a system (Beer, 1985). Beer (1985, p. xi) also calls viability the “adaptive connectivity” of its [the organisational system’s] parts. In this research, this aspect will be referred to as the ‘functional integration of the organisation’. The individual employee’s performance is thus embedded in the larger system, and the organisation and the different parts have certain effects on each other and on organisational trust. Specifically aspects such as operational management, top management involvement, autonomy and the co-ordination of teamwork are parts of the viable organisational model of Beer (1985) and were conceptualised in the present study.
- **Recursion:** Beer (1985) states that an organisation as a system has the ability of recursion to be able to duplicate its structures to manage variety more efficiently. The concept of recursion allows for the measurement of variety or complexity (Hoebeke, 2000).
- **The PMS:** the performance measurement is a subsystem in an organisation influencing and being influenced by other aspects or constructs in the organisation (De Waal, 2002).
- **The concept of a PMS taking a more inclusive look beyond individual measurements** is not new to the field of Industrial and Organisational Psychology. Authors such as Neely, Gregory, and Platts (2005) and Assarabowski (2010) advise the inclusion of the organisation’s strategy, whilst Drucker (1954) says that that key performance areas (KPAs) should be determined along the following routes:

- creating and keeping customers;
  - quality;
  - productivity;
  - innovation;
  - physical and financial resources;
  - organisational capability; and
  - community relationships environmental responsibility and profitability.
- Morlidge (2009) uses Beer (1985) in designing a financial performance management system. Aspects of concern according to these authors are that managers are entangled in variety estimations that have already been falsified by the history of the organisation (see also Beer, 1979).
  - Beer (1981) adds that the time lags to implement plans are too long and the plans themselves are too rigid. Goals are set such that the variety (or complexity) is too low. There are also no distinctions made between goal conditions that are crucial to maintaining viability and those arbitrary to management's aspirations. Clearly, a small number of potential states of the organisation are dealt with within the goal setting (Beer, 1981).
  - Managerial accountability hierarchy: Although Jaques (1996) does not necessarily mention performance management, the concept of managerial accountability alludes to such. In terms of this view, the manager takes responsibility for the performance of his or her direct subordinates. If such a person is not performing, the manager has to give support by coaching or rotating him or her to a more suitable position. The manager also needs to know the time horizons well enough to know what type and quantity of supervision these subordinates would need (Kleiner, 2001). The manager further needs to know time horizons and know his or her subordinates well enough to step in with the correct intervention and timeously. The employee requires sufficient authority to do his or her work and will respond with the necessary trust towards the organisation if he or she is treated in the correct manner (Kleiner, 2001).
  - In this way, Jaques (1996) proposes that organisations create cultures where managers are held accountable for the performance, health, safety, environmental records, etc. of their subordinates (Kleiner, 2001).

In practice, this is a comprehensive view of performance and trust in an organisation as an integrated whole. Some concepts considered in this regard were:

- Brocklesby, Cummings, and Davies (1995) claim *a system's purpose determines its primary activities*, which are not necessarily those displayed by the organisational chart. This speaks to the functionality of the Beer VSM (see Beer, 1985) in contrast to the hierarchical system in which organisations usually display their layers. The authors Espejo and Harnden (1989) include communication and information as factors influencing achievement of organisational accounts. According to these authors, control affects the formal and informal mechanisms on which management and other organisational participants can draw to influence behaviour towards organisational objectives. This control or means of control is embedded in the Beer methodology (see Beer, 1985).
- Schwaninger (2001) says *operational, strategic and normative management are addressed by multiple systems in an organisation*. Each of these levels frames the issues of concern in terms of what is appropriate at that level. Cultures and mechanisms are necessary to maintain the coherence among these parts. The authors Leonard and Bradshaw (1993) agree with Beer (1985) that information affects the ability of an organisation to respond appropriately to threats and to support department or teams in the environment. Jackson (1991) reasons this adaptive ability of an organisation, based on the viability model of Beer (1985), allows the organisation to adapt even in the case of unforeseen circumstances. In addition, the ability to manage with complexity renders the model of Stafford Beer (1985) quite powerful, and confirms Ashby's law of requisite variety. Ashby (1964, p. 207) affirms, "Only variety can destroy variety".
- Jackson (2000) shows that a system can cope with variety only in two ways – by reducing environment variety or increasing management's own variety to cope with the problem. Consequently, the management of an organisation should evaluate the capacity of the organisation thoroughly in order to adjust to variety of the organisation. Variety or complexity is necessary within the organisation to cope efficiently with the demands of the environment, which is constantly changing and increasingly becoming competitive for organisations to survive.

- Jaques (1996) is of the opinion that failure to provide conditions in which individuals are able to work at levels consistent with their capability and values can be destructive to both the individual and the organisation. In addition to resulting in possible resentment and anger towards the organisation, the inhibition of the individual's development could give rise to non-productive ways in the individual, including a loss of self-esteem. According to this view, Jaques (1996) aimed to build a system that fully employed the organisation's human resources through the recognition and utilisation of their capabilities, thus resulting in a work environment conducive to healthy and productive individuals and benefitting the organisation. *Trust is therefore seen in this research as an output of a viable performance management process.* Management should not see employees as mere human resources but should actively pursue the establishment of trust-inducing activities and move away from fear-inducing activities (Jaques, 1996). The creation of trust should be one of the prime deliverables of management.

Combining the different constructs into a single theoretical model also has implications for studying the relationship between these variables in a measurement model or models. From an empirical point of view, the present research had certain contributions in the way that organisational performance and trust are measured in the workplace. Starting with an initial theoretical model, the empirical analysis resulted in an empirical measurement model and eventual adjustments to the theoretical model. An assessment, the VPTI, resulted from the theoretical and empirical analysis.

## **1.5 THE RESEARCH MODEL**

The study adopted part of Mouton and Marais' (1990) research model framework. Mouton and Marais (1990) considered the ontological, teleological, epistemological, sociological and methodological dimensions. In 1.6.3 the research model is explained. However, before the research model is explained, the paradigm perspective is elaborated upon below.

## 1.6 PARADIGM PERSPECTIVE OF THE RESEARCH

A Paradigm is an overarching framework or worldview (Aliyu, Bello, Kasim, Martin, & Balewa, 2014). In what follows a literature review will be provided about the paradigms underlying the research.

### 1.6.1 Literature review

In the present study, literature about the cybernetics and general systems theory with special focus on Beer's (1985) VSM was considered together with the stratified systems theory of Jaques (1996). In the present research, the paradigm of the systems theory (or more specifically the stratified system theory of Jaques (1996)) with cybernetic feedback-type loops was used as an organising model.

Burrell and Morgan (1979) differentiated between four main paradigms in the social sciences. According to their view, radical humanist and interpretative paradigms are mainly based on subjective opinion, whilst radical structuralism and functionalist are based on objective knowledge. The present study falls mostly under the functionalist paradigm, which Burrell and Morgan (1979) describe as realistic, positivistic, deterministic and nomothetic. The present study used the empirical, positivistic approach in its pursuit of laws underlying viable performance and organisational trust.

#### 1.6.1.1 *Cybernetics and general systems theory*

For Ackoff (1971), the organisational system is a set or collection of elements that are interrelated and where these elements, relationships and the whole system have a certain purpose. *Cybernetics* refers to the theory or a science of an effective organisation (Jackson, 2000). It is concerned with general patterns, laws and principles of behaviour in complex, dynamic integral, properly holistic and open systems (Jackson, 2000).

#### 1.6.1.2 *Stratified systems theory*

In the theory of a requisite organisation, Jaques (1996) used the concepts of *complexity* and *time span* of discretion of tasks as well as the realisation of the results of work to be differentiating factors within the organisation. The seven-level model of managerial hierarchy identifying the time frames for responsibility from a few hours or days to 50 years and above has been specified (Jaques, 1996). The exercise of

judgement and discretion in making decisions, goal-directed activities are defined as *capability* by Jaques (1996).

### **1.6.2 The empirical study**

Sousa (2010, p. 498) avers that scientists often implicitly adhere to one of three schools of thought and methodology:

- the positivistic school looks for cause-and-effect relationships, where observation, experience and objectivity are sought;
- the social constructivism considers the social discourse and interaction, which shape the world in a post-modernistic fashion; and
- the “mind independence” of the world composed of complex, multiple and powerful structures give rise to critical realism.

In this research study, the quantitative research methodology was used. Therefore, the positivistic research paradigm was used to conduct the research. According to the positivist paradigm (see Mouton and Marais, 1990), research should be empirically verifiable. In the case of the present research, this entailed collecting data via a survey and analysing this data through a statistical analysis before conclusions were drawn from the data in a logical scientific manner.

### **1.6.3 Meta-theoretical statements, theoretical models and conceptual descriptions**

The following are the theoretical models, conceptual descriptions and meta-theoretical statements applicable to this study.

#### **1.6.3.1 *Meta-theoretical statements***

Wallis (2010) described meta-theory as inclusive of theories and communities of theories, the process of theorising, the analysis of methodology, empirical research, conclusions and implications. Case (2012) says a meta-theory is a theory about a theory, addressing the underlying philosophical aspects about the nature of a theory.

##### **1.6.3.1.1 *Industrial and organisational psychology***

Van Vuuren (2010) supports authors labelling Industrial and Organisational Psychology a scientist-practitioner model. On the one side of this dual description, the



industrial psychologist gathers, orders, reports and disseminates information with and through the scientific method. The practitioner applies this information in the workplace. Through this practical application, additional knowledge is also accumulated.

In the present study, the conclusions drawn from the scientific analysis were applicable to the workplace environment, especially with regard to understanding the interaction between performance constructs and organisational trust.

#### *1.6.3.1.2 Personnel psychology*

For Van Vuuren (2010), Personnel Psychology aims at predicting and measuring individual differences in behaviour, performance and person-job/organisation fit. Van Vuuren (2010) claims the activities of recruitment, selection, development, retention and utilisation are aimed at achieving both the individual and organisational goals.

With the results of the present research, a better understanding of the factors influencing the individual and vice versa, as well as the subsystems of the organisational system as a whole was provided. The constructs – such as the performance measurement system – give the individual employee opportunity to rate his or her experience of the surrounding environment. This in itself is valuable to understand the individual fit and it also provides an understanding of how these experiences relate to the other constructs in the study.

#### *1.6.3.1.3 Organisational psychology*

Van Vuuren (2010) says Organisational Psychology had its origins in the Second World War's human relationships movement when the need arose to include the social domain in the field of Industrial Psychology. The focus in this subfield is on structuring the organisation towards increased performance levels, higher satisfaction levels, better leadership, increased motivation levels, more productive group dynamics and decision-making, etc.

In terms of the model of Kast and Rosenzweig (1985), the present research investigated the interaction of the human cultural subsystem with the technological, strategic, structural and managerial subsystems.

#### *1.6.3.1.4 Psychometrics*

Psychometrics is at its most basic description the science that provides the measuring tools for the other subfields in Industrial Psychology (Van Vuuren, 2010).

In the present study, a measurement model and assessment tool were developed to measure the relationship between constructs related to viable performance and organisational trust in an organisation.

#### **1.6.3.2 Theoretical models**

In this research, theoretical models are presented in the following manner:

##### *1.6.3.2.1 Cybernetics and general systems theory*

Clemson (1984) claims Beer (1985) makes use of the various concepts and tools devised by cybernetics to conceptualise the underpinning viability and inter-relationships of an organisation. Cybernetics is concerned with human-machine interaction, and specifically controls systems (Clemson, 1984).

##### *1.6.3.2.2 Viable systems and general systems theory*

The VSM of Beer (1985) provided the context for functional and strategic integration in the study, making available a framework to conceptualise, understand and integrate the organisation as an organism.

##### *1.6.3.2.3 Stratified systems theory*

For this study, the layers of Jaques (1996) provided the time span of discretion framework, the dynamic interface between the ability of human beings to deal with complexity (also known as human capacity in Jaques' [1996] theory) and organisational and environmental contexts.

##### *1.6.3.2.4 The requisite organisation*

Jaques' (1996) conceptualisation of the requisite organisation provides for a structure to conceptualise the time span of discretion and the ability of people to deal with complexity within an organisational coherent structure.

##### *1.6.3.2.5 Performance measurement*

*In this research performance measurement* refers to the measuring of the output of effort exerted and the level of complexity of the output achieved.

#### 1.6.3.2.6 *Trust*

*Managerial accountability hierarchy* refers to Jaques' (1996) three aspects of trust, authority and accountability. In the present study, trust was seen as a dependent variable whilst authority and accountability were the independent variables of the performance management process.

### 1.6.3.3 **Conceptual descriptions**

In this research, theoretical models were presented in the following manner:

#### 1.6.3.3.1 *Cybernetics and general systems theory*

Beer (1979) devised a model comprising five subsystems, indicating the model of an organisation according to the cybernetic principles. Clemson (1984) argues that Beer (1979) makes use of the various concepts and tools devised by cybernetics to conceptualise an organisation underpinning viability and interrelationships. Interrelationships within the complex organisation are a primary result of the interactions within the system (Clemson, 1984).

#### 1.6.3.3.2 *Viable systems and general systems theory*

A *viable system* is a system that has the ability to maintain a second-order existence and it has a problem-solving capacity (see Beer, 1985). In other words, a system can adjust to changing and complex circumstances if necessary, and this is what Beer (1985) calls a *viable system*.

Clemson (1984) says Beer (1985) defines *variety* as the total number of possible states of a system. Leonard (1999) sees variety as a measure of the complexity of a system.

Christopher (2011) mentions that the recent years have seen rapid change and growing complexity in environmental demands. Christopher (2011) claims that systems science views an organisation as a viable complex, purposeful and probabilistic system. Christopher (2011, p. 371) defines the variables of such as system as follows:

- *viability* refers to the capability of a being in its environment through surviving and growing;
- *complexity* refers to complexity beyond current operations and outside relationships;

- *purposeful* refers to the reason why an organisation exists; and
- *probabilistic* refers to the fact that the system and the parts of the system behave in varying degrees.

Christopher (2011) is of the opinion that the application of viable system modelling in companies enables the organisation to manage complexity in an efficient way, connecting the organisation with the outside world and sustaining it through changing times ahead.

#### *1.6.3.3.3 Stratified systems theory and time span of discretion*

Jaques and Cason (1994) found a close link between the extent of a person's time horizon and the mental processing a person uses in conceptualisation in general and problem solving specifically. The differences in complexity or capability are seen in, for example, a hierarchical structure comprising seven levels of complexity in an organisation.

#### *1.6.3.3.4 The requisite organisation*

Jaques (1996) affirms that stratified systems theory deals with the capability of an individual through a series of higher levels of inherent complexity in work. A series of ever-increasing levels of organisational structure reflect the levels of work of complexity in an organisation and of human capability (Jaques, 1996). A wide range of processes, including managerial leadership apply to accountability, consistency and trust in the workplace.

Kleiner (2001) sees organisational capability and individual capability as two sides of a model within the organisation.

#### *1.6.3.3.5 Performance management*

Gilbert (1978) is considered one of the founding fathers of behavioural performance management. Gilbert (1978) devised a model with the focus on accomplishment (outcomes rather than events). He distinguished between environmental influences, such as tools and standards and factors, within the individual performer or relating to the individual performer. In his model, employees are seen as respondents to certain inputs, adjusting such to outputs based on feedback and the consequences of their behaviour or outputs. The similarity between this model and that of Stafford Beer (1985) is quite obvious. The authors Rummler and Brache (1995) took the concepts of

Gilbert further by adding a systemic view of the organisation and the opportunities for process improvement. In the model of Rummler and Brache (1995), the performance of an organisation is seen at three different levels.

- the organisational level;
- the process level; and
- the individual job performer level.

In the present research, performance management was seen as intended to align the employee's activities with the organisation's strategic objectives, to enhance performance, and to improve the organisational performance (Tahvanainen, 2000).

Rao (2008) postulates that confusion exists between performance management and appraisal systems. Whilst performance appraisals look at the past and are generally only concerned with a review of a specific period, performance management is about a strategic process embedded in the organisational strategy.

Neely et al. (2005) define a performance management system as a set of performance measurements used to quantify the efficiency and effectiveness of actions in an organisation. Assarabowski (2010) argues the relationship between lowering costs and keeping production efficiency high, and effectively measuring and monitoring an organisation's operations, is necessary to survive as a business. For Neely et al. (2005), performance management systems is a vehicle to realise strategy.

Assarabowski (2010) says one of the main problems with performance measures is that they are not linked to operational strategy. The VSM model can be used to identify order and understand these measures and interrelations amongst them within the larger context of organisation and environment.

Sonnentag and Frese (2002) assert that a distinction can be made between task and contextual performance. *Task performance* refers to the proficiency with which an individual contributes to the technical core of his or her job. Individual performance includes behaviours beyond the broader organisational context, including aspects such as improving procedures. *Contextual performance* activities are relatively similar across broad jobs and are related to aspects broader than skill linked to personality and motivation. These activities are also discretionary and beyond role level.

Sonnentag and Frese (2002) cite research indicating that performance changes over time and especially as a result of learning. The authors further state that studies have

shown that performance initially increases with the increase in time spent on a job and reaches a certain plateau after a certain time. According to this view, two stages can be differentiated in job performance. The first stage, the *transition* stage, refers to an individual who is new in a job where task levels are novel. The second stage, the *maintenance* stage, occurs when knowledge and skills have been acquired and when accomplishments become of a more dramatic nature. Initially, in the transition stage, cognitive ability is highly relevant, but during the maintenance stage, cognitive ability becomes less important and disposition of factors such as motivation, interest and values increases in relevance. Rothwell (1996) defines the field of human performance enhancement as a field focusing on the systematic and analytical improvement of present and future work results achieved by people in an organisational setting.

The holistic view of the organisation is suggested as well as alignment between these main interfaces, namely the organisation processes and the individual performance.

#### 1.6.3.3.6 *Managerial practices*

Jaques (1996) argues that the managerial accountability hierarchical structure provides for managerial leadership, and refers to the accountability of managers for the performance of their subordinates. The following can be regarded as sound managerial practices:

- two-way managerial teamwork;
- context setting in which the background or the context of the work must be considered;
- planning, which refers to problem solving, understanding the work and inputs;
- task assignment, making sure tasks are accomplished according to time and quality frameworks;
- personal effectiveness, where the manager and the subordinate are discussing;
- progress on a regular basis;
- merit reviews, namely a periodic judgement and discussion of personal effectiveness;
- coaching of subordinates towards higher effectivity;
- selection and induction practices, and assisting new employees with novel work;
- continual improvement: Jaques (1996) argues that the individual is not accountable for improving the way he or she works, but only for working at the

level of the role he or she occupy. This again refers to the manager's responsibility towards the employee's growth and performance. Jaques assumes that individuals strive towards working at their full capabilities and that redundant layering will create mistrust in an organisation. Accountability and role clarity will create trust in an organisation (Jaques, 1996); and

- de-selection and dismissal: the capability of an immediate manager is one level higher than the capability of the subordinates (Jaques & Cason, 1994). The manager has to assist the subordinate to work at levels appropriate to his or her capability and removing such if he or she does not have the necessary ability.

Three aspects of managerial leadership were conceptualised in the assessment questionnaire:

- the creation and existence of trust;
- the provisioning of authority to be able to perform at the desired levels; and
- accountability created through clear performance measurements.

#### *1.6.3.3.7 Trust*

Authors such as Karkatsoulis et al. (2005), Davis et al. (2000) and Dirks (1999) argue the importance of trust in performance management. Robinson (1996) found that trust in the employer mediated the relationship between breach and performance of the psychological contract. De Waal and Nhemachena (2006) found that trust is an integral part for participation in performance-related activities and change management. De Waal and Nhemachena (2006) argue that, for the successful implementation of performance management, management has to work deliberately and consistently towards building employee trust before, during and after the implementation process of such systems.

#### **1.6.3.4 Central hypothesis**

The central hypothesis for this study was formulated as follows:

A relationship exists between the identified viable performance constructs and organisational trust in an organisation.

#### **1.6.3.5 Theoretical assumptions**

The present research sought to address the following theoretical assumptions:

- research needs to clarify the constructs postulated empirically;
- research needs to provide elements or items to measure these constructs; and
- research needs to confirm a measurement model to derive an assessment questionnaire (the VPTI).

#### **1.6.3.6 Methodological assumptions**

In this section, the different methodological assumptions are discussed as they related to the present research. These assumptions give research the necessary basis to ensure sound empirical analysis.

##### **1.6.3.6.1 Ontology**

Ponterotto (2005) affirms that ontology is concerned with the nature of reality and being. Ontology addresses the following question: What can be known about reality and what is the form or the nature of that reality (Ponterotto, 2005). According Mingers and Brocklesby (1997), *ontology* deals with the entities assumed to exist and the nature of that existence, while *epistemology* refers to the possibilities or limitations on our knowledge of those entities (p. 490). The present study was concerned with ontology in that it operationalised and quantified constructs within the existence of the organisation to understand these constructs better and derive a measurement model from the analysis.

##### **1.6.3.6.2 Epistemological assumptions**

For Mouton and Marais (1990), the epistemology is the most important aspect in searching for truth. According to Mouton and Marais (1990), it is a search for objectivism and fundamentalism. The ideal of epistemology is to get as close to certainty as possible. Epistemology comes from the Greek word *epistémé* (Krauss, 2005). Ponterotto (2005) claims epistemology is concerned with the relationship between the research participant (the knower) and the researcher (which is the would-be knower). The present study was of an epistemological nature in that it tried to understand the totality of variance shared among the identified constructs.

##### **1.6.3.6.3 The teleological dimension**

Mouton and Marais (1990) is of the opinion that this dimension looks at the purpose of an activity, in this case, research. While the theoretical purpose of the study is to explain, explore or describe, the practical research purpose is to diagnose problems,



to resolve problems, to monitor programmes and to give information. In the present study, the measurement model and VPTI assessment were used to understand interrelationships among the constructs better with the possibility to influence decisions in an organisation.

#### 1.6.3.6.4 *Sociological dimension*

Mouton and Marais (1990) reason that the sociological dimension is concerned with:

- the existence of networks or research;
- the mechanisms of social control;
- the research ethical questions; and
- the influence of ideologies and interests.

In the present research, the organisation was seen as a system comprising subsystems and within a larger macro system, the environment with its own influencing factors, ideologies, interests and ethical aspects.

#### 1.6.3.6.5 *The methodological dimension*

Ponterotto (2005) says *methodology* refers to the process and procedures of the research. The methods for research flow from the ontology and the epistemology of the researcher. For Mouton and Marais (1990), the methodological paradigms or schools of thought are positivism, phenomenological and critical. Mouton and Marais (1990) argue another classification of the methodological dimension would be to have quantitative (such as in the present study) or qualitative or action research.

In summary, methodological assumptions determine the strategy and the design of the research. These methodological assumptions are influenced by the ontological epistemological and sociological dimensions. In the next section, the above-mentioned assumptions are used to describe the proposed research design for the present study.

## 1.7 RESEARCH DESIGN

Kerlinger (1986, p. 10) describes research as "... a systematic, controlled, empirical and critical investigation of natural phenomena guided by theory and hypothesis about the presumed relations among such phenomena".

The systematic nature requires a disciplined approach within certain categories. Mouton and Marais (1990) identify at least three categories of research design: explanatory, exploratory and descriptive.

### **1.7.1 Exploratory research**

An exploratory research design has at its heart the study of relatively unknown phenomena to get new insights, as a pre-investigation to a deeper study, to explore central concepts, to set priorities for research, and to develop new hypotheses (Mouton & Marais, 1990). In the present research, exploratory and exploratory factor analysis (EFA) was used to identify the underlying latent constructs in the measurement model and VPTI.

### **1.7.2 Descriptive research**

Descriptive research deals with an in-depth description of a phenomenon, or frequency with which a phenomenon occurs (Mouton & Marais, 1990). Mouton and Marais (1990) say the nature of the description can vary from a narrative-type description to a detailed, statistical mapping of data.

### **1.7.3 Explanatory research**

Mouton and Marais (1990) note that an explanatory research design intends to find causality between events or variables. Additionally, the explanatory researcher is also looking to determine the direction of the causality between the variables or events.

## **1.8 VALIDITY**

For Kerlinger (1986), the basic aim of research is to explain natural phenomena. These explanations are theories (Kerlinger, 1986). The researcher is looking for generalisations so that he or she can explain, understand, predict and control sufficiently and consistently (Kerlinger, 1986). The scientific approach is necessary to remain reliable (consistent) and valid. Reliability and validity as two important aspects of empirical research received elaborate attention in the present research. Shortly, these constructs can be defined as follows:

### **1.8.1 Validity with regard to the literature review**

Scientific verifiable literature in the contemporary and recent past was especially used to substantiate the research. In the case of classical theories, caution was taken to refer to the original sources of the authors.

### **1.8.2 Validity with regard to the empirical research**

Validity with regard to the empirical study was achieved by using relevant assessments, as well as face validity in the case of the questionnaire that was developed. Factor analysis was used to determine the validity of the newly developed questionnaire.

The trust questionnaire had been proved valid and reliable before by Martins (2000). This questionnaire was used in the present study with Martin's consent.

## **1.9 RELIABILITY**

Reliability relates to the consistency with which a psychometric instrument measures an attribute (Kerlinger, 1986). In the present research, reliability was ensured by using instruments whose reliability had been verified empirically. Statistics were used to look at the internal consistency of variables in the questionnaire that was developed. With regard to literature review, reliability was achieved relating to scientific literature and theories that had been tested over time. The use a representative sample of participants enhanced reliability of the study.

The reliability and validity of the trust questionnaire had been shown in previous research already (Martins, 2000).

## **1.10 THE UNIT OF RESEARCH**

The present study fell in the domain of organisational and personnel psychology and in particular individual assessments and performance evaluation. The present research was conducted with the learnership candidates attending a course. This group was selected from across regions of the organisation but mainly from the operational levels in the organisation.

## **1.11 THE VARIABLES**

Kerlinger (1986, p. 27) defines a variable as "a symbol to which numerals or values are assigned". A distinction can be made between a dependent and an independent variable. An independent variable is presumed to be the cause of a dependent variable (the presumed effect) (see Kerlinger, 1986).

### **1.11.1 The independent variables**

The general aim of the present research was to develop and test an integrated and comprehensive theoretical framework of viable performance. To realize this, it was necessary to conceptualise the elements and dimensions of an integrated and comprehensive theoretical framework, and to develop and evaluate a valid and reliable measurement model and questionnaire for viable trust and performance management. In terms of the questionnaire development, the independent variables were performance measurement, autonomy, accountability, contact frequency, operational management, top management involvement, co-ordination of teamwork, proficiency and strategic execution.

### **1.11.2 The dependent variables**

In terms of the development of the measurement model and VPTI, the dependent variable in this research was organisational trust. This variable was conceptualised and is discussed in detail in Chapter 2.

## **1.12 DELIMITATIONS**

The study was limited to the main constructs of performance measurement, autonomy, accountability, contact frequency, operational management, top management involvement, co-ordination of teamwork, proficiency and strategic execution.

This research did not focus on aspects such as recursion, the requisite organisation, span of discretion or activity, or the audit function of Beer's model (1985).

## **1.13 ETHICAL CONSIDERATIONS**

Cascio (1991) lists at least five types of ethical dilemmas that may arise, and these were dealt with as follows:

- Misrepresentations and collusion: Misrepresentation might include aspects such as goals, education, experience and interest. Collusion might be along the needs, goals, values, methods and clarity aspects. This was dealt with by explaining the purpose of the research to the participants and by safeguarding the data and using it for the purpose of the present research only.

- Misuse of data: This refers to the distortion, deletion or misinterpretation of results. This was dealt with by using the data for the present research only.
- Manipulation and coercion: This aspect refers to getting co-operation from research participants against their will, or not informing them sufficiently that they may make informed decisions. This also includes the manipulation of the participants in any manner other than free-will participation. This was dealt with by making use of voluntary participation only.
- Value and goal conflict: Casio (1991, p. 448) mentions that ambiguity or conflict might arise through the “maximizing” of one side’s values.
- Technical ineptness: This aspect refers to the researcher being ill informed, untrained or clumsy in his or her professional conduct, or lack of such. This was dealt with by adhering to the principles of ethical conduct and research methodology in the field of industrial and organisational psychology.

Permission to conduct the research was obtained from the Research Committee of the Department of Industrial and Organisational Psychology at the University of South Africa. To ensure that the researcher fulfilled the ethical requirements, approval was obtained from the host organisation; both classical and recent resources were used to analyse and describe the concepts; experts in the field of research were consulted to ensure a scientific research process; all the resources that were consulted were acknowledged by means of references and informed consent was obtained from the participants.

#### **1.14 RESEARCH METHODOLOGY**

This research was conducted in two phases, as follows:

##### **PHASE 1: LITERATURE REVIEW**

Literature will be reported as follows:

##### *Step 1: Trust*

This section will cover literature pertaining to the construct of organisational trust with special focus to Jaques’ (1996) view of how it fits into the MAH. The construct is explored in depth and the implications for contemporary industrial psychology shown.

*Step 2: The structural subsystem: The principles of viable systems modelling, operational management, top management involvement, autonomy and coordinating teamwork.*

This section will cover literature pertaining to the model of Beer (1985) and its significance in terms of functional and strategic integration of performance metrics in an organisation. The model is explored in depth and the implications for contemporary industrial psychology shown.

*Step 3: The managerial subsystem and specifically the managerial accountability hierarchy, accountability, contact frequency and authority*

The theory of Elliot Jaques (1996) is discussed in detail in this step. Stratified systems theory is used to distinguish the different levels of capacity and how it theoretically affects individual and organisational performance. In this step, the connection between human capability and the ability to deal with complexity is outlined.

*Step 4: The technological subsystem*

In this step, a critical review of literature on performance measurement is reported. The initial focus is on individual performance and the factors affecting it with special focus on the factors named in this study. Secondly, the effect of this individual performance within a model of organisational performance is discussed.

*Step 5: Theoretical integration*

In this step, the theoretical model is presented, showing how constructs and sub-constructs fit into an integration model. Testing of this model is reported in phase two of the research, i.e. the empirical study.

*Step 6: Compiling the measurement model and assessment questionnaire*

In this step, the constructs were operationalised as items for the assessment questionnaire, the items were statistically analysed, the underlying postulated structure of the assessment accepted, adjusted or rejected, and the assessment standardised.

## **PHASE 2: THE EMPIRICAL STUDY**

The present research was a quantitative design. The research consisted of the following steps:

### *Step 1: Sample determination and description*

The sample of this research was drawn purposively from a population of employees attending a learnership at a private security service provider.

The sample size comprised 356 employees. This sample size was seen as adequate for the analysis with inferential statistical procedures, including correlation, comparative statistics and structural equation modelling (SEM) and factor analysis. The sample was however not large enough for invariance testing on the different biographical groups.

### *Step 2: Measurement scale development*

The trust questionnaire of Martins (2000) was used to measure organisational trust. Martins (2000) reported satisfactory reliability with alpha coefficients ranging between 0.82 and 0.94 and a goodness-of-fit index (GFI) of 0.95.

- Sub-step 2.1: Item generation

The generation of scales took place through thorough literature and theoretical research.

- Sub-step 2.2: Item development

A potential set of items was identified for inclusion based on relevance in terms of the theoretical framework.

- Sub-step 2.3: Item evaluation

The identified pool of items was evaluated in terms of their statistical and theoretical suitability (construct validity).

- Sub-step 2.4: Refinement of the items

Content validity of the items was enhanced in terms of language usage and appropriateness for the participation group.

### *Step 3: Measurement scale administration*

A draft measurement scale was administered to a pool of subject experts for further content analysis and validation of items. The necessary adjustments were subsequently made and informed consent obtained from the organisation under study to distribute the surveys.

The VPTI survey was distributed in a classroom setting. The instructions were read out aloud as well as provided as part of the survey. The researcher distributed and collected the completed surveys himself. The researcher also attended personally to questions.

There was no time constraint with regard to the completion of the survey and participation was totally voluntary.

*Step 4: Measurement scale scoring*

The returned questionnaires were appropriately checked for completeness and prepared to be analysed statistically.

*Step 5: Data analysis*

The data was analysed by the Statistical Package for the Social Sciences (Version 20, IBM, 2011). Analysis of moment structures (AMOS, Version 20) (Arbuckle, 2011) was done for structural equation modelling.

All statistical procedures are discussed in detail in Chapter 4 (Empirical study) and the results of statistical analyses are presented in Chapter 5 (Research results: exploratory and confirmatory factor analysis and inferential analyses).

*Step 6: Reporting and interpretation of results*

Results were interpreted and are reported in Chapter 5. In Chapter 6, the conclusions, limitations and recommendations were discussed.

*Step 7: Formulation of research conclusions, limitations and recommendations*

The integration of the theoretical and empirical findings is reported in Chapter 6 (Research results: confirmatory factor and inferential analyses).

## **1.15 CHAPTER DIVISION**

This section provides a conceptual outline of the chapters of this research.

### **Chapter 1: Scientific overview of the research**

In this chapter, the scientific background to the study was discussed. The research problem and aims were discussed and the paradigmatic perspective provided. Following that, the research approach and methodology were described as well as the layout of the complete study. The chapter concludes with a summary.



## **Chapter 2: Organisational trust**

This chapter conceptualises organisational trust as a construct and in relation to the other viable performance constructs. Hypothetical variables and interrelations are identified from a literature review. The chapter concludes with a summary.

## **Chapter 3: The viable performance system**

The aim of this chapter is to describe and explain the conceptualisation of the organisational structure using the requisite models of Jaques (1996) and Beer (1985). The two theories are integrated and the concepts of recursion and time frames of discretion put in a theoretical framework. Hypothetical variables and interrelations as identified from the literature review are reported. The chapter concludes with a summary.

## **Chapter 4: The empirical research design and methodology**

In this chapter, the empirical aspects of this research will be discussed. The sample, research design, measurement model and properties of the VPTI are discussed. The chapter concludes with a summary.

## **Chapter 5: Results of the empirical research**

In this chapter, the results of exploratory and confirmatory factor analysis are presented and interpreted as well as the invariance testing, comparison of calculated means and Cronbach's alpha scores. The chapter concludes with a summary.

## **Chapter 6: Conclusions, limitations and recommendations**

This chapter is the last chapter in the research. The results of the statistical analysis were interpreted in terms of the theoretical proposals and final integration reached, and these are reported in this chapter. The results and conclusions are provided and the limitations of the research highlighted. Recommendations for further research are provided. The chapter concludes with a summary.

## **1.16 SUMMARY**

This chapter provided the background and motivation for the conceptualisation of the constructs that formed part of the study together with their relationships. Problem statements and hypotheses were formulated from the literature to be tested in the work environment. The applicable paradigms were discussed, providing the context for the

literature review and the research design and methodology. The chapter divisions were also discussed. In the next chapter, organisational trust is discussed.

## **CHAPTER 2**

### **ORGANISATIONAL TRUST**

Chapter 2 provides an introduction to organisational trust, i.e. what it means, how it relates to the other variables in the study, as well of the underlying components of the construct itself that formed part of the study.

#### **2.1 INTRODUCTION**

A major issue for organisational design is to cope with uncertainty where uncertainty pertains to task-related information (Burton, Erikson, Håkonsson & Snow, 2006; Thompson, 2010). This uncertainty has to be managed and especially so through adjusting the organisational design effectively and efficiently.

Thompson (2010) and Burton et al. (2006) argue the importance of organisation design for the achievement of organisational goals, even in times of uncertainty and change. These authors quote research showing several diverging demands on the organisation, such as change versus preservation, exploratory versus exploitive innovation, and alignment versus adaptability. The necessity of being competitive whilst maintaining participation, delegation and/or empowerment, communication structures, self-contained autonomous, self-managed teams, flexibility, enhancing motivational and trust levels and enhanced performance is suggested by Burton et al. (2006).

Jordan (1999) identifies the following eight characteristics of high-performance organisations: a clear mission, defined outcomes and focus on results, empowerment of employees, motivation and inspiration to succeed, flexibility to adjust to new situations, competitiveness in terms of performance, structuring work to meet customer needs and maintaining communication with stakeholders.

Krot and Lewicka (2012) relate organisational trust to aspects such as knowledge acquisition and dissemination, acceptance of influence, positive motives, a reduction in monitoring, mutual learning, co-operation and higher organisational performance. For these authors, the modern-day workplace is characterised by decentralisation, work teams, a need for more co-operation, information transfer and shared

responsibility requiring horizontal (between co-workers) and vertical trust (between subordinates and managers).

Phillips (1997) describes the elements of high-trust organisations (i.e. employee engagement and empowerment, visionary clear and articulated leadership, wealth sharing, investing in and nurturing intellectual capital, developing and maintaining loyalty) and how these aspects interlink with other valued, performance-related aspects.

For Burton et al. (2006), trust and control are regarded as different approaches to deal with the problems of uncertainty in interpersonal relationships governing organisational processes. The paradox of control and trust is not the only paradox in an organisation but is most prevalent in a study of organisational trust. An organisation comprises various such paradoxes as can be seen in Table 2.1 below.

*Table 2.1*  
*Common tensions*

Common tensions
<ul style="list-style-type: none"> <li>• Co-operation versus competition, rigidity versus flexibility, and short-term versus long-term orientation.</li> <li>• Competition versus co-operation.</li> <li>• Design versus emergence, co-operation versus competition, trust versus vigilance, expansion versus contraction, and control versus autonomy.</li> <li>• External versus internal legitimacy, efficiency versus inclusiveness, and flexibility versus stability.</li> <li>• Unity versus diversity, and confrontation versus dialogue.</li> <li>• Goal congruence versus goal diversity.</li> <li>• Autonomy (individuals have full autonomy to act on behalf of their organisations to accommodate the needs of the collaboration) versus accountability (individuals are constrained by their accountability to their organisations and have no autonomy to act on their behalf in the collaboration).</li> </ul>

Source: Vangen (2012)

In Table 2.1 Burton et al. (2006) elaborate on the 7 tensions that occur in most organisations. These tensions influence aspects such as decisions, relations and the socio-cultural environment according to their view.

In the past, organisational trust has been studied in various contexts such as:

- structural contexts: Jaques (1996), McLain and Hackman (1999), Ping-Li, Bai and Xi (2011);

- functional contexts: Ammeter, Douglas, Ferris, and Goka (2004), Bower (1997), Wei, Wong, and Lai (2012), Leavitt (2003), Caldwell and Clapham (2003);
- temporal contexts: Caldwell and Clapham (2003), McMorland (2005); and
- strategic, goal-driven perspectives: McLain and Hackman (1999), Puusa and Tolvanen (2006), Lindkvist and Llewellyn (2003).

## **2.2 ORGANISATIONAL TRUST**

Ping-Li et al. (2011) emphasise that there has been a surge in research in especially interpersonal and inter-firm trust in the recent past. Paliszkiewicz (2012) opines that popularity of organisational trust as a topic is primarily attributable to the increased insecurity in the workplace and a realisation of the importance of trust in all the areas of social life. This is also supported by Möllering (2001), and Kramer (1999).

Authors such as Seppälä, Lipponen, and Pirttilä-Backman (2012, p. 35) are of opinion that the field of organisational trust has been characterised by a lack of “theoretical reasoning”. A lack of consensus seems to exist on a common definition of organisational trust and identifying the different combinations of factors that exert influence in a trusting relationship (Wong, Then, & Skitmore, 2000).

Organisational trust was considered in this study of trust as an integral part of individual and organisational performance. In the words of Jaques (2010, p. 134), “Requisite institutions are those institutions whose articulated structure and functional arrangements provide solidly regulated conditions of trust in working relationships, and hence of authority with freedom and justice”.

In the section that follows, a definition of organisational trust is discussed as well as frameworks on the components and antecedents of trust and, lastly, the organisational configurations and benefits of organisational trust.

### **2.2.1 Definition of organisational trust**

Lewis and Weigert (1985) focus on reciprocity where organisational trust results in one person feeling inclined to trust another, when such person shows trust in the first person. Trusting someone may therefore result in that person also displaying trust, which if sustained, would lead to a perception of trustworthiness. Together dependence, reliance and risk all contribute to high vulnerability (see Currall, 1990).

A second important aspect that is often addressed in definitions of trust is an expectation of a positive outcome. Hosmer (1995, p. 393) sees organisational trust as:

[T]he reliance by one person, group, or firm, upon a voluntarily accepted duty on the part of another person, group or firm, to recognise and protect the rights and interests of all others engaged in a joint endeavour or economic exchange.

Hosmer (1995) sees organisational trust as an optimistic expectation of the eventual outcome of an event for which certainty does not exist yet.

For Hosmer (1995), organisational trust involves a belief that people will act for the common good (morally correct behaviour). Hosmer (1990) summarises the literature on organisational trust as follows:

- organisational trust is usually defined as an optimistic expectation about a positive outcome of an event or behaviour;
- vulnerability and dependency are often identified as components;
- organisational trust is a voluntary action and difficult to enforce; and
- there is generally a sense of duty to protect another person or interest.

Creed and Miles (1996) define organisational trust in terms of a person's embedded predispositions to trust, valuing characteristic similarity or familiarity, and experiences of reciprocity. Flores and Solomon (1998) argue that people trust others because they are trustworthy, and such trust leads to further trustworthiness.

Swift (2001) sees trust as a belief and confidence in the goodwill of the other party, resulting in a willingness to expose the self to the risk of opening the self and being vulnerable. For Swift (2001), organisational trust is a wide concept, involving mutual vulnerability and risk, as well as a duty to protect each other. Swift makes an important comment, namely that the reliance on the predictability of an organisation's behaviour is not a question of trust, but rather a lack of distrust. Swift (2001) distinguishes trust and distrust as belonging to a split organisational trust continuum rather than a single trust–distrust continuum. The first range, the distrust, lack of trust range is based on predictability of the person's behaviour and level of suspicion. Lack of distrust is a low level of suspicion based on a perception that the person's behaviour is predictable. *Distrust* refers to a perception that the person cannot be trusted, with a resulting high level of suspicion created.

Martins (2002) sees organisational trust as the willingness of a person to be vulnerable to the actions of another with the expectation of reciprocity, regardless of the ability to

monitor or control the other party. Mayer, Davis, and Schoorman (1995, p. 712) define organisational trust as “a willingness to be vulnerable to the actions of another party”.

Abrams, Cross, Lesser, and Levin (2003) did a systematic study to identify why people are seen as trustworthy. The following characteristics were identified:

- trustworthy people tend to act with discretion;
- there is a consistency between what they say and do;
- they communicate frequently and effectively;
- communication is a two-way street;
- decisions are fair and transparent;
- there is a shared vision and language;
- people are held accountable for organisational trust;
- personal connections are created;
- there exists sharing of value; and
- expertise and limitations are exposed.

Covey (2004) relates trust to offering forgiveness and common courtesies in the workplace, such as using the words ‘thank you’ and ‘please’, while Gimbel (2003) relates organisational trust to the solicitation of feedback of organisational performance at a personal level. Gimbel (2003) claims personal feedback opens an individual to being vulnerable and an assumption that the information will not be used for exploitation of self and others.

Ferrin, Dirks, and Shah (2006, p. 817) aver that organisational trust theories primarily borrowed from game and co-operation theory, social exchange theory and attribution theory. These authors define interpersonal organisational trust as “... an individual’s belief about the integrity and dependability of another”. In terms of social exchange theory, the primary assumption with these theories is that organisational trust increases as benefits are exchanged on a continuous basis (Whitener, Brodt, Korsgaard, & Werner, 1998).

Another aspect that has received much attention is trustworthiness. Colquitt, Scott, and LePine (2007) identify trustworthiness as one of the drivers of an expectation that someone has that another person will behave in a particular manner.

Yakovleva, Reilly, and Werko (2010) found that, within team selection, benevolence and integrity play a significant role in citizenship behaviour as a key to effectiveness,

especially in high-priority and interdependence circumstances. These researchers found that employees with shared perceptions had higher levels of interaction and integration and information sharing than a control group.

Some authors see trust as part of a person's belief system, or as his or her positive predisposition towards other people.

In their study, Akter, D'Ambra, and Ray (2011) found that consumer trust played a mediating role between trustworthiness and customer continuance intentions. Trustworthiness was seen as a reflective second-order construct following organisational trust.

In a systematic study of organisational trust definitions, Paliszkievicz (2012) came across various definitions displayed in Table 2.2.

*Table 2.2*

*The theoretical approaches and conceptualisations of organisational trust*

Theoretical approach	Definition of trust
Marketing channels research, social exchange theory	Relying on an exchange partner in whom the person has confidence
Social exchange theory and the economic approach	Confidence in reliability and integrity of the other person
Psychology, literature on marketing channels	The degree of certainty or the level of expectation certainty in the reliability and truth or honesty of the other person or object
Social psychology and marketing	The perceptions of benevolence or credibility of the other person
Transaction cost approach, marketing channels	The degree of co-operation, appose to coercion and self-interest
Organisational theories and social exchange theory	Organisational trust as creating selling-partner relationships
Economic, sociological and psychological theories	An expectation that the other person will behave in a mutually acceptable way
Relational exchange theory, transaction cost theory	A belief in the other person's sense of obligation and predictability
Psychology, sales literature	A belief that the salesperson, or the product exchanged, and/or the organisation where the product is purchased, will fulfil their obligations and promises
Theories of inter-organisational co-operation	A perception that the other party will not exploit vulnerabilities
Relationship and industrial marketing theories	When confidence in the honesty, reliability, and integrity of the other person exists



Source: Paliszkiewicz (2012, pp. 204–205)

Aspects of trust that Paliszkiewicz (2012) highlighted were honesty, reliability, integrity and credibility as trust-inducing qualities, mostly with a focus on expectations of exchange/reciprocal relationships. The same research looked at attitudinal or enduring behavioural qualities or belief systems that make the person more susceptible to trusting fellow human beings. Aspects such as willingness for co-operation and exposing the self to others, benevolence and co-operation as sources for trust, keeping obligations and a willingness to open one-self were identified as related to trust.

Akter et al. (2011) claim research on organisational trust and trustworthiness has focused on the following aspects:

- competence, integrity, and benevolence;
- competence, positive intentions, ethics, predictability;
- ability, benevolence, integrity, organisational trust disposition;
- reputation, system assurance and propensity to organisational trust;
- ability, benevolence and integrity;
- ability, benevolence, integrity and predictability;
- ability, benevolence, integrity and predictability;
- competence (ability), benevolence, honesty (integrity), and predictability;
- predictability, competence, openness, caring, and good will;
- credible threat of punishment, credibility of promises;
- ability, intentions, organisational promises;
- predictability;
- competence, integrity;
- ability, organisational trustworthy intentions;
- benevolence, honesty;
- predictability;
- competence, motives;
- ability, intentions to deliver;
- benevolence; and
- ability, competence, consistency, discreteness, fairness, integrity, loyalty, openness, promise fulfilment, receptivity.

From this list, it is clear that the discussion on what organisational trust is, is far from closed. Wong et al. (2000) argue that a lack of consensus exists on a common definition of organisational trust and identifying the different combinations of factors that exert an influence in a trusting relationship. Mayer et al. (1995) and Mayer and Davis (1999), however, concluded that three aspects can be isolated regarding their influence of organisational trust: ability, benevolence and integrity.

Colquitt et al. (2007) cite definitions by Mayer et al. (1995) and Rousseau, Sitkin, Burt, and Camerer (1998), and show that the two primary components – the intention to accept vulnerability and positive expectations – are deeply rooted in historic conceptualisations of organisational trust. Colquitt et al. (2007, p. 910) identify ability or having competence, interpersonal skills and “general wisdom necessary to succeed in a job and organisation” as important components of trustworthiness.

Colquitt et al. (2007) quote Mayer et al. (1995) who distinguish benevolence and integrity as the two aspects of character that inspire trustworthiness. *Benevolence* refers to the perception a person holds regarding the propensity of another to act in good faith. *Integrity* is the perception a person holds that another will adhere to certain moral and ethical codes.

Mayer et al. (1995) and Mayer and Davis (1999) (from Colquitt et al. 2007) have studied research on the components of trust, ability, benevolence and integrity. The results can be seen in Table 2.3.

*Table 2.3*  
*The coding for ability, benevolence, and integrity*

Coding category	Mayer and Davis (1999) survey items	Mayer et al. (1995) synonyms
Ability: "that group of skills, competencies, and characteristics that enable a party to have influence within some specific domain" (Mayer et al. 1995, p. 717).	<p>[The organisational trustee] is very capable of performing his or her job.</p> <p>[The organisational trustee] is known to be successful at the things</p> <p>[The organisational trustee] has much knowledge about the work that needs to be done.</p> <p>I feel very confident about [the organisational trustee's] skills.</p> <p>[The organisational trustee] has specialised capabilities that can increase our performance.</p> <p>[The organisational trustee] is well qualified.</p>	Competence, perceived expertise
Benevolence: "the extent to which the organisational trustee is believed to want to do good to the organisational trustor, aside from an egocentric profit motive" (Mayer et al. 1995, p. 718).	<p>[The organisational trustee] is very concerned with my welfare.</p> <p>My needs and desires are very important to [the organisational trustee].</p> <p>[The organisational trustee] would not knowingly do anything to hurt me.</p> <p>[The organisational trustee] really looks out for what is important to me.</p> <p>[The organisational trustee] will go out of his or her way to help me.</p>	Loyalty, openness, caring, receptivity, availability
Integrity: "the perception that the organisational trustee adheres to a set of principles that the organisational trustor finds acceptable" (Mayer et al. 1995, p. 719).	<p>[The organisational trustee] has a strong sense of justice.</p> <p>I never have to wonder whether [the organisational trustee] will stick to his or her word.</p> <p>[The organisational trustee] tries hard to be fair in dealing with others.</p> <p>[The organisational trustee's] actions and behaviours are not very consistent.</p> <p>I like [the organisational trustee's] values.</p> <p>Sound principles seem to guide [the organisational trustee's] behaviour.</p>	Fairness, consistency, promise fulfilment, reliability, value congruence, discreteness

Source: Mayer et al. (1995) and Mayer and Davis (1999)

In Table 2.3 above benevolence, trust and integrity is operationalised to be used as questionnaire items by the authors. The detailed descriptions leave not ambivalence to the participant as to what the author(s) intended.

The most prevalent factors that emerge from the definitions are ability (competence), benevolence, integrity and predictability and a willingness to open oneself to being vulnerable. In the present research, organisational trust was therefore defined as a voluntary openness to risk and intrapersonal vulnerability based on perceptions of benevolence, integrity and predictability towards a person, group or situation.

Although common themes emerge from the above definitions and models, more research is needed to develop a coherent structure. It is evident that a lack of consensus for a coherent for model trust still exists (Seppälä et al., 2012; Wong et al., 2000).

Although some theories primarily focus on intra-personal factors (such as those by Mayer et al. [1995] and Rousseau et al. [1998]), others tend to focus on interpersonal and environmental conditions (such as those by Gimbel [2003] and Abrams et al. [2003]). Models such as the split organisational trust continuum of Swift (2001) focus on the complex interplay of factors, while the models of Rossiter and Pearce (1975) and Bews and Martins (2002) introduce developmental aspects into their models.

The present research focused especially on the interplay of factors (factors in the organisation – especially around performance management) on the perceptions of trust.

### **2.2.2 Antecedent models of organisational trust**

Some authors distinguish between different organisational models to guide research. A well-known framework is that of Kramer (1999, p. 573) who distinguishes between the following forms of organisational trust:

- dispositional trust – referring to a general disposition of individuals towards organisational trust or distrust;
- history-based – trust being influenced by past experiences;
- third parties acting as conduits or amplifiers of information sources;

- category-based trust – referring to organisational trust based on membership of an organisation (e.g. professional bodies such as the Health Professions Council of South Africa [HPCSA]);
- role-based trust based on an individual's role and not on characteristics or motives, and
- rule-based trust referring to existing formal and informal norms and practices in organisations forming behaviour.

According to Kramer (1999, p. 573), organisational trust is not merely a rational calculation based on risk assessment, but it relates also to a “social orientation” towards colleagues and society as a whole (see also Barber, 1983).

In the following sections, other models compiled to explain trust or provide direction for further research will also be considered briefly.

#### **2.2.2.1 A six-component model**

McKnight and Chervany (1996) distinguish between the six components of this model as follows:

- *situational trust* relates to trust in a particular situation;
- *dispositional trust* relates to the subjective nature of the individual to tend to be positive or cynical to new encounters naturally;
- *system trust* is the trust placed in a system that it has built in the necessary control mechanisms;
- *trusting belief* is the belief that someone has that another person will act in his or her best interest, or not;
- *trusting intention* refers to a decision to trust another person, even though it may be dubious; and
- *trusting behaviour* is the outcome of the other five components, when the person displays trust in a situation, with a feeling of security, with the knowledge that negative consequences might occur and an intention to trust.

In the evaluation of the model, it could be said that, on the positive side, the model acknowledges the complexity of organisational trust as a construct by defining the components as such in an elaborate manner. On the other side, it lacks a model on

the process, influence and direction of the components with regard to organisational trust. In Table 2.4, below the model is displayed.

*Table 2.4*

*The trust framework of McKnight and Chervany*

Trusting behaviour			
Decision to trust			
Situational trust	Trusting beliefs		System trust
	Dispositional trust	Belief formation	

Source: Gray, Jensen, O'Connell, Weber, Seigneur, and Chen (2006, p. 97)

In Table 2.4 above McKnight and Chervany (1996) distinguish between situational trust, system trust and trusting beliefs. The components of the latter are dispositional trust and belief formation. The decision to trust follows from systemic, situational and/or trusting beliefs. Trusting behaviour results from the decision to trust.

### **2.2.2.2 Cognitive versus affect-based trust**

Möllering (2001) conceptualises trust as a mental process consisting of three elements: expectation, interpretation and suspension. Trust is seen as an effective process with a more abstract – even moral – component. Möllering (2001, p. 403) sees trust as a process starting with interpretation, i.e. a perception of what constitutes ‘good reasons’. In the second element of the process, suspension, the individual decides that the reasons identified (during interpretation) are indeed certain. This is when the individual takes the “leap of organisational trust” (p. 403) or “inherent dualities of knowledge-ignorance” (p. 404) (this is in line with the work of Simmel (1950)). The third element, expectation, is the outcome or result of the combination of elements one and two, i.e. interpretation and suspension.

Möllering (2001) quotes Luhmann (1979) who is of opinion that trust is not a mere rational choice. According to this view, individuals rationalise decisions made on a basis of trust, even if it is just to justify themselves socially and to uphold self-respect.

Möllering (2001) emphasises that trust research should focus on whether an expectation (as an outcome of trust) about fellow employees’ actions and intentions is favourable or unfavourable.

Mayer, Davis and Schoorman (1995) developed a model of organisational trust based on decisions individuals make about the risk involved in trusting others. These decisions are primarily based on cognitive processes, although Schoorman, Mayer, and Davis (2007) included affective dimensions in their model.

From their review, Schoorman, Mayer and Davis (2007, pp. 345–346) concluded that trust in organisations should be conceptualised keeping the following aspects in mind:

- organisational trust should be examined at both macro and micro levels in an organisation;
- while an individual's ability, benevolence and integrity affect organisational trust perceptions about individuals, these characteristics also influence the extent of organisational trust an individual displays in an organisation,
- trust in management, management beliefs and actions, and (Creed & Miles, 1996; Puusa & Tolvanen, 2006) influence levels displayed in the organisation;
- some organisations develop greater propensities to display organisational trust than others;
- factors such as geography, industry and economic history seem to affect organisational trust propensity in organisations;
- organisational trust is an aspect of relationships;
- organisational trust and distrust are the opposite ends of the same continuum;
- the perception of risk acts as a moderator between organisational trust and risk-taking behaviour;
- the effect of reciprocity should be considered in organisational trust models;
- aspects such as forgiveness and subsequent behaviour taken to repair organisational trust, are worthwhile pursuing in further research;
- there seems to be a progression in time with the development of organisational trust; and
- while propensity plays an important role in the beginning of the organisational trust relationship, judgements of ability and integrity would form relatively quickly, while benevolence judgements would take more time.

In the evaluation of the model, it could be said that the setting of organisational trust is a cognitive construct providing for the rich application of the findings around cognition, neurophysiology and neuropsychology. On the other hand, it lacks the

acknowledgement that humans are coherent beings with aspects such as emotions and unpredictability.

### **2.2.2.3 *Calculus-based, knowledge-based and identification-based organisational trust***

Puusa and Tolvanen (2006) distinguished three types of organisational trust: calculus-based, knowledge-based and identification-based organisational trust. Calculus-based trust is an ongoing process where the individual assesses the risk (i.e. the consequences) of doing or not doing something. Knowledge-based trust is centred on a prediction of another person's behaviour relying on information and specifically historical interaction. Identification-based trust is trust where the individual internalises the preferences of another person and builds his or her organisational trust on such preference.

### **2.2.2.4 *Deterrence-based, knowledge-based and identification-based trust***

Shapiro, Sheppard, and Cheraskin (1992) suggest that three forms of organisational trust operate in a business relationship:

- deterrence-based trust (based on consistency, reliability and threat of punishment or loss);
- knowledge-based trust (having enough knowledge of other people to understand them and predict their behaviour); and
- identification-based (complete empathy with the other party's desires and intentions).

### **2.2.2.5 *An economic and social exchange model***

Colquitt et al. (2007) cites Blau (1964) who distinguished between two types of trust relationships in the workplace: economic exchange and social exchange. While *economic exchange* refers to a contractual exchange of exact quantities specified in advance, *social exchange* refers to an exchange of more diffuse, future-based nature similar to Gouldner's (1960, cited by Colquitt et al., 2007) concept of a norm of reciprocity.



### **2.2.2.6 *Institutional-based, characteristic-based and process-based trust***

Zucker (1986) distinguishes three types of organisational trust: institutional-based, characteristic-based and process-based organisational trust. Whereas *institutional-based* organisational trust relates to formal societal structures, *characteristic-based* organisational trust is tied to a person and centres on aspects such as ethnicity, culture and background. *Process-based* trust is related to historical experiences of a person or entity.

In the evaluation of the models presented in 2.2.2.3–2.2.2.6, it could be said that simplicity is both a positive and negative aspect of this theory. It is positive in its reductionist nature, and negative in what is practically meant by these subcomponents, the circumstances under which one is chosen above the other, flexibility regarding the application of the approaches in different scenarios, and the effect of feedback received from the other party or object.

### **2.2.2.7 *Process-based models***

Rossiter and Pearce (1975) postulated a model that perceives trust as developing in four stages. In the early stage, an individual displays trust even though there is no evidence that the trust will be reciprocal. Only as time progresses, are incremental steps taken towards increased trust through a process of negotiation. Finally, as the trust levels increase, parties become more willing to interpret behaviour as trustworthy moving away from impulses of exploitation.

Luhmann (1995) says a new system first tests the bond of trust that exists and only then it starts processing the meaning of these relationships. Relational interaction deepens the levels of trust.

Caldwell and Clapham (2003) link organisational trust to a temporal component, arguing that organisational trust occurs through experiences, interactions and perceptions over time.

The development of organisational trust is a gradual process (see Axelrod, 1984), and a common future is a strong motivator for building such relationship.

In the evaluation of process-based models it could be said that they acknowledge the complexity of the concept of organisational trust. On the other side, it lacks detail on

the aspects of what exactly each phase involve, the components, antecedents and mediating factors as well as individual differences.

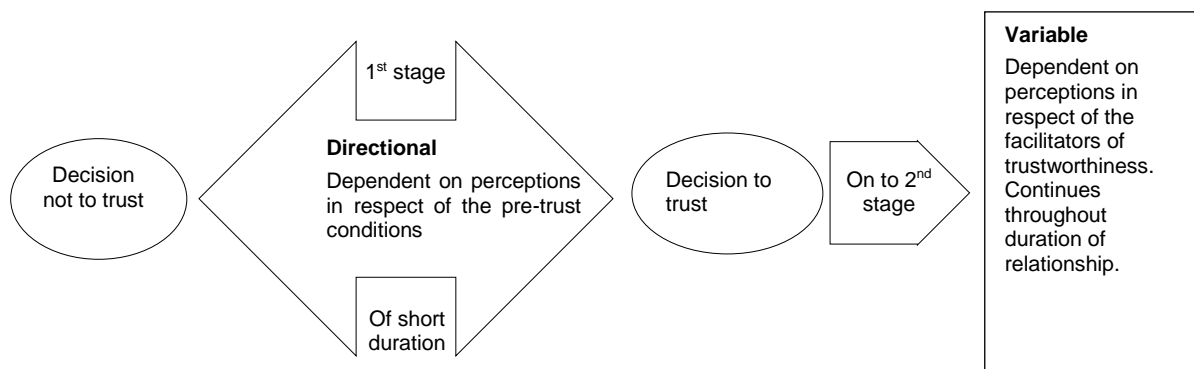
### 2.2.2.8 *Intrinsic and extrinsic trust*

Noteboom (2005) distinguishes between the intrinsic and external value of organisational trust. *Internal value* refers to the improvement of wellbeing and quality of life and *extrinsic value* enables transactions to occur between parties.

This view is closely related to the reason for the pursuit of organisational trust and the view or model to which the organisation subscribes. As can be seen in later sections, various benefits exist according to research on trust in organisations. Noteboom's (2005) distinction becomes especially relevant when trust initiatives are introduced or when the benefits of trust are explained.

Bews and Martins (2002) suggest a model as can be seen in Figure 2.1. According to this model, trust unfolds over two stages, sequential in nature and influenced by a repertoire of factors. Stage 1 is of short duration and is influenced by contextual factors, such as perceived risk, propensity to trust and reputation. Stage 2 is variable in duration and dependent upon the aspects that facilitate trustworthiness, such as benevolence, competency and integrity.

This model was selected to be the most relevant for the current research.



**Figure 2.1: The stages of trust formation model**

Source: Bews and Martins (2002, p. 15)

In Figure 2.1 above organisational trust is described as a 2 stage process. In the first stage the direction, i.e. to trust or not to trust is influenced on the perceptions in respect of pre-trust conditions. If a person does decide to trust based on these pre-trust

conditions, other variables around the trustworthiness of the facilitators of this trustworthiness influence the continuance of trust.

In the evaluation of the model, it could be said that the model deals elaborately with the origin of organisational trust, the sequence and the repertoire of underlying factors. On the other hand, it lacks detail around the procedural aspects of the construct and individual differences. More research on the repertoire of the components of the constructs and how these are influenced and are influencing surrounding factors is also needed.

### **2.2.3 Organisational configurations and benefits of trust**

Organisational trust is a multidimensional construct consisting of various dimensions. Wong, Then, and Skitmore (2000) argue that trust must be consciously made part of an organisational functioning. Wong et al. (2000) claim three interdependent antecedents of organisational trust can be identified, namely:

- getting consistent positive results at individual, team and organisational level;
- having integrity (i.e. a clear purpose, vision, performance targets, operating principles, open and honest communication, straightforwardness, and honouring commitments); and
- demonstrating concern (i.e. a feeling of fellowship, common loyalty and confidence in each other's abilities).

Möllering (2001) quotes Simmel (1950, p. 318), who claims trust is “one of the most important synthetic forces within society” enabling humans to transcend rationality.

Arrow (1974) is of the opinion that, wherever two parties exchange information, services or goods, trust is important.

Cummings and Bromiley (1996) claim that organisational trust operates at the interpersonal, intergroup, organisational and societal levels. At interpersonal level, it is about the one-on-one relationship. At intergroup level, it is about how organisational trust is affected by and affects the trust that groups have towards each other. At organisational level, it is about the factors in the workplace that affect organisational trust and how this environment changes to maintain or influence individual employees and entire cultures in the workplace. At societal level, aspects such as norms, cultural belief systems, group pressure and religious systems are considered.

Weber and Carter (2002) note that trust is a foundational aspect between the individual and other people. According to this view, organisational trust is emotive, reflective and behavioural, and it influences the systematic and reciprocal nature of relationships. Risk and organisational trust are necessary to proceed where immediate gratification is not possible. Simply put, we need trust in the workplace and in life in general for the system to work.

Wong et al. (2000) cite research, which found that organisational trust is regarded not only as the glue that holds organisations together but also as a component of organisational performance, competitiveness, employee empowerment, co-ordination and control of effort, reduction in waste of resources, reduced defensiveness, less distortion of messages, accurate perceptions of other people's motives, values and emotions, increased self-understanding, good interpersonal relationships, willingness to adapt to and implement changes, high employee satisfaction levels.

#### ***2.2.3.1 Employee relationships and co-operation***

Jones and George (1998) found a relationship between positive mood and emotion and the creation of organisational trust. Ridings, Gefen, and Arinze (2002) articulate that organisational trust is a key element in the creation of co-operation between members of virtual communities. According to these authors, organisational trust based on the socially acceptable behaviour of others, is an important aspect where structure and rules are virtually absent, e.g. in a virtual community. Organisational trust is essential for the functioning of and co-ordination in this community.

Seppälä et al. (2012) argue that, as work is being conducted increasingly by diverse groups, the willingness of employees to co-operate with each other towards attaining shared goals, should receive more attention. According to these authors, this co-operation is very hard to attain without co-workers trusting each other.

Dirks and Ferrin (2002) linked organisational trust to having positive relationships in the workplace, high satisfaction levels, the formation of organisational citizenship, conflict resolution, high employee performance, and increased profit levels in organisations. Möllering (2001) cites research that links organisational trust to individual risk-taking behaviour, co-operation and reduction in social complexity, order, social capital, etc. He however warns that the "functional consequences" (p. 403) of

organisational trust, such as risk-taking, co-operation, relationships or social capital should not be confused with organisational trust itself.

Tzafrir and Dolan (2004) found that organisational trust in the employment context is three-dimensional, comprising harmony, reliability and concern. While *reliability* is about the consistency of words and actions displayed by a person, *concern* refers to the self-interest of a party to be balanced against that of another. The third aspect, *harmony*, refers to a common identity and shared values.

Thorgren and Wincent (2011) cites research showing that trust is associated with a greater understanding and familiarity between parties. It relates to “cognitive closeness” (relating to the matching of mental models) (Thorgren & Wincent, 2011, p. 22), shared meaning, simpler and faster decision-making (due to cognitive closeness), high propensity towards risks due to positive expectations, relational closeness, reciprocity, frequency and intensity of interactions.

Ferrin et al. (2006, p. 873) focused on interpersonal organisational citizenship behaviours (OCBIs) as “... behaviors of a discretionary nature that are not directly or explicitly recognized by the formal reward system but nevertheless promote the effective functioning of the organization”. According to this research, social-contextual factors and third-party relationships are important contributors to the building of organisational trust. More specifically, the following hypotheses were confirmed:

- A positive relationship was found between the frequency of OCBI and organisational trust displayed in a co-worker;
- An employee’s trust in a co-worker was found to be positively related to the proximity of working relationships. Ferrin et al. (2006, p. 871) attribute this, i.e. “network closure” to an inclination of people to want to build a favourable reputation;
- Trust in a co-worker was also found to be positively related to the “structural equivalence” (Ferrin et al., 2006, p. 873) between the person and the co-worker.

This structural equivalence refers to –

- the extent to which an employee and co-worker are similar in terms of the formal and informal relationships employees have with others within the organisation and are also similar in terms of the relationships they do not have with others within the organisation;

- trust in a co-worker was also found to be positively related to the trust displayed by third parties in this co-worker while these third parties were also trusted by the person. This aspect of “trust transferability” (Ferrin et al., 2006, p. 874) confirms a postulation that people also look to other people’s behaviour to confirm own beliefs.

### **2.2.3.2 Compliance and organisational trust**

Gregory, Gundlach, and Cannon (2010) found that governance and control measures are not incompatible with organisational trust measures, as initially postulated by their research hypothesis. These authors suggest the use of information or reports to govern against the abuse of trust in an organisation. They believe, “At a basic level, these strategies should either provide incentives and safeguard against the violation of organisational trust or serve to bolster and complement the positive benefits of trust. Strategies that accomplish both outcomes should be considered optimal” (Gregory et al., 2010, p. 412).

Ammeter et al. (2004) note that organisational trust and accountability might be used for the same purposes but at different stages. The authors use an example of a department manager who does not necessarily check each direct subordinate’s corporate credit card statements each month. The organisation has entrusted these subordinates to utilise their credit cards within certain parameters. However, Ammeter et al. (2004) note that someone in the organisation’s financial system would in all probability check those credit card expenses in the process of payments. In this situation, organisational trust is temporarily suspended while formal audit procedures are being followed. The contextual factors in this situation necessitate and normalise the use of control measures without damaging organisational trust itself.

For Puranam and Vanneste (2009), organisational trust could reduce reliance on formal governance mechanisms and, since the latter is expensive to maintain, holds a significant benefit to the organisation. These mechanisms might hinder the development of trust as relationship building or trust exchange is hampered.

### **2.2.3.3 Trust and performance**

Barney and Hansen (1994) believe trust in an organisation can provide the competitive advantage in the organisation. Dirks and Ferrin (2002) maintain trust can enhance

organisational effectiveness, efficiency and performance. Employees who display organisational trust, have a high tenure in organisations, put in extra effort and work co-operatively (Dirks & Ferrin, 2002).

McAllister (1995) indicates that trust influences co-ordination and control at both institutional and interpersonal levels in the organisation, affecting general organisational effectiveness. As the activities in organisations take place in networks of interpersonal behaviour, working together and trusting fellow employees in these types of relationships are required. This importance of organisational trust relationships is especially important under conditions of uncertainty and complexity and where co-ordinated action is required. McAllister (1995, p. 33) suggests “need-based monitoring” where employees feel responsible and react with “assistance behaviour” (p. 33) as an important contributor to enhance peer performance.

The mediatory effect of accountability and self-monitoring in people with low organisational trust tendencies is shown by De Cremer, Snyder, and Dewitte (2001). According to this research, people prone to trusting other people were willing to contribute to a community project and displayed positive expectations in contrast to a control groups not trusting other people so easily.

These aspects are very relevant when considering the effect of trust on individual and organisational performance. De Waal (2002) relates organisational trust to the following aspects of a performance management system:

- A culture of openness and organisational trust is required for improvement in the process of performance management. Without a culture of organisational trust and continuous improvement, the organisation is measuring inadequate outputs and focusing on the wrong behaviour.
- Managers must be able to trust information that they are receiving so that they can be better prepared and can take preventative action where necessary. Better quality information will result in trust in the defined key performance indicators (KPIs), forecasting and management abilities. Accurate information and forecasts will also result in employees having high trust levels in managers. This information should be openly available, so that analysis goes to sufficient depths. Open communication should also focus on the reasons for the performance and the status of the system.

- In the relationship between the controlling system and the controlled system, there has to be a certain degree of trust in order to be able to use the performance management system effectively.
- As a performance management system makes the performance variables more transparent, it results in a vulnerability of employees being measured. This vulnerability should not be exploited and employees punished resulting in a resentment of the system and attempts to sabotage it.
- The results of the performance management system must be freely available to everybody in the organisation resulting in increased trust in each other and in the system.
- Transparency also makes comparisons between organisational units easier.
- Relaxed control between the board of directors and senior managers sets the stage for the rest of the organisation.
- As cross-fertilisation of ideas and innovation is required in the modern workplace, and especially so in turbulent times, the need for a properly developed workforce that fosters co-operation, flexibility, teamwork and organisational trust, individuals become even more important, especially in cases where decision-making is group-dependent.

Tzafrir (2005) describes trust as a desirable outcome for organisations due to its relationship to organisational citizenship behaviour, organisational performance, work attitudes, satisfaction and productivity.

Ammeter et al. (2004) confirm that, where trust levels have been damaged, accountability mechanisms can be used to regain performance by substituting for trust in such situations.

Insofar as the relationship between organisational trust and the performance management practices is concerned, Tzafrir (2005) considered four aspects: incentive compensation, employee participation, internal labour market and training. Tzafrir (2005) concluded that:

- managers with high organisational trust perceptions of subordinates will increase risk with regard to incentive compensation plans;
- there is a relationship between a manager's delegation and allowing decision-making at lower levels and organisational trust;



- internal promotions are linked to organisational trust levels of managers in employees; and
- more training is invested in employees if they are trusted by management.

Gregory et al. (2010) linked organisational trust to eliminating the duplication of activities, system and transaction savings, enhanced adaptability, lowered opportunism, higher levels of co-operation, collaboration, interaction, integrative bargaining, loyalty, high satisfaction levels, long-term interaction anticipations, a willingness to explore opportunities and implement decisions, and overall sales performance.

Thorgren and Wincent (2011) argue that one of the most prevalent reasons for the study of organisational trust is that it is impossible in any relationship to monitor every single detail. In terms of the relationship between organisational performance and organisational trust, McAllister (1995) mentions that the waste in managerial man-hours whilst monitoring behaviour and acting “defensively” (p. 33). McAllister (1995) also notes that employees need to contribute constructively to the performance of an organisation, finding ways to do work smarter, sharing ideas and innovation and not merely working as specified. Organisational trust has been related to a reduction of staff monitoring, co-ordination costs, and increases in individual effort (Borgen, 2001; Bradach & Eccles, 1989; Ring & Van de Ven, 1992; Uzzi, 1996), reduced transaction costs and stabilised expectations of people (Kubon-Gilke, Sturn, & Held, 2005).

Organisational trust has been related by Paliszkievicz (2012) to performance, working attitudes and behaviour in general. Paliszkievicz (2012) notes, however, that the nature of the link between performance and organisational trust remains unclear at this stage.

Seppälä et al. (2012) reported that organisational trust is related to positive attitudes in the workplace such as commitment, pro-activity and performance. Scott, Montes, and Irving (2012) found in their research that organisational trust acts as a mediator between the socialisation of new staff, job satisfaction, affective commitment, increased co-operation, greater certainty in relationships, positive social exchange, increased performance, job satisfaction, acceptance of decisions, acceptance of change efforts, and a reduced need to monitor subordinates.

#### **2.2.3.4 Accountability and organisational trust**

Bartling, Fehr, and Schmidt (2011) considered employee ability and accountability and found that uncontrolled discretionary powers given to employees might result in avoidance of accountability. These authors propose that proper selecting practices be implemented looking at employees' past records (reputation formation) through proper screening practices. When discretion is given to the correct employee, increased productivity might result if combined with the correct incentives. This would be in line with the ideas of employee–job level fit in requisite organisational terms.

Jaques (1996) suggests an organisational hierarchy comprising accountability and authority appropriate to identified layers with their specific functions in an organisation. Jaques (1996) emphasises that most employees strive to function effectively in an organisation and want to contribute to the organisational goals. According to this view, individuals should not be held accountable for improving their own work but only for working at a level of work required for the role they occupy. It is the manager who is ultimately responsible for continuous improvement.

Ammeter et al. (2004) are of the opinion that both accountability and organisational trust are important for proper social interactions within organisations. The absence of organisational trust might result in underproductive, costly measures to maintain accountability whilst the absence of accountability would result in chaos.

Ammeter et al. (2004) see organisational trust and accountability as having similar outcomes in organisations, with the two aspects being on a continuum with accountability at one end and organisational trust at the other. Where an employee is completely trustworthy, there is no monitoring needed, and where there is total monitoring under a strict accountability measure, there is no need for organisational trust, according to these authors.

Ammeter et al. (2004) postulate the following relationships between accountability and organisational trust:

- In a role, there should be an optimum level of organisational trust and accountability for optimum performance.
- Performance would suffer where there is a need for total monitoring (due to costs) or total organisational trust and having an individual not performing due

to a lack of accountability. Optimum performance occurs when the costs of both these aspects are minimised.

- Performance levels should increase when accountability and organisational trust co-exist.
- If a midpoint view of organisational trust and accountability on a continuum is considered, an inverted U-shaped curve could be postulated on a graph.
- This inverted U-shaped relationship postulates that increased organisational trust might serve as a substitute for accountability, and vice versa.

#### **2.2.3.5 *Manager-employee relationships***

Fox (1974) distinguishes between organisational trust relationships among peers who share a similar work situation, and relationships between individuals and their immediate supervisors. The relationship between organisational trust and leadership or management has since received extensive focus.

Not only can leaders influence the trust relationship between themselves and their subordinates directly, Seppälä et al. (2012) indicated that group leaders can play an important role in influencing employees' trust toward each other.

Braun, Peus, Weisweiler, and Frey (2013) found that trust in the line manager mediated the relationship between the employees' perceptions of such line manager's transformational leadership and job satisfaction. These authors also found that organisational trust in the team members mediated the relationship between the team perceptions of transformational leadership and job satisfaction.

Cunningham and Macgregor (2000) opine that employees display organisational trust when supervisors are fair, benevolent and predictable in terms of treatment and working conditions. In terms of environmental factors, supervisory trust was shown by these authors to be the most important factor contributing to organisational trust. The relationship between subordinates and top management also seems to differ from that of their direct managers.

The trust relationship between manager and subordinates flows over to affect the organisation as a whole. Paliszkiewicz (2012) cites the research of Wayne, Shore, and Liden (1997) and that of Wong, Ngo, and Wong (2003) indicating that employees generalise the levels of organisational trust in their direct managers to the organisation

as a whole. Brown and Leigh (1996), Aryee, Budhwar, and Chen (2002) (cited in Paliszkiewicz, 2012) found a positive relationship between organisational trust in the top manager and organisational commitment and identity, which in turn resulted in employees working harder and spending more time and energy on their work.

Tan and Tan (2000) related organisational trust in the direct manager to perceived ability, benevolence and integrity of the supervisor. Trust in the organisation was found to be related to fairness and justice in practices, and resulted in higher commitment and lower turnover.

Zhu, Chew, and Spangler (2005) link visionary leadership with high levels of cohesion, commitment, organisational trust and motivation, resulting in increased performance levels in new organisational environments, while Ping-Li et al. (2011) found that transformational leadership in an organisation positively relates to collective perceptions of organisational trust held by employees.

Authors such as Monji and Orllepp (2011), Brashear, Boles, Bellenger, and Brooks (2003) and Mayer and Schoorman (1992) found that the creation of trusting relationships was conducive to lower employee turnover rates. When levels of organisational trust are high, employees trust in just rewards and recognition but when organisational trust levels are low, even incentives offered by the organisation seem to be devalued, (Mayer & Schoorman, 1992).

Some initiatives that organisations could consider to strengthen the trust relationships between manager and subordinates are:

- Bower (1997) avers that, for an organisation to be effective, it needs to move from a management-based orientation to a leadership-based orientation in which the leader could gain trust, exercise justice, and display humility. The leader should take small leaps, trusting and empowering staff to inspire confidence in followers who may be frightened about the process or the responsibility and taking risks (Bardwick, 1996).
- Paliszkiewicz (2012) showed that where supervisors were concerned with the wellbeing of their subordinates, giving career advice and valuing their work, closer social exchange relationships developed. According to this research, an emotional investment forms that is reciprocated and often is generalised to trust in the organisation as well as favourable perceptions of the organisation. Sydow

(2000) considers management that establishes a culture of organisational trust through a sensitivity of decision-making, forms of contracting, monitoring, communication, events, procedures, disciplinary measures and rewards and recognition.

- Barber (1983) argues that the expectation of organisational trust should go beyond technical competency towards including morally correct inclinations.

Table 2.5 below provides a step-by-step guide with the actions, the reasons behind the actions and detailed content as to what management should do to establish and promote organisational trust. The framework goes beyond personal–individual and relational aspects to organisational aspects encompassing many of the aspects addressed earlier, especially the importance of competence and benevolence. The simplicity and practical application of the framework are noteworthy.

*Table 2.5*

*A systematic study of the relationship between organisational trust and management behaviour*

Managerial behaviours that promote interpersonal organisational trust		
Organisational trust builder	Description and logic	Managerial actions
<i>Organisational trustworthy behaviours</i>		
1. Act with discretion	Keeping a secret means not exposing another person's vulnerability; thus, divulging confidence makes a person seem malevolent and/or unprofessional. <i>Promotes: benevolence and organisational trust</i>	<ul style="list-style-type: none"> <li>• Be clear about which information you are expected to keep confidential.</li> <li>• Do not reveal information you have said you would not and hold others accountable for this.</li> </ul>
2. Be consistent in word and deed	When people do not say one thing and do another, they are perceived as both caring about others (i.e. they do not mislead) and as being competent enough to follow through. <i>Promotes: benevolence, competence and organisational trust</i>	<ul style="list-style-type: none"> <li>• Be clear about what you have committed to do, so there is no misunderstanding.</li> <li>• Set realistic expectations when committing to do something, and then deliver.</li> </ul>
3. Encourage frequent and rich communication	Frequent, close interactions typically lead to positive feelings of caring about each other and better understandings of each other's expertise. <i>Promotes: benevolence, competence and organisational trust</i>	<ul style="list-style-type: none"> <li>• Make interactions meaningful and memorable.</li> <li>• Consider having some face-to-face (or at least telephone) contact.</li> </ul>

Managerial behaviours that promote interpersonal organisational trust		
Organisational trust builder	Description and logic	Managerial actions
		<ul style="list-style-type: none"> <li>• Develop close relationships.</li> </ul>
4. Engage in collaborative communication	<p>People are willing to trust someone who shows a willingness to listen and share; i.e. to get involved and talk things through. In contrast, people are wary of someone who seems closed and will only answer clear-cut questions or discuss complete solutions.</p> <p><i>Promotes: benevolence, competence and organisational trust</i></p>	<ul style="list-style-type: none"> <li>• Avoid being overly critical or judgmental of ideas still in their infancy.</li> <li>• Do not always demand complete solutions from people trying to solve a problem.</li> <li>• Be willing to work with people to improve jointly on their partially formed ideas.</li> </ul>
5. Ensure that decisions are fair and transparent	<p>People take their cues from the larger environment. As a result, there is a 'trickle-down' effect for organisational trust, where the way management treats people leads to a situation where employees treat one another similarly.</p> <p>Thus, fair and transparent decisions on personnel matters translate into a more organisationally trusting environment among everyone.</p> <p><i>Promotes: benevolence and organisational trust</i></p>	<ul style="list-style-type: none"> <li>• Make sure that people know how and why personnel rules are applied and that the rules are applied equally.</li> <li>• Make promotion and rewards criteria clear-cut, so people do not waste time developing a hidden agenda (or trying to decode everyone else's).</li> </ul>
Organisational factors		
6. Establish and ensure shared vision and language	<p>People who have similar goals and who think alike find it easier to form a close bond and to understand one another's communications and expertise.</p> <p><i>Promotes: benevolence, competence and organisational trust</i></p>	<ul style="list-style-type: none"> <li>• Set common goals early on.</li> <li>• Look for opportunities to create common terminology and ways of thinking.</li> <li>• Be on the lookout for misunderstandings due to differences in jargon or thought processes.</li> </ul>
7. Hold people accountable for organisational trust	<p>To make organisational trustworthy behaviour become 'how we do things here', managers need to measure and reward such behaviour. Even if the measures are subjective, evaluating people's organisational trustworthiness sends a strong signal to everyone that organisational trust is critical.</p> <p><i>Promotes: benevolence, competence and organisational trust</i></p>	<ul style="list-style-type: none"> <li>• Explicitly include measures of organisational trustworthiness in performance evaluations.</li> <li>• Resist the urge to reward high performers who are not organisationally trustworthy.</li> </ul>

Managerial behaviours that promote interpersonal organisational trust		
Organisational trust builder	Description and logic	Managerial actions
		<ul style="list-style-type: none"> <li>Keep publicising key values such as organisational trust – highlighting both rewarded good examples and punished violations – in multiple forums.</li> </ul>
<i>Relational factors</i>		
8. Create personal connections	<p>When two people share information about their personal lives, especially about similarities, a stronger bond and greater organisational trust develop. Non-work connections make a person seem more 'real' and human, and thus more organisationally trustworthy.</p> <p><i>Promotes: benevolence and organisational trust</i></p>	<ul style="list-style-type: none"> <li>Create a 'human connection' with someone based on non-work things you have in common.</li> <li>Maintain a quality connection when you do occasionally run into acquaintances, including discussing non-work topics.</li> <li>Do not divulge personal information shared in confidence.</li> </ul>
9. Give away something of value	<p>Sharing organisational trust and good faith with someone makes that person want to be organisationally trusting, loyal and generous in return.</p> <p><i>Promotes: benevolence and organisational trust</i></p>	<ul style="list-style-type: none"> <li>When appropriate, take risks in sharing your expertise with people.</li> <li>Be willing to offer others your personal network of contacts when appropriate</li> </ul>
<i>Individual factors</i>		
10. Disclose your expertise <i>and</i> limitations	<p>Being candid about your limitations gives people confidence that they can organisationally trust what you say your strengths are. If you claim to know everything, then no one is sure when to believe you.</p> <p><i>Promotes: competence and organisational trust</i></p>	<ul style="list-style-type: none"> <li>Make clear <i>both</i> what you do and do not know.</li> <li>Admit it when you do not know something rather than posturing to avoid embarrassment.</li> <li>Refer to people who know more than you do about a topic.</li> </ul>

Source: Abrams et al. (2003)

### 2.2.3.6 Organisational goals and trust

Puusa and Tolvanen (2006) believe trust is linked to commitment and co-operation with regard to organisational goals and organisational changes.

Employees displaying organisational trust are more flexible and open to ambiguity and future risks (McLain & Hackman, 1999). McLain and Hackman (1999) show that organisational trust induces the sharing of information and participation especially where complex tasks are involved. Therefore, trust facilitates the implementation of organisational and personal goals through processes like delegation, increased co-operation and group effectiveness.

Where the change involves higher levels of complexity, higher trust levels facilitate the processes. McLain and Hackman (1999) found that organisational trust is influenced by proximity and complexity. Where complex services and a geographical dispersion exist, these researchers found that cognitive organisational trust will take preference above affective inducers of organisational trust. Where services are less complex and members are geographically closer to each other, affect-inducing measures will prevail above cognitive measures.

Wei et al. (2012) found that regardless of uncertainty in the environment trust provide the transactional and relational mechanisms necessary to improve performance in a logistical environment. Sharing information through the information technology (IT)-integrated network was found to be conducive to developing inter-organisational trust and partner co-operation as it supports economic transactions and logistical co-ordination, which in turn improves buyer and supplier performance in the logistics chain.

Long-term performance benefits through repeated exchange of transparent information and organisational trust, as well as a reduction in the likelihood of partner firms leaving exchange relationships, allows flexibility to handle unforeseen contingencies, adjusting activities and aligning divergent goals in the partner relationship according, to Wei et al. (2012).

#### **2.2.3.7 Proficiency and organisational trust**

Ridings et al. (2002) claim organisational trust consists of three distinct beliefs or factors: ability (or rather competence), benevolence (positive reciprocation), and integrity (i.e. socially accepted norms and standards). Colquitt et al. (2007, p. 910) identified ability or having competence, interpersonal skills and “general wisdom” necessary to succeed in a job and organisation as an important component of organisational trustworthiness. Another component of trustworthiness is character,



referring to aspects such as honesty, fairness, openness, caring motives and intentions and predictability.

Lindkvist and Llewellyn (2003) reported that peer communication is important and it assists in the forming of competence-based organisational trust and willingness of employees to take on lateral responsibilities.

#### **2.2.3.8 Authority and organisational trust**

Jaques (1996) argues that leadership is about accountability, influencing others towards the purpose and goals of the organisation and moving in the direction set by the leader using authority appropriate for the role.

For Jaques (1996), authority and accountability are deeply related, as authority should be sufficient enough to discharge the accountability. When organisations are poorly structured, resulting in poor cross-functional relationships, unproductive managerial accountability, authority and leadership, organisational trust cannot occur.

Jaques (1996) uses the concept of *de-selection* to say that a manager should have the authority to remove employees from roles for which they are not suited whilst finding alternative roles, should they genuinely seek to contribute to the organisation. Through de-selection, the manager also has the authority needed to deal with anti-social behaviour.

#### **2.2.3.9 Organisational trust and hierarchy**

Some authors, like Ping-Li et al. (2011) and Leavitt (2003), regard the relationship between organisational hierarchy and organisational trust as negative.

Ping-Li et al. (2011) argue that extensive formalisation in an organisation relates negatively to employees' organisational trust. These authors distinguish between organic structures and mechanistic structures, using the dimensions of formalisation and centralisation. *Formalisation* relates to explicit control procedures, and centralisation to the concentration of authority at specific levels. Li et al. (2011) confirm that formalisation relates negatively to organisational trust, while there is no proven link between centralisation and organisational trust. Formalisation and centralisation do however further constrain autonomy, reciprocity, identification and social exchange interfering with the formation of organisational trust relationships between peers and

the organisation itself and the individual employees (Ping-Li et al., 2011). Despite the postulations about the effect of centralisation on organisational trust, Ping-Li et al. (2011) could not prove such link.

Leavitt (2003) warns that organisational hierarchies can be counterproductive in that they could lead to distrust, dishonesty and fear in an organisation if leaders are reckless with power usage.

Authors such as Salas-Fumás and Sanchez-Asin (2013) and Ivanov (2001) relate organisational hierarchy to positive aspects of the organisational trust relationship in the workplace.

Salas-Fumás and Sanchez-Asin (2013) hypothesise that organisational trust, increased product–market competition, and skill dispersion result in favourable environmental conditions to expand organisational hierarchies and average spans of control. These researchers argue that efficient specialisation and exchange processes and collaboration of skilled employees are necessary for economic viability of organisations. On the other hand, the efficiencies of hierarchies and span of control are being limited by information costs and incongruence of objectives in cases of joint production. Salas-Fumás and Sanchez-Asin (2013) conclude that organisational trust and information and communication technologies will contribute to higher goal congruence and lower information costs, will buffer the limits of hierarchies and increase productivity.

Ivanov (2001) is of the opinion that organisations need to determine whether their work roles are correctly positioned in the organisation. In a properly designed organisation, each work level will add value, resulting in the elimination of conflict and increased organisational trust, which will lead to optimal performance (Ivanov, 2001).

“The organizational design embeds organisational trust between people because the manager and subordinate are working together to achieve common goals free of organizational absurdity and discord. This organization is structured for optimal performance. Theoretically, this design could boost organizational productivity from 5-30% to 80-90% systemically because it eliminates bull and frees people to work productively. This organizational system is based on the scientific stratification of work of value-adding manager-subordinate relationships” (Ivanov, 2011, p. 107).

Lindkvist and Llewellyn (2003) take a compromising stand and argue that an organisational trust-based governance form is a viable way to manage when direct

control measures are not possible (or feasible) or when non-measurable goods are being exchanged. Reliance is optimally put in an individual to act in the interest of an organisation.

Ivanov (2001) sees the so-called 'requisite organisation' suggested by Jaques (1996) as the means to keep organisations in the United States more competitive. Ivanov (2001) reasons that organisations sometimes treat employees like commodities, resulting in suspicion and mistrust, lower self-esteem, generating conflict, over-compensation, poor interpersonal and family relationships, and low productivity and effectiveness.

Much work has been done by Jaques (1996) in defence of organisational hierarchy.

Jaques (1976) recognised the importance of trust early in his work: "An institution or pattern of organization may thus be defined as requisite to the extent that it reinforces the expression of behaviours supportive of confidence and organisational trust in human interactions, and reduces suspicion and mistrust" (p. 374).

In the book *Executive leadership*, Jaques and Clement (1991) distinguish between the general core values as a necessary minimum (mutual organisational trust, confidence, reliability, fairness, justice, openness, freedom from fear and central decree, respect and dignity). The values describe firstly the behaviours expected from employees (integrity, commitment, reliability, initiative and co-operativeness) and the values that the employees can expect from the organisation (i.e. clear accountability and authority for all roles, managerial competency, opportunities to participate in task assignment and policy development, challenging work, timely managerial feedback, fair differential remuneration based on level of work, assurance of reasonable continuance in the relationship, and access to vacant positions).

Jaques (1996) describes an organisation where the basic values are valuing the individual and his or her development, mutual organisational trust and confidence, shared values and commitment, democratic practices, and opportunities for growth. According to this view, it is not hierarchies as such that constrict human capabilities but rather inadequate structuring of these hierarchies. Jaques (1996) sees hierarchies in an organisation as natural phenomena just as human capability is a natural phenomenon.

Thoms and Greenberger (1995) conceptualised the term *temporal alignment* referring to the time orientation people have, i.e. towards the past, present and future. Thoms (2004) believes this time orientation includes people's timeline orientation, their future time perspective, their time span, and their time conception. Although this conceptualisation refers to a personality-related concept, Thoms (2004) argues that varying ways in which people think about and deal with time, can influence the work area and the complementation of outputs.

Caplan (1987) says that, in exchange for work, the employee asks what he or she can get out of the job (the needs–supplies exchange process). The employer is looking for what he or she can get from the employee (the demands–abilities exchange). Both these aspects translate into person–environment fits and influence aspects such as retention, satisfaction, obligations, commitment and expectations (Caplan, 1987).

Cognitive abilities can be defined as the way in which a human being takes in information from the environment around him or her, analyses it, and utilises it to make sense of the world (Thompson, 2010). Managerial leaders with high cognitive ability differ from those with low cognitive ability, as they are able to process large amounts of information given to them easily, they work well in complex environments, and can handle high levels of instability and uncertainty (Thompson, 2010). Therefore, those individuals with high cognitive abilities function well in exceedingly complex environments, and are hence the individuals who usually attain high positions in organisations.

Stamp and Stamp (1993) developed the Matrix of Working Relationships Model (MOW) from stratified systems theory. This model defines the seven levels of work, which are used in the career path analysis, a psychometric instrument to assess capability based on stratified systems theory (Stamp & Stamp, 1993). The seven themes of work derived from this model are as follows (Stamp & Stamp, 1993, pp. 8–9):

**Level 1 (Quality):** Making or doing something that can be fully specified beforehand, has a concrete or direct output and an immediate influence on viability.

**Level 2 (Service):** Responding to the requirements of particular situations or people in such a way that people at Level 1 are supported by expertise, response to the customer or client is complete, the purpose of the organisation is exemplified.

**Level 3 (Good practice):** Constructing, implementing and fine-tuning the systems and procedures to cope with both stability and change, and to engage with the future.

**Level 4 (Strategic):** Development underpinning the future by addressing what does not exist but is needed for advantageous positioning, bringing it into being within three to five years.

**Level 5 (Strategic intent):** Providing a view of the organisation that is completely separate from its operational activities, and fully connected with the socioeconomic context and viable for the next seven to ten years.

**Level 6 (Corporate):** Citizenship reading with economic, social, political and technological contexts to alert and protect Level 5 strategic units and represent the group in national and trans-national arenas.

**Level 7 (Corporate prescience):** Sustaining viability for future generations by defining values and designing contexts for contributions up to twenty-five years ahead.

Stamp (1981) postulated these levels to be organised in a hierarchical structure with the lower levels stable and concrete and the higher levels ambiguous and uncertain. Stamp and Stamp (1993) used the assessment model to derive four types of individual capability:

- current capacity (making decisions under uncertainty);
- the rate at which capacity is expected to develop;
- the individual's approach in using information when making decisions; and
- the individual's capacity for aiding other people to make effective decisions.

Stamp (1981) also defined five styles that people use to approach situations:

- pragmatic intuition (Type A);
- pragmatic analysis (Type B);
- analytical intuition (Type C);
- conceptual analysis (Type D); and
- intuitive analysis (Type E).

For Jaques (1996), employees should experience organisational trust at all levels of the hierarchy to feel that they are being used to the fullest and that they are being remunerated fairly. He suggests the removal of layers in an organisation not adding value to induce full collaboration and effectiveness. Organisations should be structured

to be responsive to humanistic and social needs. Values that he regards as important are mutual organisational trust, confidentiality, reliability, fairness, justice, personal recognition, being open and free from fear and central control (Jaques, 1989, 1996).

The correct requisite structure in organisations realises in organisational trust, feelings of freedom, flexibility, less bureaucracy, greater justice, and fairness. Organisational limits and constraints enable people to trust each other organisationally as well as rely on each other despite individual differences.

Jaques (1996) argues the importance of organisational trust as a binding factor and a criterion to judge behaviour.

#### ***2.2.3.10 Span of control and task assignment***

Jaques and Clement (1991) talk about MKUs (mutual knowledge units) as the units of measure of the number of subordinates a manager can have. This number is influenced by a mutuality to know one another. In terms of stratified systems theory levels (see Jaques, 1996) it is expected that managers at higher levels will have less capacity due to complexity levels. Similarly, it is postulated in this research that the diversity levels experienced within performance measures, will also reduce going up in the complexity levels of the organisation.

For McMorland (2005), micro-management or over-controlling is a symptom of poor accountability levels and insufficient discretion given to employees. Employees should be managed at the level that they are capable of and given the discretionary power and accountability to perform. McMorland (2005) argues that role definitions are designed for optimal effectiveness in line with a proper organisation and required capability at the different levels. For McMorland (2005), a lack of ability to trust others (delegation and authority) hampers the organisation in achieving the standards and timelines required.

Gabarro (1990) sees working relationships as task-driven to accomplish task achievement, task instrumentality and task-specific competence. Gabarro (1990) continues by saying organisational trust in the interpersonal domain focuses on aspects such as affect and self-disclosure, which are not necessarily regarded as of importance in the workplace. Caldwell and Clapham (2003) considered the similarities of interpersonal and organisational trust as reflected in Table 2.6.

*Table 2.6*  
*Comparing interpersonal and organisational trust*

Interpersonal organisational trustworthiness factor	Key elements of factor	Organisational trustworthiness elements	Similarities with interpersonal organisational trustworthiness
Ability	Skills, competencies, expertise	Competence, financial balance, quality assurance	Focus on task, excellence and outcomes
Benevolence	Benevolence, intentions, 'desire to do good'	Interactional courtesy, responsibility to inform	Demonstrating respect, courtesy, and involvement
Integrity	Character, integrity, fairness, credibility	Legal compliance, procedural fairness	Honours ethical requirements and treats others fairly

Source: Caldwell and Clapham (2003, p. 353)

In the classic study by Hackman and Oldham (1976), the primary dimensions of work were identified as –

- autonomy (the freedom to carry out work);
- skills variety (utilisation of various skills in a position);
- task identity (whether an individual completed a portion of or a whole task in a position);
- task significance (affecting positive societal outcomes); and
- feedback (on performance) in a position.

The employee finds him- or herself in a hierarchical structure with certain implicit and explicit roles and expectations. For Jaques (1990), this structure or managerial hierarchy is both natural and necessary for large organisations to be effective. As tasks increase in complexity (i.e. as the time span of the longest task assigned to employees increases) the responsibility, level of experience, knowledge, and mental stamina required also increase (Jaques, 1990).

Burns (2009) claims that personal effectiveness is the application of the individual self in a role within a requisite organisation. *Effectiveness* refers to the production of a pre-determined and desired effect as well as a readiness for service or action (Burns, 2009, p. 61). The personal part of the term, *personal effectiveness*, refers to the independence of the action as well as the personal effect it has on the individual person.

Managers in an organisation should, says Burns (2009), assign tasks appropriately to an employee in line with his or her ability. The employee should be able to trust the manager to do so, but also that the manager would allocate sufficient resources and intervene where the employee needs support. Burns (2009) further argues that, where an employee is assigned a task with a time span of discretion above the level he or she can handle, such person tends to focus on the shorter-term tasks, neglecting the longer-term tasks. The inverse is also not conducive for productive practice, i.e. assigning short-term tasks to employees able to do longer-term tasks. The employee will become bored and frustrated and even invent tasks fitting his or her desired level of functioning.

Hsiung and Tsai (2009) reason that clear and consistent expectations of both employer and employee in the psychological contract translate into better involvement by employees, resulting in the development of skills, experience and competence, which will, in turn, open opportunities for advancement and growth. Axelrod (1984) says organisational trust is regarded as a necessary antecedent for co-operation. Heiskanen et al. (2008) reported that both formal and informal contracts are needed between parties because it is difficult to write a formal contract encompassing all aspects of agreement. Hence, the psychological contract is necessary to sustain the relationship between employee and employer. Morrison (1994) emphasises predictability, reliability, credibility, loyalty and organisational trust as crucial elements of the psychological contract between employee and employer.

Where expectations of reciprocity and fair dealings are undermined, employees tend to become less confident about predicting their employer's future actions and conduct (Lewicki & Bunker, 1996). Mishra (1996) warns that inconsistency between action and verbal statements could seriously damage trust between employee and employer. Kramer (1996) notes that this is especially true at the lower levels of organisations where the link between manager and pay raise, promotional opportunities, and responsibilities is more salient (see also Mayer et al., 1995; Robinson, 1996).

In the present research, it is postulated that an employee will trust the organisation to be fair, consistent and equitable with regard to reward and recognition given for the level of work as well as the assigning of tasks in such a manner that is proper and fitting to the employee's capabilities. The importance of the psychological contract is emphasised in this postulation.



### **2.2.3.11 *Autonomy and organisational trust***

Ford and Fottler (1995) argue that, allowing employees the freedom to make decisions about both job content and context, is the ultimate form of trust. These authors believe that employees will reciprocate this trust through displaying loyalty.

Morgeson and Campion (2003) define autonomy in terms of three elements:

- timing control (opportunity to schedule work);
- method control (the choice of how work is done); and
- production responsibility (tolerance levels for errors).

Lindkvist and Llewellyn (2003) say the alternative to trust might be an approach of control and detailed instruction creating formalised environments and depriving the individual employee of autonomy. Therefore, Lindkvist and Llewellyn (2003) argue that visions communicated and informed consensus are conducive to productive working relationships. According to this view, this type of management style would result in solidarity, interactive involvement and a sense of significance. The individual employee is trusted and audit and accounting measures are used to specify and measure the resources and goals to be achieved. Considerable discretion is allowed within pre-determined limits. This “embedded organisational trust” (Lindkvist & Llewellyn, 2003, p. 267) makes control measures less important.

Gustavsson (1994) believes other virtues, such as diligence, parsimony or organisational trustworthiness will be generated in such environments. According to this view, not only organisational purposes will be achieved, but a desired moral obligation will also be fulfilled by instilling such values in employees.

### **2.2.3.12 *Further context of organisational trust***

Thorgren and Wincent (2011) relate organisational trust to the following inter-organisational benefits:

- problem sharing;
- benchmarking;
- negotiations regarding inter-organisational organisation and objectives; and
- evaluation of outputs, finances, network organisations, etc. and making strategic decisions.

Puusa and Tolvanen (2006) are of the opinion that trust is a key element to create commitment to an organisation. According to these authors, organisational identity (individual identification with the organisation) creates trust, which leads to a development of commitment (see also Scott et al., 2012).

In their study, Khanifar, Nazari, Emami, and Soltani (2012) found that low levels of organisational trust were positively related to increasing stress levels, decreased efficiency and a lack of creativity. High levels of organisational trust are positively related to increased motivation levels, decreased absence levels, and an increased level of creativity.

#### **2.2.4 Organisational trust in the South African context**

As far as South African authors are concerned, Monji and Ortlepp (2011) relate organisational trust to organisational effectiveness and stability. Castro and Martins (2010) agree that, for organisations to survive and outperform competitors, the constant pursuit of higher performance is necessary.

Castro and Martins (2010, p. 2) define organisational climate as: "... the shared perceptions, feelings and attitudes that organisational members have about the fundamental elements of the organisation, which reflect the established norms, values and attitudes of the organisation's culture and influences individuals' behaviour positively or negatively". Within this study, trust is seen as a dimension of organisational climate referring to the honest and open relationship between employee and manager.

Von der Ohe and Martins (2010) report that research on trust has increased in the past decade with renewed interest in the relationship between trust and organisational benefits, such as commitment, organisational citizenship behaviour, team performance and organisational performance. There also seems to be a decline in leadership trustworthiness as aspects such as the rise in executive compensation levels, management negligence and malfeasance result in a perceived breach of the psychological contract on the employer's side.

Von der Ohe and Martins (2010) see trust as a primary attribute of leadership having adverse effects on group performance when it breaks down. Von der Ohe and Martins

(2010) emphasise that trust among stakeholders has become critical for survival in the current economic and political of times of change and global turmoil.

Wolmarans and Martins (2001) did research on the ability to connect with others at an emotional level, and the relationship of such to building trust and loyalty in order to sustain long-term relationships.

Monji and Ortlepp (2011) distinguished between trust in the immediate manager and the wider organisation. Trust in the immediate manager relates to a positive effect, honesty and competency of the manager. *Organisational trust* relates to the environment at large referring to aspects such as relationships, structures and systems within the organisation. According to this research, trust relates positively to employee satisfaction and staff retention.

Van der Berg and Martins (2013) also conclude that organisational trust is an essential part of the effectiveness and performance of an organisation. These authors considered the relationship between trust in the context of changes in beliefs and value systems, when they focused on knowledgeable workers and the quality of work life the South African (SA) context. Based on this research, it is believed that the perceptions of an employee's ability, benevolence and integrity will affect the levels of trust both ways, i.e. by the organisation in the employee and the employee in the organisation (Van der Berg & Martins, 2013).

In their research, Van der Berg and Martins (2013) found that managerial practices, more than personality factors, influenced the establishment and progression of the trust relationship in the organisation. It therefore makes business sense to attend to aspects such as the job-related needs and quality of the work life of employees.

Binikos (2008) did research in South Africa, showing that in organisations, trust plays a role in employees' decisions to report wrongdoings and in how it is reported. In cases of low trust, an employee is more likely to remain quiet and less likely to use means such as whistle-blowing internally to report wrongdoings.

In their research, Dannhauser and Boshoff (2006) found a stronger relationship between servant leadership and trust in the organisation and the manager than between servant leadership and trust in colleagues. The same authors found team commitment more strongly influenced by trust in an employee's colleagues than by

trust in the organisation or manager. Dannhauser and Boshoff (2006) also related religion and culture to higher levels of trust and commitment.

### **2.3 CHAPTER SUMMARY**

In this chapter, the importance, the components and the various definitions of organisational trust were considered. It was shown how organisational trust has been related to some aspects of organisational performance and effectiveness. Lastly, it has also been shown that the measurement model of Bews and Martins (2002) was used in the present research.

In the next chapter, the theoretical considerations on viable performance in terms of the requisite model of Jaques (1996) and the viable systems model of Beer (1985) are considered.

## CHAPTER 3

### THE VIABLE PERFORMANCE SYSTEM

The aim of this chapter is to describe and explain the conceptualisation of viable performance and how the requisite organisation – as per the model of Jaques (1996) and the VSM of Beer (1985) – relates to this concept. The PMS as part of this viable performance system will also be discussed.

#### 3.1 CHAPTER INTRODUCTION

Struwig and Cilliers (2012) claim that the work of an industrial psychologist in organisations involves systems and the interrelationship of the parts. These parts and interrelationships exist in systems, and systems have boundaries. According to the research findings by Struwig and Cilliers (2012, p. 7), the primary task of boundary management is “... to hold the polarities of integration and differentiation and not allow the system to become fragmented or overly integrated”. Elaborating on the purpose of boundary management, Struwig and Cilliers (2012, p. 7) say, “it ‘is an activity in organisations that happens continuously at all levels and involves whole organisations”.

Attempts to have integrated theories on systems or organisations are not a recent initiative. As early as in 1954, Gordon Allport used the term *intergroup contact* to specify four key conditions in organisations: equal group status within the situation, common goals, intergroup co-operation, and the support of authorities, law or custom (Allport, 1954). For Penrose (1959), a unified approach model was also needed towards resource management and was seen as paramount to integrating the processes of the organisation, increase efficiency and diversifying strategy.

It was however the work of Von Bertalanffy (1969), who postulated five general principles of integration, that left the most enduring mark on the field of Industrial Psychology. These principles underlie many research articles in systems thinking even today. The five principles are:

- a general tendency towards integration in the sciences (natural and social);
- this integration is centred in a general theory of systems;
- exacting theory from the non-physical fields of science;

- unifying these sciences; and
- generating integration in sciences.

Integration primarily has to do with structuring an organisation in a specific way. Kaplan and Norton (2001) made an enduring mark with their approach of a balanced scorecard using scorecards to align key management processes and systems to the strategy. Scorecards have mushroomed overnight globally, and numerous organisations have adopted some sort of scorecards based on these authors initiative. The power of the balanced scorecard lies in its ability to have a unified model of measurement resulting in integrated business processes.

In their recent research, Teixeira, Koufteros and Peng (2012) concluded that organisations must fit structure and processes if strategic execution is pursued. Organisational structure (consisting of aspects such as centralisation, flatness, managerial specialisation and employee specialisation), as discussed by these authors, influences internal communication, which affects organisational integration (internal integration, supplier integration and customer integration) resulting in manufacturing performance (i.e. quality, flexibility, cost, delivery and innovation).

In the present study, management cybernetics – especially due to its relationship with systems theory and the emphasis on control – has been chosen as a paradigm. From management cybernetics, the model of VSM arose when Beer (1985) applied the principles of cybernetics to organisations. Beer organised the theory into what he called viable systems model providing a cybernetic model of the organisation.

Stratified systems theory (SST) has its roots in the systems theory, differentiating between systems (or layers) within layers with varying levels of complexity. Combining VSM and SST into an unified systems–cybernetic model of the organisation, provides a rich framework for understanding and measuring organisational attributes. This means that the viable system with all functions also has certain layers of complexity. For the purpose of the present research, this complexity exists along temporal layers.

### **3.2 VIABLE PERFORMANCE**

Çalışkan (2010) believes employees and how they are managed are increasingly important as the other sources for a competitive advantage are increasingly being marginalised. The strategy around the usage of human resources is therefore an

increasingly important edge in strategic success. Çalışkan (2010) affirm that the human resource management (HRM) practices in an organisation aim to obtain and retain the skilled, committed and well-motivated employees.

This also includes taking steps to assess and satisfy future needs of the strategic planning with regard to people practice, namely enhancing and developing inherent capacity of employees, current and future potential by providing learning and continuous development opportunities. Çalışkan (2010, pp. 103–104) says, “Competitive advantage ... differs from the environmentally focused strategic management paradigm in that its emphasis is on the links between the internal resources of the firm, its strategy and its performance ...”.

### **3.2.1 Organisational performance**

Çalışkan (2010, p. 103) reasons that productivity is the key to sustaining a profitable organisation with a productive workforce. Çalışkan (2010) suggests that the following aspects are important in achieving this:

- increasing capability by introducing and encouraging learning processes;
- aligning skills to organisational needs;
- developing intellectual capital;
- identifying knowledge required to meet goals and meet customer needs (the writer wishes to add developing and retaining such knowledge);
- identifying behaviour necessary for organisational success and encouraging, value, and rewarding this behaviour;
- promoting employees' engagement in their work; and
- promoting employees' commitment to the mission and values of the organisation.

Colvin and Boswell (2007) are of the opinion that the alignment between performance management practice and organisation strategy can be achieved through the following actions:

- clear communication of the organisational objectives;
- participating in role-related decisions;
- having clear roles in place; and
- allowing more discretion to employees with regard to the way goals are pursued.

Aguinis (2005, p. 20) says, performance management is “a continuous process of identifying, measuring and developing performance in organisations by linking each individual’s performance and objectives to the organisation’s overall mission and goals”.

Armstrong and Baron (1995) emphasise the strategic and integrated nature of a proper performance management framework. These authors believe performance management should increase the effectiveness of an organisation by improving the performance of employees as well as developing their capabilities.

DeNisi (2000) argues that performance management encompasses a range of activities aimed at individuals or groups to enhance performance. According to this view, *performance appraisal* refers to the allocation of a score to an employee or target group as a measure of such performance (DeNisi, 2000).

Performance management is aimed at increasing employee, team and organisational performance as well as aligning these aspects. When the performance management system is poorly managed, not only performance might suffer, but secondary aspects of equal importance are also affected. Aguinis (2005, p. 20) identifies the following risks to the organisation:

- employee turnover could increase;
- false or misleading information could make the system suspect or inefficient;
- employees’ self-esteem may be lowered;
- time and money may be wasted;
- relationships might be damaged;
- motivation might be reduced;
- employee burnout and/or dissatisfaction might arise;
- disputes might increase;
- a poor system taps the manager’s resources unnecessarily or unjustly;
- standards and ratings may be inconsistent or unfair;
- standards could be reduced as biases creep in; and
- employees’ uncertainty about how the rating was derived at, and/or how the ratings are translated into rewards.

Locke and Latham (2006) aver that where employees are committed to the goal that was set, have the ability to attain it, are pursuing goals that are not conflicting, positive



relationships can be found in the relationship between goal difficulty and performance. Locke and Latham (2006) maintain that specific rather than vague goals motivate employees to achieve. Goals also inform employees about which behaviour is valued and appropriate for the organisation (Staw & Boettger, 1990).

On the downside, Kerr (1995) argue that goal setting may result in employees ignoring other aspects of performance not specified or measured by the goals. Shah, Friedman, and Kruglanski (2002) show that, where multiple goals are set, employees might concentrate on only one goal.

Cheng, Subramanyam, and Zhang (2005) show that whilst goal setting did improve results, the short-term gains were sometimes pursued at the cost of the longer-term gains – something that might result in a threat when it comes to sustainability. In line with Jaques' (1996), postulations about person and role fit, Mussweiler and Strack (2000) found that giving someone a goal that is too challenging might result in self-doubt. Goals should therefore be in line with the capabilities of the employee in the appropriate role in line with his or her ability. It is necessary for the correct skill set and level of capability to be in the correct position at the right time. Goals set in this position should cascade from such aspects as well as from organisational structure or role and – least but definitely not last – organisational strategy.

Ordóñez, Schweitzer, Galinsky, and Bazerman (2009) argue against the well-known view of Locke and Latham (2006) that as long as employees are committed to the goals, have the requisite ability to attain it, and when these goals are not in conflict with each other, there exists a clear linear relationship between goals (stretch goals) and (high) performance.

Ordóñez et al. (2009, p.15) accordingly warn against the abuses of goal setting in organisations arguing that goal setting requires close supervision, applied in the correct manner and guarding against possible harmful effects. The following possible downsides of goal setting are discussed by Ordóñez et al. (2009):

- goals are too specific resulting in employees overseeing other important aspects in the workplace or their roles;
- setting goals too narrowly also results in employees missing or ignoring important aspects in their surroundings;

- where there are multiple goals being driven simultaneously (or just too many goals) employees tend to focus on only one goal,
- time horizons might also be set inappropriately leading to employees focusing on short-term goals at expense of the longer-term aspects;
- when goals are too challenging, employees might also choose to focus on the less challenging goals at the expense of the more complex goals or even become despondent;
- inappropriate goal setting might result in employees taking risks and short cuts to meet target levels;
- unethical behaviour might result when employees are misrepresenting or concealing aspects in their work to meet targets, or even they might engage in unethical behaviour to attain results;
- dissatisfaction and other negative psychological consequences might result from failing to make targets; and
- focusing on goal achievement at the expense of learning and growth.

Ordóñez et al. (2009, p. 15) argue that managers may be creating “hedonic treadmill(s)” by rewarding employees only with external means (goals, rewards, etc.), forgetting that the position in itself may have sufficient rewards already for some employees.

The operational functions of an organisation are concerned with the production targets, tactical goals, planning and project performance while the strategic functions monitor corporate performance against strategy (see Eckerson, 2009). The distinction lies in the futuristic focus of the strategic functions compared to the production here and now and the short-term target focus.

### **3.2.2 Viability of the organisation**

Viability was derived in the present study from the VSM of Beer (1985). This model has its roots in management cybernetics. In this section, the VSM model of Beer (1985) will be used to unravel the functional components and characteristics of an organisation. In this chapter, the structure of the organisation is explored. The basis of structural integration is that the organisation should be structured for purpose. This purpose goes beyond homeostasis, maintaining the system’s integrity, and refers to the organisation as a purposeful system. The organisation seeks to maintain its viability

in a changing and ever-increasing changing environment. To survive and grow, the organisation adapts, using the structure to arrange functional components and other resources to absorb variety in Beer's (1985) terms, and to expand or even re-invent its identity (Schwaninger, 2001).

*Viability* refers to the ability of a system to maintain a separate existence (Beer, 1985). Holmberg (1995) believes a viable organisation must be able to:

- make normal decisions effectively (self-regulation);
- adjust itself according to required changes in the environment; and
- learn from experience.

In terms of Beers' (1985) VSM, five distinct systems or functions are needed for the viability of a system. Viability deals with the ability of the system to maintain a separate or independent existence in a changing environment (Beer, 1985).

Looking at four principles of organisation (Beer, 1985, p. 146), variety should be managed:

- between subsystems;
- along communication channels;
- across transducers (encoding and decoding of messages); and
- with the whole process exhibiting the appropriate cyclical dynamics.

In terms of the current paradigm, performance management should be dealt with in this manner to maintain functional integration in an organisation.

Before the VSM is discussed, it is necessary to understand management cybernetics underlying the VSM. Stephens and Haslett (2005, p. 3) say, "Cybernetics is the scientific study of the nature of control. Cybernetics is the interdisciplinary (biophysical) science that considers all the principles of control and communication as they apply in our companies". The origins of organisational cybernetics are closely linked with the work of Beer (1985), the founder of managerial cybernetics (Schwaninger, 2001).

For Péres Rios (2012), the purpose of managers in an organisation is to deal with complexity. Managers should use their problem-solving skills and knowledge to steer or govern the organisation. The word *kybernetesis* is Greek for steer or *gubernator* in Latin (from which the word *govern* has been derived) (Péres Rios, 2012). Govern or steer is therefore related to control, and hence, cybernetics is the science of control in the sense of governing or managing an organisation (Péres Rios, 2012, p. 6).

For a system to remain viable, it must be able to manage this variety (complexity) of the environment within which it exists (Péres Rios, 2012). This viability or survival is the primary drive of an organisation. The second-most important drive is that of maintaining its identity. Schwaninger (2001) argues that this concept of identity should be understood beyond mere survival, meaning that an organisation might change its activities and other radical forms of change over time.

The ideas of control, interconnectivity and the recursive nature of systems are paramount in the work of Beer (Stephens & Haslett, 2005). Jackson and Flood (1991) summarise the principles of management cybernetics as follows:

- the organisation consists of several sub-parts or subsystems operating in a bigger system, the meta-system;
- the sources of command and control are distributed throughout the organisation enhancing self-organisation and localised management; and
- the emphasis is on the viable entity and its environment both being influenced and influencing it.

Beer (1985) sees the ideal company control system as a homeostatic machine for regulating itself. Stephens and Haslett (2005) are of the opinion that control is used in Beer's work to refer to connectedness as a means of self-regulation or self-emergence.

### **3.2.3 The viable systems model**

An organisation is viable only when it comprises a set of functions, namely systems 1 to 5 (Schwaninger, 2001). Viable systems modelling portrays the organisation in terms of its organisation and not its structure (Jackson & Flood, 1991).

An organisation is an open system, according to systems theory (Lewis, 1980). This system comprises certain elements and processes (Baird, 1977). Beer (1985) unites these processes and elements into a model. Wyman (2003) warns that a lack of a comprehensive model may result in treating the systems rather than the causes. In this study, it was argued that VSM provides such model to investigate the components of a viable performance management system.

Christopher (2011) believes an ever-increasing complexity is a sign of the times. This complexity exists both inside and outside the organisation. System science, the science of communication, and control systems are needed to maintain viable,

complex, purposeful and probabilistic systems (Christopher, 2011). According to the VSM theory, variety exists in the environment and in the organisation, and this variety (or complexity) can only be adequately managed by variety itself (Beer, 1985). Since no single person has the ability to manage the variety alone, specialised divisions in an organisation should manage and absorb variety (Beer, 1985).

Conant and Ashby (1970) emphasise that managers maintain a cognitive model of an organisation and the kind and quality of the model affect decisions. It therefore makes sense to understand – if not postulate – models used by managers to understand and influence organisational decisions better. The VSM of Beer (1972) is proposed by Christopher (2011) to maintain stability and growth in the midst of complexity.

The power of VSM lies in its presentation as a general framework of reference within which other theoretical contributions have a clear positioning. Of special importance is the use of the adaptive capacity of cybernetics for organisations to evolve in environmental conditions of change and complexity (Katz & Kahn, 1978) and to structure it accordingly (Pérez Ríos, 2010), highlighting the importance of knowledge and learning processes that are fundamental for system viability (Clark, 1997).

Barile, Pels, Polese, and Saviano (2012, p. 63) adopted VSM for their research and they mention the following benefits of using such framework:

- It is a meta-model to interpret business and social phenomena.
- Different observers focus on different levels of complexity and even the same observer might focus on different levels of complexity at different systemic states. Having a model such as the VSM helps to have a uniform terminology and therefore shared meanings of what is observed or referred to.
- Viability allows for a context of dynamic interaction with various other system entities, which the observed system perceives as relevant, providing resources critical for functioning and viability.
- The model provides for an interpretative governance methodology that offers a system thinking contribution to the understanding and management of social and business organisations, as this approach provides a general framework that accounts for both structural configuration and the dynamics of functioning. Its general schemes are useful for interpreting the concept of complexity in that these schemes highlight its systemic nature and support the investigation of its implications for decision-making.

Some of the other more recent applications of the VSM in research are those by –

- Péres Ríos (2010) – for organisation diagnosis and design;
- Velentzas and Broni (2011) – as a conceptualisation framework for complex organisations;
- Wieland, Polese, Vargo, and Lusch (2012) – to simplify socioeconomic mechanisms to inform public policy better;
- Zargar, Faghani, and Mahmudi (2011) – using VSM as a template to assess whether the European Foundation for Quality Management (EFQM) model supports organisational viability;
- Thompson, Laws, Reilly, Taleb-Bendiab, and Llewellyn-Jones (2011) – using VSM as a model for human–software interaction and feedback;
- Brocklesby (2012) – to advise government bodies and law enforcement agencies to respond best to the increasingly complex problem of organised crime;
- Zadeh, Millar, and Lewis (2012) – using VSM for designing viable organisations and IT governance arrangements; and
- Ahmed and Nazir (2013) – structuring the organisation towards customer centricity.

### **3.2.4 The purpose of a system**

Beer (1985) asserts that the purpose of a system is merely what it does. Although this seems at first a simple definition, Beckford (1995) notes that a system might not be doing what the stakeholders intend it to be doing. Beckford (1995) therefore advises that the following questions be asked when it comes to determining what the system actually does:

- What constitutes the system (This would be similar to determining the system in focus as Beer [1985] puts it)?
- What are the outputs of a system?
- Do these outputs meet the expectations of the stakeholders?
- What other/different outputs should rather be pursued?

Beckford (1995) argues defining the purpose of a system should be done at all levels of recursion, especially in determining how the systems interlink or are in conflict with each other.

Assimakopoulos and Dimitriou (2006) are of the opinion that viable systems modelling is helpful both to design new organisational structures and to diagnose existing structures. These authors divide the structures influencing an organisation as the environment (E), the operational units (O) and the meta-system (M). The meta-system is a collective term referring to Beer's System 2 (co-ordination), System 3 (control), System 3\* (the audit system), System 4 (intelligence) and System 5 (policy). Beckford (1995) refers to these systems as the enabling systems (i.e. they exist to enable the survival of the system so that the operational requirements can be met).

Assimakopoulos and Dimitriou (2006) argue that the job of the meta-system is to render a service to ensure harmonious relationships, stability, optimisation, future planning and working in an integrated fashion. Without the implementation function (system 1), the enabling functions are not needed (Beckford, 1995).

For Assimakopoulos and Dimitriou (2006), the focus points should be:

- System 1 (implementation) – flexibility;
- System 2 (co-ordination) – stability;
- System 3 (control) – efficiency;
- System 4 (intelligence) – future planning; and
- System 5 (policy) – strategy.

Barile et al. (2012) call their application of VSM the viable systems approach (VSA) applying it to marketing. According to these authors' approach, the VSM renders itself useful because:

- it provides a structural configuration explaining the dynamics of functioning;
- it assists with interpreting and managing complexity because of its systemic nature;
- its assist with investigations and decision-making;
- its assist with identifying (and qualifying) relevant people who influence decision-making; and
- it assists in identifying and following actions necessary to accomplish sustainable performance.

Therefore, we argue that VSA allows addressing the gap in marketing management research regarding complexity.

A few fundamental concepts need to be highlighted to understand viable system modelling.

Beer (1972) derived the VSM from the functioning of the human nervous system. A viable system like an organisation, comprises five interacting subsystems (see Beer, 1972). Systems 1–3 are concerned with the present state of the operations of the organisation (Beer, 1972) whilst System 4 is concerned with the future challenges (i.e. the strategic focus) of the organisation). System 5 is concerned with balancing the present state and the future challenges to give policy directives, which maintain the organisation as a viable entity. Péres Rios (2012) emphasises that all five subsystems must be present at all levels of an organisation for an organisation to remain viable.

In order to understand VSM properly, the different functions within an organisation must be understood:

#### **3.2.4.1 System 1 (*Autonomy*)**

System 1 is the operational system, and responsible for producing and delivering the products and services created by the organisation (Pérez Ríos, 2010). Christopher (2011) defines System 1 as the operating unit of an organisation. Assimakopoulos and Dimitriou (2006) argue that the operational function consists of sub-parts, namely people in units, departments, divisions of individual employees. The basic work (production, distribution and earning the revenue) is performed by the operational system. Péres Rios (2012) sees System 1 as the only subsystem in the organisation able to exist independently outside the organisation. The other subsystems are non-viable regulatory units (Péres Rios, 2012).

System 1 has the following identifiable relationships:

- with System 3 (corporate management) through receiving instructions and guidelines, accountability and resource bargaining (Péres Rios, 2012, p. 28);
- with the environment (its market, suppliers or services offerings);
- with the regulatory/coordinating functions of System 2;
- with the auditing system (System 3\*) dealing with special information;
- with the other operational units (System 1);
- with the management of the various other operational units; and
- with the meta-system through the algedonic channel.



*Flexibility* refers to a greater amount of autonomy and therefore giving employees the necessary freedom to perform their functions (Assimakopoulos & Dimitriou, 2006). This includes individual mission statements, budgets and other resources, an agreed-upon working plan, agreed-upon intervention rules, accountability and own development as long as the agreed mission is being pursued (Assimakopoulos & Dimitriou, 2006).

In the present research, System 1 was synonymous with autonomy.

#### **3.2.4.2 System 2 (Co-ordination)**

Péres Rios (2012) argues that each operational unit strives to achieve its own goals, resulting in possible conflict. The purpose of System 2 is to create harmonious relationships to amplify self-regulating of the operating units (Péres Rios, 2012), and to co-ordinate and regulate the functions of operational units (Christopher, 2011). This function is fulfilled with the attenuation and amplification mechanisms mentioned earlier. Typical functions in organisations include information systems, planning tools, co-ordination teams, standard operating procedures and other staff functions. It is important to remember that System 2 has an information systems function, and does not form part of the management control function and therefore is positioned between System 1 and System 3 (Péres Rios, 2012).

The following functions can be distinguished (see Christopher, 2011):

- keeping the operations running, solving problems, and dealing with interruptions;
- controlling the budgets;
- communicating policies and parameters;
- monitoring and ensuring compliance;
- co-ordinating interrelations between operational units to ensure optimal functionality; and
- supervising information flow from System 1 to the other systems.

Possible instability might occur due to the dynamics of the different interactive parts (Assimakopoulos & Dimitriou, 2006). The different parts of a system might have conflicting interests, leading to possible instabilities, which might cause the system to oscillate.

In the present research, System 2 referred to Co-ordination.

### 3.2.4.3 System 3 (*Operational management*)

Christopher (2011) defines System 3 as the management functions that direct and support the operating units of the organisation. This function deals with the day-to-day activities of the system and escalated situations, which cannot be managed by System 4. The following key functions are defined by Christopher (2011, p. 369):

- defining the name of each operating unit;
- definition (products, services, markets, future and present, etc.);
- boundaries of operation;
- the purpose of the unit;
- long-term goals; and
- performance measures and the resources of the unit.

These functions are collectively termed *resource bargaining*, and are summarised as the agreement of the operational unit with higher management on what it is and what it will do (Christopher, 2011).

System 3 also assists with the development of short-term objectives and performance measures for the operational unit, i.e. System 1. Christopher (2011, pp. 369-393) lists the following aspects to be included in key performance measures:

- creating and keeping customers;
- quality;
- productivity;
- innovation;
- physical and financial resources;
- organisational capability;
- community relationships;
- environmental responsibility;
- profitability;
- monitoring performance and making changes where necessary.

Péres Rios (2012) summarises the function of System 3 as the optimisation of the operational units through stability, synergy, efficiency and efficacy. *Stability* refers to homeostasis and the avoidance of the systems oscillating beyond the control system (Beer, 1985). *Synergy* refers to integration or cohesion and harmonious relationships being maintained (Péres Rios, 2012). *Efficiency* has to do with the optimising of the

overall system-in-focus by creating synergy between the interacting parts (Assimakopoulos & Dimitriou, 2006).

System 3 has to employ its support subsystems, Systems 2 and 3\*, to achieve its objectives (Péres Rios, 2012).

Péres Rios (2012), refers to System 3 the operational management of the organisation with its focus on the here and now. Péres Rios (2012) warns the interference of System 3 in System 1 should be restricted to the following areas:

- transmitting information from the meta-system on aspects of the aim and purpose of the organisation (and matters of policy);
- setting and changing goals; and
- negotiating resources.

Péres Rios (2012) maintains that interfering directly with the functioning of the operational units by using direct authority is an indication of the shortcomings of the design of an organisation.

Péres Rios (2012, p. 35) calls the desired relationship between System 3, 1 and 4 that of a “fluid, continuous communication” System 3 is continuously gathering information from System 1 to convey such to System 4 and vice versa.

#### **3.2.4.4 System 3\* (Audit function)**

The function of System 3\* is auditing (Beer, 1985). Beckford (1995) argues that an effective auditing function is necessary to amplify knowledge of implementation (System 1) to control (i.e. System 3).

Péres Rios (2012) confirms that System 3\* supports System 3 through gathering and conveying information from System 1 that is not being conveyed through the normal or direct communication channels.

Another important distinction between the information of System 3\* and that of the other communication channels is that it conveys non-routine information per definition and also focuses on the whole of System 1 and not merely on selected parts, ensuring that the information between System 1 and System 3 is complete (Péres Rios, 2012). System 3\* should be designed to obtain the information filtered in such a way that it does not go through to System 3\* (Péres Rios, 2012).

Mechanisms used by this subsystem are quality audits, opinion surveys, compliance and accounting procedures, work studies, operations research and special studies (Péres Rios, 2012).

System 3\* does not form part of the present research.

#### **3.2.4.5 System 4 (*Strategic execution*)**

Christopher (2011) defines System 4 as the management function that creates the future of the organisation. It helps the organisation to cope with environmental change and expectations by constantly redefining itself and its purpose, whilst maintaining cohesion (Beckford, 1995).

This function entails the following (Christopher, 2011):

- conducting strategic planning to keep up with the ever-increasing complexity in the environment;
- ensuring that research and development are done;
- discovering new different and better ways of doing things and remaining competitive;
- sponsoring innovative projects to put the new developments into practice;
- planning financial resources for innovation and expansion;
- conducting market research to direct marketing and sales and identifying future prospects; and
- keeping in touch with environmental issues and corporate responsibility.

Assimakopoulos and Dimitriou (2006) believe future planning is tasked with designing plans and strategies in the light of information gathered. Assimakopoulos and Dimitriou (2006) note that the following activities should always be considered when future planning is done:

- What are the activities to be done (the nature of the planning needed)?
- Who will be responsible for the execution of plans?
- What is the time scale?
- What are the priorities to be considered?

### **3.2.4.6 System 5 (*Top management involvement*)**

Beckford (1995) argues that System 5 is responsible for the creation and maintenance of the identity of the viable system as well as for maintaining a balance between the control of System 3 and development of System 4 (a meta-systemic co-ordination role, according to Beckford [1995]). The identity consists of values, beliefs and expectations.

Christopher (2011) defines System 5 as the management functions that design the company and gives executive direction to where the organisation should be heading. This function is usually carried out by the chief executive officer (CEO) or the managing director and/or the board of directors. Christopher (2011) describes key functions as:

- determining purpose and boundaries of operations;
- designing the structure of the organisation to achieve its purpose;
- establishing the ethos and character of the organisation supported by policy and auditing functions to ensure compliance;
- setting organisational goals and performance measures;
- establishing management principles;
- keeping organisational functions within the boundaries determined by strategy and policy; and
- consistently determining and/or assessing which actions are needed, documenting these matters in policy, and organisational parameters ensuring compliance.

Christopher (2011) adds the following functions:

- design of the organisation (i.e. designing infrastructure, structure, management process, establishing a network of indicators, directing innovation, etc.);
- development (ensuring the survival and growth of the organisation);
- ensuring corporate synergy;
- endowment and allocation of resources as the situation requires;
- ensuring information flow;
- determining and enforcing an ethical code of practice; and
- developing and maintaining a corporate management support system.

System 5 deals with the ethos of the organisation and with the complex interactions between efficiency and future planning (Assimakopoulos & Dimitriou, 2006). It should not interfere with the day-to-day operations of the organisation (see Assimakopoulos

& Dimitriou, 2006), but should rather focus on policies, integration of the various parts and ensuring that the parts remain within the boundaries of principles set.

Péres Rios (2012) refers to System 5 as normative managerial function and argues that it should contain in some form all the stakeholders of the organisation, including the future ones.

Whilst System 5 maintains the organisation's identity and viability (Péres Rios, 2012), identify goes beyond a static, self-persevering view to include the expansion and re-inventing the organisation (Schwaninger, 2001).

### **3.2.4.7 Communication channels**

Christopher (2011) lists four types of information guiding the internal operations of an organisation. These communication channels function as transporters of information between the different systems, namely 1–5. The communication channels contribute to the health or viability of the system. These channels take information back and forth between the various systems. When attenuators are present, the message is being toned down, and when amplification occurs, the message is being tuned up. *Transducers* refer to the changes the message undergoes between the systems (Beer, 1985). As the communication channels operate between the systems, they are mentioned separately from the other systems, 1–5. The information being transported comprises:

- routine information;
- management information;
- technical and commercial information; and
- emergency and other special information.

Every connection between elements is actually an information channel (Péres Rios, 2012), but, for Péres Rios (2012), there are six communication channels within the VSM (see also Assimakopoulos & Dimitriou, 2006).

- The first channel is found where each elementary operational unit (System 1) and the environment intersects;
- Channel 2 deals with operational interactions interacting with each other;
- Channel 3 deals with the corporate intervention;
- Channel 4 deals with the resource bargaining;

- Channel 5 is the anti-oscillatory channel (co-ordination function of System 2); and
- Channel 6 is the monitoring channel (audits and surveys of System 3\*).

The above communication channels did not form part of the present study. In terms of information flow, though, the construct *information sharing of organisational trust* of Martins (2000) formed part of the research and measured this aspect in the research.

### 3.2.5 VSM and organisational pathology

Organisational pathologies were included in this research as it is an indication of a system not being viable. It is especially useful in that it is specific and related in the theoretical framework to specific areas of the system lacking the function, information channel or integration.

The use of the term *pathology* in an organisational context is not limited to Beer (1979). Others, such as Haberman (1987) and Howard (1999), have used the term also in similar contexts.

Pérez Rios (2010) warns that the absence or malfunctioning of any of the functions or subsystems of systems, or the deficient design of the communication channels that connect them, will create pathology. The most common pathologies in organisations are the non-existence or insufficient of the vertical unfolding of functions or entangled vertical unfolding. The latter refers to the overlapping or multiple memberships or relationships to sub-divisions, which results in conflicts, different ways of unfolding complexity according to different criteria, inadequate communication channels, improper membership relationships, or a lack of sufficient representations at the required levels (Péres Rios, 2012).

Péres Rios (2012) says the *insufficient* or *vertical* unfolding of functions refers to inadequate dealing with variety or complexity of some organisations, which stems from their inability to subdivide and have specialised sub-functions to deal with complexity. It is not possible for a single organisation to deal with all the variety at its disposal as an undifferentiated unity. It follows that autocratic, controlling and bureaucratic organisations also fall in this category.

*Insufficient recursion* refers to the organisation not adequately addressing variety required at the different levels of complexity facing the organisation (Péres Rios, 2012).

Examples of these are where an aspect of organisation–environment interaction is merely ignored or where a required interaction is ignored.

Pérez Ríos (2010) and Schwaninger (2009) has done substantial work around possible pathologies in organisations and possible reasons for these using VSM principles. Pérez Ríos (2010) warns that an organisation lacking any of the elements of the five systems or which has deficient designs in the communication channels linking them, will not work properly or go under. Pérez Ríos (2010) classifies organisational pathologies into three groups:

- structural pathologies;
- functional pathologies; and
- informational pathologies.

As *viability* refers to the ability to sustain itself, pathology is the result of an organisation not possessing a function, a function not fully working or the communication channels not functioning towards integration of the functions. Pérez Ríos (2010) lists four steps in organisational diagnosis using VSM:

- identifying the identity and purpose of an organisation;
- determining how the organisation interacts with its environment forming structures;
- looking at the various elements in the structures to see whether they are adequately represented; and
- looking at the relationships and coherence of the structures in the organisation.

### **3.2.5.1 Structural pathologies**

As stated by Pérez Ríos (2010), *structural pathologies* relate to the absence of sufficient differentiation to handle the variety required. Pathologies of a structural nature are therefore found where the organisation reacts to the complexities of the environment under one of the following circumstances (Péres Rios, 2012):

- an absence of the process of division when it is necessary (non-existence of vertical unfolding);
- insufficient recursion (vertical unfolding) necessary at some particular level; and
- confused organisational memberships (multiple-dependence relationships (Pérez Rios, 2012, p. 142).



### **3.2.5.2 Functional pathology**

This type of pathology refers to the absence of functioning or ineffective functioning of the roles of the horizontal structures of an organisation.

### **3.2.5.3 Pathologies of System 1**

*Organisational autopoietic “beasts”* (Pérez Ríos, 2010, p. 1547) refers to the uncontrolled growth and activity of some parts of the organisation putting the viability of the whole organisation at risk. This includes a poorly developed or absent meta-system.

An *autopoietic system* is defined by Velentzas and Broni (2001, p. 742) as:

“[A] system that is generated through closed organization processes of production such that the same organization of processes is reproduced through the interactions of its own products (components). Thus, the organization of components and component-producing processes may remain relatively invariant through the interactions and turnover of components. If an organization (the specified relations between components or processes) were to change substantially, there would not necessarily be a change in that system's identity. What would change is the system's structure (its particular manifestation in the given environment) within the degrees of freedom allowed by the specified relations between components. In this way, the development of a system's structure is done recursively”.

The autopoietic perspective explains the necessity of a network of rules that govern the relationships between components of systems, and maintains the identity of such system(s) (Velentzas & Broni, 2001).

Beckford (1995, p. 4) recommends that the following aspects need to be understood when System 1 is interrogated:

- Which constraints are imposed by higher management?
- How are accountability and KPIs established for each part?
- Do implementation managers have sufficient authority to fulfil their purposes?
- Is there a proper model and understanding of the environment, operations and localised management?

### **3.2.5.4 Pathologies of System 2**

Pérez Ríos (2010) identified the following possible pathologies in this system:

- a lack of coherence or a fragmentation between System 1 operations; and
- an authoritarian system.

Questions that should receive attention are:

- Which possible oscillation or conflict sources exist between the implementation elements (System 1) and their environments?
- Which coordinating mechanisms have harmonising and which have damping effects?
- Are soft issues, such as morals, ethics and culture, addressed through this function?

### **3.2.5.5 Pathologies of System 3**

Pérez Ríos (2010) identified the following possible pathologies of this system:

- excessive interference with System 1 by System 3 (e.g. authoritarian style that undermines autonomy) resulting in an inadequate management style;
- conflict between the operational and meta-systemic (managerial) functions of System 3;
- a too loose connection between System 1 and 3; and
- hypertrophy of System 3 (Pérez Ríos, 2010, p. 1546) where System 3 takes on responsibilities of Systems 1, 2 and 3\*.

Péres Rios (2012) warns that, where System 3 directly and excessively interferes in operational units (an authoritarian management style), the following consequences develop:

- the vertical line of command is overloaded (not all the information can be handled),
- autonomy of System 1 or the capacity to act (Péres Rios, 2012, p. 153) is limited;
- due to the inability of System 3 to handle all the variety, an ineffective System 1 follows; and
- a proper design of the organisation is lacking.

Beckford (1995) notes that attenuation or amplifying variation by management might hamper the ability of the system to absorb the variation required adequately. Examples

might be that management enforces a rule book too strictly (i.e. using overly control to limit variety attenuation) or overreact to gossip (amplification).

Beckford (1995) notes that the control and strategic (developmental) function should always be distinguishable entities as their functions might become interwoven. The following questions should be asked regarding the control functions in an organisation (Beckford, 1995):

- How are the parts of control made accountable for resources consumed?
- Is their performance measured as a function of fulfilling the purpose intended?
- Are the control functions necessary, especially in areas of maintenance?
- What are the controlling activities of the system in focus?
- In what manner is control exercised?
- How is the resource bargaining with the implementation elements (in System 1) done?
- Who is responsible for the performance of the implementation elements?
- Are the control and developing activities adequately distinguished from each other?
- Is the relationship between control and implementation of an autocratic or democratic nature, allowing for autonomy?

Beckford (1995) advocates the inclusion of all the implementation managers in this function, exposing them to the whole picture of the organisation and managing resources efficiently.

### **3.2.5.6 Pathologies of System 3\***

Pérez Ríos (2012) reasons that the pathologies of System 3\* usually centre on its absence or failure to function adequately. The consequences of pathology in this system can be seen (Pérez Ríos, 2012) in:

- the appearance of the proliferation of inappropriate activities;
- practices not aligned to the norms or processes of the organisation; and
- unethical behaviour occurs.

Beckford (1995) recommends the following practices with regard to this function:

- audits organisations should not be done routinely, but should remain sporadic as an audit should retain its investigative power;

- standards should be clear;
- voluntarism helps with reducing conflict;
- the responsibility to reward compliance and punish transgression should be clear; and
- audits should be used for sporadic amplification of any relevant aspect of implementation (System 1) to control (System 3).

#### **3.2.5.7 Pathologies of System 4**

Pérez Ríos (2010) identified the following potential pathologies under this system:

- the absence or improper working of the system; and
- dissociation between the strategic and managerial functions.

Beckford (1995) notes that implementation managers (System 1 managers) should be included in the development (System 4) function as they contribute to the essential model of the organisation and the wealth of information that comes with their rich interactions. The inclusion of staff in this function adds to the debate on human values influencing decision-making and not allowing autocratic behaviour to creep in (Beckford, 1995).

Beckford (1995) advocates asking of the following questions when System 4 is considered:

- How are the developmental activities made accountable for resources consumed?
- How is performance relevant to the enabling of development of the system measured?
- How is the relevance of the function determined?
- How does the development system learn from the experience of the whole system?
- What are the developing activities in the system?
- How far into the future do these activities plan?
- Will these planned activities guarantee adaption in the future environment?
- Are the developing activities still monitoring the environment and trends existing in it?
- Are the developing activities open to new ideas and other adjustments?

- Does the development function have a mechanism to alert System 5 of urgent developments?
- Is an environment for decision-making being created, considering both internal and external sources of information?

### **3.2.5.8 Pathologies of System 5**

Pérez Ríos (2010) identified the following pathologies in this system:

- ill-identified identity;
- institutional schizophrenia (conflict due to different identity concepts);
- extensive interference of System 5 in System 3; and
- poor connection between System 5 and other systems.

Beckford (1995) suggests that the following questions be asked with regard to System 5:

- Who is on the highest body of governance and how does it behave?
- Which restraints are put on this system by the next level of recursion?
- How do these constraints affect efficiency?
- Has a suitable identity been provided to the organisation?
- How is the ethos affecting development?
- Does System 5 (policy) share an identity with System 1 (implementation) or is it claiming to be different?
- How does policy (System 5) affect the debate between control and development?

### **3.2.5.9 Pathologies relating to information and communication channels**

Pérez Ríos (2012) identified the following forms of this pathology:

- the lack of a proper information system;
- fragmentation of information systems;
- the lack or failure of or inadequate communication channels; and
- the lack of or insufficient algedonic channels.

### **3.2.6 The operationalisation of viable performance**

The VSM was used in the present study to look at the application of the performance management system to ensure viability of the organisation. Performance is about achieving the desired organisational and behavioural outputs. The organisational strategy is the blueprint for viability and defines the desired outputs. The relationship between functional integration and performance management focuses on the presence of the functional components of the system, the integration of these components, and the ability of the system to identify and correct deficiencies or eventual resulting pathologies.

#### ***3.2.6.1 The presence of the functions in an organisation***

Firstly, a viable system is required to possess the five functions of subsystems (Beer, 1985).

In the present study, performance was seen as an aspect of a viable organisation. The VSM provides a coherent structure to consider the different functions interacting in an organisation to allow viable performance management. These functions describe and support a viable performance management system.

At the most basic level of performance, some service or product is being produced. The actions or operations producing this output, i.e. a service or a product, are firmly based in System 1 of the VSM. The other Systems 2–5 are merely supporting the execution of these operational outputs. System 2 provides co-ordination to prevent outputs being produced in a synchronised manner or conflict arising due to competition for resources. System 3 gives operational direction, determines and adjusts performance measures and effectiveness, and sees to proper communication between System 1 and the other systems. System 2 (co-ordination) and System 3\* (audits) are used to gather routine and non-routine information about the functioning of the performance system and information flow respectively.

System 4 looks at the performance management system itself, among others, by ensuring that the system is efficient and in line with the organisational strategy, and gathers information to share with Systems 3 and 5. The external and internal environments are constantly being assessed, and the necessary changes advised.

System 5 looks at the synergy of the system, the total direction and ethos and the culture whilst performance is being managed. Of special importance is the maintenance of the six communication channels to support a viable performance management system.

Table 3.1 reflects the perceived essential elements of an organisational structure in terms of Beer's (1985) model. In terms of the model of Kast and Rosenzweig (1985), the table refers to the structural subsystem.

*Table 3.1*

*The components and elements of organisational structure*

Elements	
Theoretical base	Item descriptions
System 1	
<p><i>Autonomy</i> refers to the freedom of an embedded subsystem to act on its own initiative, but only within the framework of action determined by the purpose of the total system (Beer, 1985, p. 105). Beckford (1995) advocates that sufficient authority should be given to managers in managing this function and having the capacity to absorb the required variety.</p>	I am granted autonomy in my job.
	I have sufficient authority to make decisions relevant and appropriate for the level I am employed at.
<p>Determining the environmental areas that are relevant for the particular organisation Pérez Ríos (2010).</p>	<p>I am allowed to interact with the external environment as required by my level of work.</p> <p>I can exercise my own discretion in my job.</p> <p>I control the priorities in my job within the pre-decided boundaries.</p> <p>I can make adjustments to my job when necessary.</p> <p>My direct supervisor/manager allows me to choose the way I achieve my objectives where possible.</p>
<p>Beckford (1995) recommends that the following questions need to be asked when System 1 is interrogated:</p> <ul style="list-style-type: none"> <li>• Which constraints are imposed by higher management?</li> <li>• How is accountability and KPIs established for each part?</li> <li>• Do implementation managers have sufficient authority to fulfil their purposes?</li> </ul>	<p>I am held accountable for the correct aspects of my job.</p> <p>It is clear to me where I fit in the organisation.</p> <p>I know what is expected of me in my job.</p>
	<p>It is clear to me where I fit in the organisation.</p> <p>I know what is expected of me in my job.</p>

Elements	
Theoretical base	Item descriptions
<ul style="list-style-type: none"> <li>Is there a proper model and understanding of the environment, operations and localised management?</li> </ul>	
<p>This includes individual mission statements, budgets and other resources, an agreed-upon working plan, agreed-upon intervention rules, accountability and own development as long as the agreed-upon mission is being pursued (Assimakopoulos &amp; Dimitriou, 2006).</p>	<p>I have adequate resources to perform my job.</p>
System 2	
<p>Resolving conflict and dealing with interruptions (Christopher, 2011).</p>	<p>Conflicts and disruptions between organisational units and individuals are appropriately addressed in the organisation.</p> <p>Work is well coordinated between different organisational units.</p> <p>The process flow in the workplace is conducive to productivity.</p>
<p>Pérez Ríos (2010) identified the following possible pathologies in this system:</p> <ul style="list-style-type: none"> <li>a lack of coherence or a fragmentation between System 1 operations; and</li> <li>an authoritarian system.</li> </ul> <p>Beckford (1995) mentions that issues such as ethics, morality and culture should also be addressed through the co-coordinating devices. Questions that should receive attention are:</p> <ul style="list-style-type: none"> <li>Which possible oscillation or conflict sources exist between the implementation elements (System 1) and their environments?</li> <li>Which coordinating mechanisms have harmonising and which have damping effects?</li> <li>Are soft issues, such as morals, ethics and culture addressed through this function?</li> </ul>	<p>We work together as a team in the organisation.</p>
	<p>Issues of organisational culture, ethical behaviour and general conduct becoming are adequately being addressed.</p>
System 3*	
<p>Beckford (1995) recommends the following practices with regard to this function:</p> <ul style="list-style-type: none"> <li>audits should not be done routinely but remain sporadic as it should retain its investigative power;</li> <li>standards should be clear and prescribed; voluntarism helps with reducing conflict;</li> </ul>	<p>Audits focus on the correct aspects of my job and the organisation and are necessary in making the organisation more effective.</p>
	<p>Audit standards are made clear.</p>



Elements	
Theoretical base	Item descriptions
<ul style="list-style-type: none"> <li>the responsibility to reward compliance and punish transgression should be clear; and</li> <li>audits should be used for sporadic amplification of any relevant aspect of implementation (System 1) to control (System 3)</li> </ul>	
System 3	
<p>Péres Rios (2012) summarises the function of System 3 as the optimisation of the operational units through stability, synergy, efficiency and efficacy. <i>Stability</i> refers to homeostasis and the avoidance of the systems oscillating beyond the control system (Beer, 1985). <i>Synergy</i> refers to integration or cohesion and harmonious relationships being maintained (Péres Rios, 2012). <i>Efficiency</i> has to do with the optimising of the overall system-in-focus by creating synergy between the interacting parts (Assimakopoulos &amp; Dimitriou, 2006).</p>	My manager guides us in making the organization more efficient.
	My manager helps me to focus on the correct aspects of my job.
<p>Beckford (1995) advocates that the following questions be asked regarding the control functions in an organisation:</p> <ul style="list-style-type: none"> <li>How are the parts of control made accountable for resources consumed?</li> <li>Is their performance measured as a function of fulfilling the purpose intended?</li> <li>Are the control functions necessary, especially in areas of maintenance?</li> <li>What are the controlling activities of the system in focus?</li> <li>In which manner is control exercised?</li> <li>How is the resource bargaining with the implementation elements (in System 1) done?</li> <li>Who is responsible for the performance of the implementation elements?</li> <li>Are the control and developing activities adequately distinguished from each other?</li> <li>Is the relationship between control and implementation of an autocratic or democratic nature allowing for autonomy?</li> </ul>	<p>My manager assists me in correcting performance errors.</p> <p>My manager assists me in developing my skills towards higher effectivity in my job.</p>
<p>Pérez Ríos (2010) identified the following possible pathologies of this system:</p>	My manager does not interfere unnecessarily in my work.

Elements	
Theoretical base	Item descriptions
<ul style="list-style-type: none"> <li>• excessive interference with System 1 by System 3 (e.g. authoritarian style that undermines autonomy) resulting in an inadequate management style;</li> <li>• conflict between the operational and meta-systemic (managerial) functions of System 3;</li> <li>• a too loose connection between Systems 1 and 3; and</li> <li>• hypertrophy of System 3 (Pérez Ríos, 2010, p. 1546) where System 3 takes on responsibilities of Systems 1, 2 and 3*.</li> </ul>	
System 4	
<p>Beckford (1995) advocates asking the following questions when System 4 is considered:</p> <ul style="list-style-type: none"> <li>• How are the developmental activities made accountable for resources consumed?</li> <li>• How is performance relevant to the enabling of the development of the system measured; and</li> <li>• How is the relevance of the function determined;</li> <li>• How does the development system learn from the experience of the whole system?</li> <li>• What are the developing activities in the system?</li> <li>• How far into the future do these activities plan?</li> <li>• Will these planned activities guarantee adaption in the future environment?</li> <li>• Are the developing activities still monitoring the environment and trends existing in it?</li> <li>• Are the developing activities open to new ideas and other adjustments?</li> <li>• Does the development function have a mechanism to alert System 5 of urgent developments?</li> <li>• Has an environment for decision-making been created considering both internal and external sources of information?</li> </ul>	<p>The organisation plans sufficiently ahead to be ready for the future.</p> <p>I am involved in information gathering for strategic purposes.</p> <p>The organisation's strategy is realistic.</p> <p>All effort in the company is directed at the execution of the strategy.</p>
	<p>I am involved in the decision-making and information gathering for the purpose of strategy formation.</p>
	<p>I understand how the strategy impacts my job and vice versa.</p>
System 5	
<p><u>Identity recognition</u>: Péres Rios (2010) argues that a fundamental step to understand an</p>	<p>I understand the identity and purpose of the organisation.</p>

Elements	
Theoretical base	Item descriptions
organisation, is to make explicit its identity and purpose.	Generally, I am proud to tell people where I work. Top management interferes with levels of work at operational level.
Pérez Ríos (2010) identifies the following pathologies in this system: <ul style="list-style-type: none"> <li>• ill-identified identity;</li> <li>• institutional schizophrenia (conflict due to different identity concepts);</li> <li>• extensive interference of System 5 in system 3; and</li> <li>• poor connection between System 5 and other systems.</li> </ul>	Top management is sufficiently involved in the levels below them.
Beckford (1995) suggests that the following questions be asked with regard to System 5: <ul style="list-style-type: none"> <li>• Who is on the highest body of governance and how does it behave?</li> <li>• Which restraints are put on this system by the next level of recursion?</li> <li>• How do these constraints affect efficiency?</li> <li>• Has a suitable identity been provided to the organisation?</li> <li>• How is the ethos affecting development?</li> <li>• Does System 5 (policy) share an identity with System 1 (implementation), or is it claiming to be different?</li> <li>• How does policy (System 5) affect the debate between control and development?</li> </ul>	Policy is adequately communicated. Organisation policies are appropriately enforced.
	Our top management acts in accordance with the ethos/values and culture of the organisation. Top management adequately communicates to lower levels.
	The synchronisation/flow of tasks in the organisation is unnecessary delays are not taking place.
<i>Feedback</i> refers to the return of the output of a system in order to modify its input (Beer, 1985, p. 105).	The organisation learns from its mistakes.
	We get feedback on proposals made.

### 3.2.6.2 The indexes

In applying VSM to performance management in organisations, the most obvious place to start is the indexes provided by Beer (1985) himself. Beer (1972) believe it is the responsibility of System 4 to realise this inherent achievable potential. In his pursuit to define these parameters of output, Beer (1972) went on to identify ratios of productivity, latency and performance. *Productivity* refers to the ratio of actuality and capability. *Latency* refers to the ratio of capability and potentiality. *Performance* refers to the ratio of actuality and potentiality, and also the product of latency and productivity.

In *Brain of the firm*, Beer (1972, p. 163) describes what he called “a triple vector” to characterise activities in System 1. The identified components are actuality, capability and potentiality. The three vectors are defined as follows:

- *actuality* refers to the present reality and the outputs with the existing resources and constraints;
- *capability* refers to the present state and the outputs delivered with the existing resources and outputs if more effort is exerted; and
- *potentiality* refers to the outputs achievable when the constraints are removed and resources increased. This achievable output exists within the parameters of what is known already.

An example in performance management might be that a target or KPI is set that a data typist must type 30 words per minute. Her output is in reality only 26 words per minute. The typist however knows that, if the constraints of office disturbances are removed and she is given more training (i.e. resources) on the word processing software, she can type 80 words per minute.

In terms of Beer’s (1972) methodology, the typist’s actuality is 26 words per minute, capability 30 words per minute and potentiality 80 words per minute. The ratio of latency (capability/potentiality) is  $30/80 = 0.38$ . The ratio of productivity (actuality/capability) is  $26/30 = 0.87$ , and the ratio of performance (latency x productivity)  $0.38 \times 0.87 = 0.33$ .

The value of these calculations in strategic planning and execution can be used to measure and analyse organisational performance further.

### 3.3 THE PERFORMANCE MEASUREMENT SYSTEM

For Eckerson (2009), performance metrics are crucial to link performance to business strategy. This author also argues that metrics should go beyond mere business activity and should measure execution of business strategy, i.e. strategic objective and aligned goals.

The management of performance rests on a proper PMS. The PMS has implications for the organisation and specifically the organisational climate. A too rigid, bureaucratic system might hamper the organisation as too much time is spent on maintaining the

measurement system, or employees might feel overly controlled by too narrowly set targets or boundaries.

Eckerson (2009) discusses in detail the different types of metrics, e.g. cascaded KPIs (duplicated from one level to the next), conglomerate KPIs (consisting of two or more lower-level KPIs) and unique KPIs.

Eckerson (2009) describes performance metrics as powerful forces that can drive performance and change in the organisation effectively as long as these metrics are properly developed and applied. Proper care should be taken in the institution of performance metrics. Eckerson (2009) warns that the wrong metrics could result in disorganisation of organisation processes and it could also demoralise employees.

Aguinis (2005) believes an effective and fair performance management system should adhere to at least the following:

- strategic congruence with the organisational strategy;
- thoroughness meaning that all employees should be valued, all mayor responsibilities and behaviour included, performance spanning the entire performance period, and should include positive aspects as well as opportunities for improvement;
- practicality with regard to costs, time and logistics;
- meaningfulness (considering functions only under the control of the employee, inclusive of standards, with regular evaluations and/or feedback, provisioning for skill improvement, and results should be used for relevant processes);
- specificity, i.e. detailed and concrete guidance;
- distinction should be made between effective and ineffective performance;
- reliability;
- validity;
- acceptability and fairness;
- inclusiveness (input from multiple sources);
- transparency;
- correct ability (to correct errors of the system or judgement);
- openness – good systems have no secrets, and performance should be evaluated frequently;
- standardisation (consistent across people and time); and

- ethicality, i.e. complying with ethical standards.

De Waal (2002) provides an elaborate model and assessment of the attributes of a proper PMS. The following aspects are borrowed from De Waal (2002) but operationalised in a different manner:

- purpose – managers accept the need for performance management;
- participation in setting metrics and targets – managers are involved in defining KPIs and in setting KPI targets;
- communication – managers are actively communicating about the performance management system project and understand the meaning of KPIs);
- relevance – managers have insight into the relationship between strategy and critical success factors (CSFs) and KPIs and into the relationship between business processes and CSFs/KPIs; managers find the performance management system relevant due to regular evaluations;
- clear accountability – managers have sole responsibility for a KPI;
- reward and recognition – managers' use of the performance measurement system is stimulated by the reward structure.

Jensen and Sage (2000, p. 34) say performance metrics in a performance measurement system should display the following attributes:

- cost-effectiveness;
- strategic grouping;
- acceptability (buy-in);
- usefulness;
- attainability;
- consistency;
- accuracy;
- reliability;
- repeatability;
- credibility;
- punctuality (or timeliness);
- the ability to react (responsiveness);
- known responsibilities; and
- security

From the above theoretical statements, the elements of a proper PMS can be operationalised as in Table 3.2 below. These questions were used in the VPTI.

*Table 3.2*  
*Elements of a performance measurement system*

Performance measurement system	
Theoretical base	Items
Jensen and Sage (2000)	
- Cost-effectiveness	The time we spend on the performance measurement system adds value.
- Acceptability (buy-in)	I take part in defining the performance measures I am measured on.
- Usefulness	I am being measured on aspects of real relevance in my job function.
- Attainability	I am being measured on realistic measures and targets.
- Consistency	The performance measurement system is applied consistently across all employment levels and groups.
- Accuracy	I am being measured on the relevant aspects as it apply in the here and now.
- Punctuality (or timeliness)	Adjustments can be made to performance measures and tasks as and when necessary.
- The ability to react (responsiveness)	Adjustments can be made to performance measures when necessary.
- Security	The time we spend on the performance measurement system adds value.
Schneiderman (2001)	
- Unambiguous	I have a clear understanding of my performance measures, standards, and targets I shall be measured upon.
- Based on properly documented processes	Performance reviews are properly documented and records kept.
- Continuously capturing incremental value	My performance measures strive towards continuous improvement.
- Completeness	My performance metrics cover my total functional area.
- Focusing on weak points or drawbacks	Drawbacks and weak points are provided for in my performance metrics.
De Waal (2002)	
- Communication	I get feedback as and when required on my performance.
- Reward and recognition	I am properly being rewarded and recognised for my level of performance.
- Purpose	The performance management system is taken seriously enough in the business.
- Relevance	I understand how my performance interlinks with the strategy and business processes.



In Table 3.2 above the elements of a performance measurement system is discussed from the point of view of three resources. These elements are displayed as items for questionnaires.

When a PMS is properly managed, the following benefits can be derived (see Aguinis, 2005):

- increase in motivation;
- a proper system could result in an increase in employees' self-esteem;
- managers have an opportunity to gain insight about subordinates;
- job definitions and criteria are clarified;
- self-insight and development could be enhanced;
- a proper system enhances a belief in human resource actions to be fair and appropriate;
- organisational goals are clarified;
- competence could be enhanced;
- disputes about inequity could be reduced;
- more adequate and timeous distinction could be achieved between good and poor performers;
- managers' views with regard to performance could be communicated more effectively; and
- organisational change could be facilitated.

Eckerson (2009, p. 18) describes the characteristics of 'good' metrics as follows:

- sparse: the fewer KPIs the better;
- drillable: users can drill into detail;
- simple: users understand the KPI;
- actionable: users know how to effect outcomes;
- owned: KPIs have an owner;
- referenced: users can view origins and context;
- correlated: KPIs drive desired outcomes;
- balanced: KPIs consist of both financial and non-financial metrics;
- aligned: KPIs do not undermine each other; and
- validated: workers cannot circumvent the KPIs.

### 3.3.1 Performance vectors

In *Brain of the firm*, Beer (1972) identifies the metrics of actuality, capability and potentiality. These three vectors were operationalised to measure performance score as follows:

- *actuality* refers to the present reality and the outputs with the existing resources and constraints;
- *capability* refers to the present state and the outputs delivered with the existing resources and outputs if more effort is exerted; and
- *potentiality* refers to the outputs achievable when the constraints are removed and resources increased. This achievable output exists within the parameters of what is known already.

In Table 3.3 below, the performance vectors of Beer (1985) can be seen. These vectors were used in the VPTI.

*Table 3.3*  
*Performance vectors according to Beer (1985)*

Performance score	
Theoretical base	Items
Beer (1972)	When resources are increased, I can potentially achieve better performance results.
	I am capable of higher performance levels with the existing resources and outputs if I exert more effort.
	When the constraints are removed and resources increased, I can potentially achieve better performance results within the parameters of what is known already

## 3.4 PROFICIENCY

Performance is naturally supported by the level of competence. Where an employee lacks the proper competence, he or she can never perform optimally. Therefore, in looking at strategic integration, the competence or proficiency level of the employee must be considered.

Dreyfus and Dreyfus (1980) describe how a person normally passes through five developmental stages when a new skill is acquired, namely novice, competence, proficiency, expertise and mastery. Dreyfus and Dreyfus (1980) argue that any form of skill training must be based on a model of skill acquisition. This model addresses, at each stage of training, the appropriate issues involved in facilitating advancement.

Harzallah and Vernadat (2002) see competency management as a strategic matter affecting all layers of the organisation. Firstly, it provides for the competitive edge needed to survive and grow in industry. For Tripathi and Suri (2010), competency management is crucial for the survival and growth opportunities for organisations in the current knowledge-based economies. Cheng, Dainty, and Moore (2003) similarly view the establishment of a competency workforce as crucial for the development of an organisation.

Armstrong and Baron (1995) believe competence is about what an employee needs to know as well as how the employee is expected to apply this acquired knowledge. For these authors, competence is about the application of knowledge and skills, the delivery of performance, and the behaviours required to get things done very well (Armstrong & Baron, 1995). Kagire and Munene (2007) confirm that a person who is competent, is efficient and effective in performing according to a standard.

For Tripathi and Suri (2010), competencies consist of attributes of personality, ability, knowledge and skills. According to these authors, competency management provides the framework for competency assessment and gap identification. Through proper competency management, organisations can increase their capability through optimal utilisation of employees' talents to achieve superior performance (Tripathi & Suri, 2010).

Competency management can provide the tools to measure the status quo against strategically tactical plans and to guide the organisation in terms of continuous improvement (Harzallah & Vernadat, 2002). At operational level, competency management can help with real-time decisions, identifying employees' abilities to handle unplanned activities and competency inventories preparing for challenges ahead (Harzallah & Vernadat, 2002).

Lucia and Lepsinger (1999) say competency –

- should be grouped in related areas of knowledge, skills and attitudes;
- correlates with job performance;
- can be improved through training and development; and
- must be measurable against agreed standards.

In terms of competence management, it starts off with requiring the capability or potential during the recruitment process, whilst enhancing and developing this

throughout the HRM processes, such as training and development, coaching and feedback, exploration, performance management, etc. (Lucia & Lepsinger, 1999).

Lucia and Lepsinger (1999) reason that, since competence can be developed, the organisation should assist the employee in identifying areas of development and address this through its processes of training and development. The fact that competency management focuses on what employees actually do, makes the process tangible. Furthermore, a process of distinguishing standards and priorities might be time-consuming in the beginning, but assists the organisation to build role- and organisation-specific requirements and designing structures that the future requires. Lucia and Lepsinger (1999) believe a good model of what competencies are, is required. Sanda, Sackey, and Fältholm (2011) found that, for executives to be efficient, they should be both competent as well as have the capability to execute organisational goals.

Dreyfus and Dreyfus (1980) note that people rely less and less on abstract principles and increasingly more on concrete experience as competence is acquired. According to this view, an employee undergoes progressive changes in his or her perception of the task environment as increased competency is obtained. Dreyfus and Dreyfus (1980) therefore postulate a five-stage model on how employees perceive their task environments in terms of these phases of progression to render a better understanding of competence levels and how such levels can be influenced by learning interventions. Table 3.4 below depicts the scale to measure proficiency in the VPTI.

*Table 3.4*  
*The proficiency scale*

Questions
I stick to taught rules and plans. At this stage I still have no discretionary judgement and still needs lots of instruction.
Sometimes I can use my own judgements, but I still need supervision, instruction for the overall job. I still find it difficult to distinguish priorities in my job.
I have a basic understanding of my actions in relation to goals and I can plan tasks, formulate routines and am able to achieve most tasks using my own judgement.
I can easily prioritize importance of aspects, note deviations from the normal patterns and standards and am able to take full responsibility for my own work.
I have a deep, tacit understanding of my job and am able to take responsibility for going beyond existing standards and expectations.

### 3.5 THE REQUISITE ORGANISATION AND THE MANAGERIAL ACCOUNTABILITY HIERARCHY

Jaques postulates a hierarchal structure of the organisation striving to utilise employees optimally, both in service of organisational productivity and individual growth (King & Nicol, 1999). The correct structure, with appropriately designed roles, allows for the provisioning of work that allows employees to apply their potential capability. Jaques (1996) and King and Nicol (1999) agree that organisations will thrive when employees are allowed sufficient freedom to actualise their full potential.

For Jaques (1996), work is an important contributor to an individual's self-worth and correct structure in an organisation will support employees in their growth by removing obstacles preventing people from realising their full potential. For King and Nicol (1999), it is a win-win situation, as employees realise their potential, even at spiritual level, and the organisation progresses through productive employees.

Kleiner (2001) compares these strata with a double helix where on the one side of the helix, the organisational levels can be visualised, and on the opposite side, the employee's capability to handle different levels of complexity. It follows that a proper fit will result in desired organisational outcomes.

The requisite model of Jaques (1996) is used as a guiding model for understanding the managerial accountability hierarchy (MAH). Specifically the following aspects are considered:

- accountability;
- authority;
- span of control (how many peers are reporting to the same manager); and
- contact frequency between manager and subordinates.

#### 3.5.1 Managerial accountability hierarchy

Jaques and Clement (1991) see leadership as a role-related function within the relationships in organisations. They do not make a distinction between a manager and leader, as managerial work includes displaying leadership characteristics. A distinction is made between *role-vested authority* (referring to the authority vested in a position) and *personally earned authority*, which results in collaboration beyond duty to include aspects such as voluntarism and enthusiasm.

The concept of managerial accountability hierarchy refers to the following (see Jaques, 1990):

- adding value to work throughout the organisation;
- identifying and creating accountability;
- positioning employees in optimal positions in line with their ability to handle complexity; and
- creating acceptance of the structure that achieves these requirements.

King and Nicol (1999) maintain that employees are more and more experiencing a sense of meaningless and unbalanced, sometimes chaotic, lives in the modern workplace. Their work focuses on actualisation, self-awareness flow and realisation in the external environment. King and Nicol (1999) argue that, for employees to reach this state, the organisation should be structured to support these needs of individuals. It is about fulfilling individual needs whilst also attaining organisational goals.

King and Nicol (1999) argue the organisation is both influencing and being influenced by the capacity of its employees. Creating an environment that acknowledges discrepancy of potential and levels of complexity if provided roles, internal and external conflict and stress are reduced and an environment is created that "... releases the unique creativity, imagination and growth of individuals as they follow their spiritual paths to wholeness" (King & Nicol, 1999, p. 241).

The managerial accountability hierarchy is about goals and the achieving of such. Both organisation and individual are in pursuit of their goals and a fit should be sought. Jaques (1982, pp. 112–113) postulates that goal-directed episodes have the following characteristics:

A goal directed episode starts with a sense that something should be done:

- triggered by some internal or external stimulus;
- a desire is created or translated into a goal image;
- resulting in an orientation to start exploratory behaviour,
- searching and acquiring for resources;
- commencing of the planned path to acquire the goal state or object
- overcoming expected and unexpected obstacles on the path the goal attainment; and
- attaining the goal state or object and experience satisfaction; or

- changing the goal state or abandon the plan and experience failure.

### **3.5.1.1 Accountability**

In this section, the definition of Burns (2009) will be used to operationalise accountability.

An employee is accountable to do work of a specific type in exchange for compensation (Jaques, 1990, p. 128). This accountability, together with the authority of the manager to assign appropriately to subordinates (Jaques, 1990) is a major aspect of the theory of requisite organisations. Leadership is defined by Jaques and Clement (1991, p. 4) in terms of these aspects as:

[T]he process in which one person sets the purpose or direction for one or more other persons, and gets them to move along together with him or her and with each other in that direction with competence and full commitment.

King and Nicol (1999, p. 240) believe Jaques identified commitment, self-reflection and values as the internal support system towards achieving potential capability:

If they are distracted, adrift, or spiritually bereft, their ability to function at their potential capability will be severely constrained. If individuals yearn for the opportunity to be fully challenged by work that they value, then the perception of value is an important element of how much of a person's potential will actually be applied to work. Hence, if, through self-reflection, individuals are able to assess the extent to which they value their work, and are able to identify the work that is consistent with their capacity and value system, then they will be able to achieve their full potential.

For Burns (2009), *accountability* refers to the discretion to be made to answer for own actions and – in the case of a manager – for the actions of subordinates. The ingredients of accountability (see Burns, 2009) are:

- that each person exactly understands what he or she is being held accountable for;
- accountability levels are managed; and
- consequences are spelled out and followed when expectations are not met.

The elements of accountability, as they were measured in the questionnaire, are operationalised in Table 3.5 below.

*Table 3.5*  
*Elements of accountability*

Accountability	
Theoretical base	Items
Burns (2009)	I understand completely what I am being held accountable for.
	Accountability levels are managed in my working area.
	Actions are taken when accountability expectations are not met.
	Accountability is appropriately rewarded in my working environment.

Grimshaw, Baron, Mike, and Edwards (2006) claim the following four elements relate to creating accountability in an organisation:

- expectations should be clear to employees;
- employees should perceive that the expectations are credible and reasonable;
- employees expect that positive consequences will follow the desired performance levels; and
- employees expect that negative consequences will follow poor performance.

Koplowitz (2008) asserts employees have the following accountabilities in terms of the MAH:

- working with total commitment on assigned jobs;
- giving their manager the best advice;
- following policy;
- maintaining trust and respect in the organisation; and
- can be removed by their manager if they are too inefficient,

A manager is accountable for:

- the outputs of his or her subordinates;
- exercising leadership,
- continued improvement initiatives; and
- developing a team of capable subordinates.

### **3.5.1.2 *Span of control and contact frequency***

Etzioni (1959) is of the opinion that an organisation comprises employees in the roles of managers and those of experts. Managers deal with people, whilst experts mainly



deal with symbols and materials to create and implement knowledge. Managers integrate systems and subsystems from the needs and goal achievements from the perspective of the organisation.

Koplowitz (2008) believes an individual employee should be managed by a person a notch more capable than the subordinate so that the employee:

- feels good about taking instructions from the manager;
- gains valuable context and clarity and receives coaching from such manager; and
- is effectively employed working at the correct level.

Guadalupe, Wulf, and Li (2012) report that in the recent past, organisations have de-layered to an extent that they have broadened spans of control and changed pay structures to accommodate incentives. Although these initiatives show that decision-making has been delegated to lower levels of management, executive levels have increased in size. Guadalupe et al. (2012) remark that the number of managers has doubled in the past 20 years, from five in 1986 to approximately 10 in 2012. More functional managers (finance, human resources and marketing) are reporting directly to the CEO. Guadalupe et al. (2012) found in their research that increased compensation for this functional specialist reporting to the CEOs is in line with increases in authority and responsibility levels. General managers' salaries tend to decrease as the functional specialists become more prevalent in the execution of business strategy. Guadalupe et al. (2012) conclude that the use of functional specialisation renders the organisation in a better position for integration and to compete.

Jaques (1970) believes that people unconsciously know their capacity level, and they have an underlying norm of equity, natural law and order, justice and fairness, and therefore desire equitable compensation.

Davies, Smith, and Twigger (1991, p. 8) argue that as span of control increases "instrumental" responsibility (operational) is replaced by "regulatory" responsibility (i.e. control). Such a change takes place from direct supervision and control to the regulation of the employee through values, choice and time span of discretion. Davies et al. (1991) argue that especially in times of turmoil, complexity and change, these aspects are prevalent, allowing the individual to realise his or her potential and to grow.

At the same time, they also relate organisational goals in terms of congruent and realistic visions maintaining understanding at the different levels of complexity.

*Span of control* refers to the number of direct subordinates managed by a manager (Bandiera, Prat, Sadum, & Wulf, 2011). The concept *span of control* fell outside the scope of this research. However, *span of activity* provides useful information related to the performance parameters of an employee and was considered in the present study as a structural component inherent in an organisation. Some of the conclusions by Bandiera et al. (2011) in their research are:

- the use of span of activity in conjunction with span of control provides a good understanding of the organisation;
- aspects of consideration would be the relationship between span of control complemented by span of activity and organisational structure, management interactions, strategy and performance;
- span of control in itself is not a clear measure of interaction and time spent when it comes to measuring productivity of top executives;
- direct reporting relationships are not indicative of time spent across functions;
- a broader span of control resulted in an increase in involvement in internal interactions rather than the expected decrease; and
- analysis and conclusions around formal structure do not provide for a clear picture of interaction as informal interaction is often excluded.

Bandiera et al. (2011, p. 17) conclude that activity analysis would provide a more precise picture of the organisational structure, teams in the organisation and “complementarities inherent in human capital”. Calendar analysis is suggested as a tool to evaluate patterns of time allocation. Activity analysis would also provide information of whether the manager is focusing on the correct strategic aspects and priorities required. Bandiera et al. (2011) found that executive managers’ perception of their own time allocation and that of reality differed. Executive managers found it very useful in their study to analyse and compare these time patterns and compare such with peers.

The elements of Stieglitz (1964) were used in this research to define or operationalise span of control as follows:

- *Similarity of function*: refers to the degree of similarity of activities, i.e. do these activities relate to a single functional area or are they spanning across functional areas? This element is similar to what Gibson, Ivancevich, and Donnelly (1991) refers to as the range of a job referring to the number of tasks a jobholder performs.
- *Geographic contiguity*: refers to the physical location of the activities, i.e. are these activities located in a single site or plant where movement exerts extra time and effort or do these activities involve a large amount of travelling?
- *Complexity of functions*: refers to the nature of the activities ranging from repetitive, routine tasks to highly complex and diverse actions. This element is similar to job depth as defined by Gibson et al. (1991), referring to the amount of discretion allowed to decide job activities and outcomes;
- *Direction and control*: this aspect is related to the degree of supervision measured in time and effort required at the lower levels (in the case of a manager);
- *Co-ordination*: refers to the amount of time and effort exerted to keep activities within the scorecard correlated and in sync with other activities in the organisation. This element is similar to what Gibson et al. (1991) call job relations, referring to the quality and kind of relationships required to make a job possible.
- *Planning*: Stieglitz (1964) saw this aspect as the importance, complexity and time necessary to establish future programmes and objectives and to review such.

Stieglitz (1964) added a seventh element, *organisational assistance*, referring to the help received by a manager by assistants, and staff functions to lessen the burden and increase the ability to manage a wider span of control.

Stieglitz (1964) allocated point values to each of these elements based on his research, which were used as multipliers to get to a score of supervisory burden.

Using the operational definition of Stieglitz (1964), the following definition is derived for span of activity in the present research:

Span of activity is a measure to determine the similarity of functions, the degree of direction and control provided to other functions or jobs, the degree of assistance or support obtained from other functions or jobs and the geographic continuity of the position or job.

Table 3.2 contains the items:

Span of control will simply be defined and measured in the current research as the number of employees reporting to a manager. The concept of contact frequency referring to how often contact between the subordinate and direct manager is made, is closely related to span of control. Both concepts will be measured with a nominal scale in the present research.

### **3.5.1.3 Authority**

Nahm, Vonderembse, and Xenophon (2003, p. 285) define *authority* in an organisation in terms of the locus of decision-making as “the degree to which decisions are made high versus low in the organizational hierarchy”.

- in the first place, authority is a manager’s power to initiate projects and direct subordinates to perform certain duties;
- secondly, the manager should have the power to enforce obedience;
- thirdly, the manager should have the power to ratify and approve actions in a pre-defined manner;
- lastly, the manager should have the authority to monitor subordinates and reward performance.

Burns (2009) defines authority as the following:

- a clear understanding of who in the organisation makes which decisions;
- the possession of sufficient decision-making authority to perform duties;
- when decisions are being made, the decision-makers are present;
- a clear understanding of which decisions need to be escalated to other levels;
- understanding the degree of influence each person has in making decisions; and
- when veto authority is being used, it is in exceptional cases only with full understanding of the reasons.

The concept of Fama and Jensen (1983) was adjusted in the present research to provide an operational definition that could equally be used for employees in managerial positions. Two elements (elements 5 and 6) concerning the understanding of decision-making authority are borrowed from Burns (2009).

Lunenburg (2012) talks about the centralisation or hierarchy of authority, referring to the number of employees participating in decision-making as well as the number of

areas in which these employees participate. The lower the proportion of employees participating in decision-making, the more centralised the organisation.

Harrigan (1984) calls the over-involvement of superior levels in lower levels. Harrigan (1984) lists the following consequences (or disadvantages) of vertical integration in an organisation:

- increased managerial costs in co-ordinating multiple stages of the value chain;
- unevenly balanced productivity resulting in possible underutilisation or overextension of resources;
- technological obsolescence;
- strategic inflexibility;
- increased mobility and exit barriers;
- enmeshment of business units; and
- a lack of information and feedback from stakeholders.

Harrigan (1984) believes that the greater the vertical integration, the lower the degrees of strategic freedom and the higher the bureaucratic costs.

Lunenburg (2012, p. 2) distinguishes between mechanistic and organic organisations. *Mechanistic* organisations have rigid hierarchies, high levels of formalisation, strong reliance on rules, policies, and procedures, vertical specialisation, centralised decision-making, downward communication flows, and narrowly defined tasks. *Organic* organisations are more flexible, adaptable, team-directed, characterised by weak or multiple hierarchies, low levels of formalisation, horizontal specialisation, decentralised decision-making, focus on communication flow, and fluidity of tasks to be able to adapt to change. Lunenburg (2012) remarks that mechanistic organisations are found in areas where efficiency and standardisation are sought, whilst organic organisations are found where job satisfaction and development are sought. Aghion and Tirole (1997) are of the opinion that certain organisational attributes, such as span of control, concentration of ownership, and the number of managerial layers, are relevant when it comes to understanding real authority in organisations.

Citing various authors some elements of authority are identified by Aghion and Tirole (1997, p. 27) as:

- a right of choice impacting parts or the whole of an organisation;

- ownership of an asset, giving the right to make decisions concerning the use such asset;
- resulting from an explicit or implicit contract allowing the right of decision on specified matters to a member or group of members of the organisation (formal authority);
- effective control over decisions (real authority); and/or
- asymmetrical power (formal authority) over a decision or activity allowing subordinates to make decisions (real authority) in so much as such decision is not contradictory or managed in terms of the information possessed by the principle.

Aghion and Tirole (1997) argue that the delegation of formal authority to an employee will foster participation and result in the acquiring of information about the corresponding activities. Delegation poses a loss of control for the manager requiring trust to be put in the employee, especially where the decision to be taken is of importance to the manager or where the manager has not acquired sufficient skill or knowledge to manage the task or make the decision.

Aghion and Tirole (1997) found that centralisation (i.e. not delegating formal authority) might have a negative effect on initiatives taken by subordinates when there exists fear that they might be overruled by managers. This centralisation might also have a positive effect on employees resulting in increased communication where subordinates trust their manager.

Aghion and Tirole (1997, p. 27) list factors that might increase the levels of real authority, namely:

- a large span of control so that the manager has to delegate authority;
- urgency;
- a reputation for “moderate interventionism”;
- performance measurement; and
- a structure of multiple managers (e.g. a matrix organisational structure).

The elements of authority are shown in Table 3.6 below.

*Table 3.6*  
*The elements of authority*

Authority
-----------

Theoretical base	Items
Fama and Jensen (1983)	I have the necessary power to initiate projects in my area of execution, and direct/co-ordinate team members towards certain desired outcomes.
	I am empowered by management to enforce appropriate corrective steps/discipline team members/subordinates where appropriate.
	I am empowered to ratify and approve actions in a pre-defined manner.
	I am allowed to monitor employees under my guidance/leadership and reward performance appropriately.
	I am allowed to reward fellow employees appropriately.
Burns (2009)	I have a clear understanding of who in the organisation makes which decisions; and
	The overruling of authority levels occurs rarely and when it occurs, I have a full understanding of the reasons.

### 3.6 A THEORETICAL MODEL OF VIABLE PERFORMANCE AND TRUST

The systems model of Kast and Rosenzweig (1985) was seen as an organising framework for the individual constructs measured in the present research. Organisational trust, as the human–cultural sub-system comprises the constructs work support, information sharing, credibility and team support as discussed by Martins (2000).

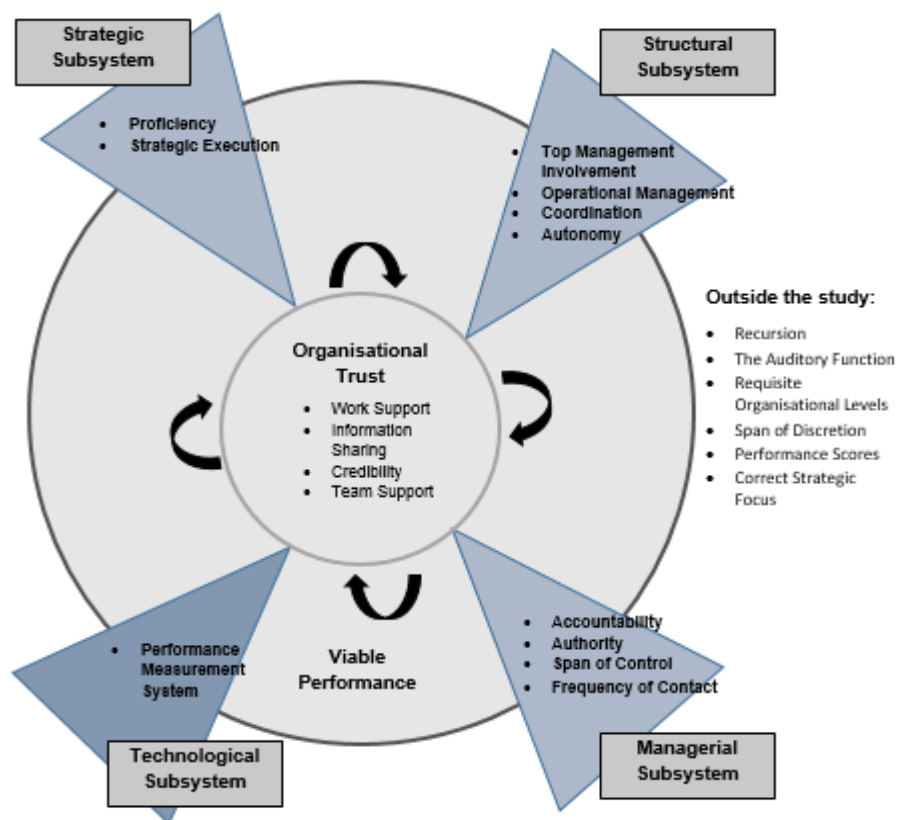
Organisational trust as the dependent variable in the present research is influenced by and influence the other sub-systems. The other sub-systems are the technological sub-system (the PMS), the structural sub-system (top management involvement, operational management, autonomy and team co-ordination), the strategic sub-system (proficiency and strategic execution), and the managerial sub-system (accountability, authority, contact frequency and span of control).

The structural and strategic sub-systems are closely related to the model of Beer (1985), while the managerial subsystem relates to the MAH of Jaques (1996). Viable performance comprises the constructs of the technical, structural, strategic and managerial sub-systems. These constructs were analysed within a measurement model for viable performance first, and thereafter within a combined model. The same is true for organisational trust. The combined measurement model comprises the

viable performance and organisational trust models. It was expected that the combined model would produce different psychometric properties than the two individual models.

Organisational trust sitting right in the centre of the model in Figure 3.1 is conceptualised as pivotal to the viability of an organisation and its performance. Certain aspects closely related to the theoretical components mentioned in the model (such as recursion, the audit function [System 3\*], requisite organisational levels, span of discretion and span of activity, the performance scores themselves and correct strategic focus) can be found outside the borders of the model as constructs that are worth investigating further in future research.

The theoretical framework is reflected in Figure 3.1.



**Figure 3.1: The postulated model of viable performance and trust**

### 3.7 CHAPTER SUMMARY

In this chapter, the importance, the components and the definition of *viable performance* were considered. It was shown how viable performance is a theoretical concept derived from the work of Beer (1985) with additional theoretical constructs from other theoretical sources.



In the next chapter, the empirical design followed during both the exploratory and confirmatory phases of the research are discussed. Special attention is given to the objective of this study, the population and sample, the measuring instruments, the validity and reliability of these instruments, the data collection method and the statistical methodology.

## CHAPTER 4

### EMPIRICAL RESEARCH DESIGN AND METHODOLOGY

The literature reviews in Chapters 2 and 3 provided the theoretical basis for the variables in the study. This chapter will focus on the research methodology for the quantitative research approach. More specifically, the process that was followed during the empirical study, the subject sample, the tools of measurement and the data analysis techniques are elaborated.

#### 4.1 INTRODUCTION

The research design provides the foundation of the study and should follow a systematic and purposeful process (Saunders, Lewis, & Thornhill, 2009).

Chow (2002) is of the opinion that proper research differs from informal information gathering in that in proper research, data is systematically collected to answer a well-defined question and the research is conducted in line with a pre-determined design or plan. For Cooper and Schindler (2006), a proper research design has the following characteristics:

- the purpose is clearly defined;
- sufficient detail is provided;
- the designed is properly planned;
- adequate analysis (of the data and findings) takes place;
- research findings are presented unambiguously;
- research conclusions are justified properly;
- limitations are mentioned; and
- proper ethical standards are applied.

Chow (2002) describes how a proper research design follows the following path:

- a theory is proposed to explain a phenomenon using conceptual skills;
- deductive logic is then used to formulate a hypothesis or hypotheses from a specific body of theory;
- a research design or plan is subsequently used to collect data systematically;

- a potential interpretation is made from the data based on the inductive rule of logic that underlies the experimental design (i.e. making certain inferences from the data possible);
- appropriate statistical analysis is used to analyse and tabulate the data; and
- deductive logic is used to draw conclusions.

## 4.2 OBJECTIVES OF THE STUDY

The objectives of the present research were as follows:

### 4.2.1 General objective

The general aim of the research was to construct and test an integrated and comprehensive theoretical framework of viable performance and trust.

### 4.2.2 Theoretical objectives

The theoretical objectives from the literature review were as follows:

- to conceptualise viable performance measurement from the literature;
- to conceptualise trust in an organisation from the literature; and
- to conceptualise the elements and dimensions of a comprehensive and integrated theoretical model for viable performance and trust measurement in an organisation from the literature.

### 4.2.3 Empirical objectives

In Table 4.1, the research aims and hypotheses are displayed.

*Table 4.1*  
*The research aims and hypotheses*

Research aim	Research hypotheses
Research aim 1: To test the statistical validity and reliability of the developed viable performance indicator (VPI).	H01: The eight factors of the VPI model measurement model are not valid across all persons in terms of item fit, unidimensionality and bias.
	Ha1: The eight factors of the VPI model measurement model are valid across all persons in terms of item fit, unidimensionality and bias.
	H02: The eight factors of the VPI do not have internal consistency reliability (Cronbach's alpha $\geq$ .70).

Research aim	Research hypotheses
	Ha2: The eight factors of the VPI have internal consistency reliability (Cronbach's $\alpha \geq .70$ ).
Research aim 2: To develop a measurement model of viable performance to verify the theoretical model and to determine whether any new construct emerged.	H03: An eight-factor structure is not expected to relate to each other as part of the viable performance measurement model as follows: authority, accountability, autonomy, operational management, strategic execution, top management involvement, co-ordination of teams, the PMS.
	Ha3: An eight -factor structure is expected to relate to each other as part of the viable performance measurement model as follows: authority, accountability, autonomy, operational management, strategic execution, top management involvement, co-ordination of teams, the PMS.
Research aim 3: To confirm the statistical validity and reliability of the Trust Questionnaire for a security environment.	H04: The four factors of the organisational trust model are not valid across all persons in terms of item fit, unidimensionality and bias.
	Ha4: The four factors of the organisational trust model are valid across all persons in terms of item fit, unidimensionality and bias.
	H05: The four factors of the organisational trust model do not have internal consistency reliability (Cronbach's $\alpha \geq .70$ ).
	Ha5: The four factors of the organisational trust model have internal consistency reliability (Cronbach's $\alpha \geq .70$ ).
Research aim 4: To confirm the measurement model of trust for a security environment.	H06: A four-factor structure is not expected to relate to each other as part of the organisational trust measurement model as follows: information sharing, work support, credibility, team support.
	Ha6: A four-factor structure is expected to relate to each other as part of the organisational trust measurement model as follows: information sharing, work support, credibility, team support.
Research aim 5: To develop a combined model of viable performance and trust to verify the theoretical model and to determine whether any new constructs emerged in a security environment.	H07: There is not a strong positive relationship between the identified factors of viable performance and organisational trust (authority, accountability, autonomy, operational management, strategic execution, top management involvement, co-ordination of teams, the PMS, information sharing, work support, credibility and team support)
	Ha7: There is a strong positive relationship between the identified factors of viable performance and organisational trust (authority, accountability, autonomy, operational management, strategic execution, top management involvement, co-ordination of teams, the PMS, Information sharing, work support, credibility and team support)
Research aim 6: To determine invariance	H08: The biographical groups (age, gender, qualifications, proficiency, span of control and contact frequency) differ significantly in terms in terms of construct levels.

Research aim	Research hypotheses
existed for the group variables.	Ha8: The biographical groups (age, gender, qualifications, proficiency, span of control and contact frequency) do not differ significantly in terms in terms of construct levels.

### 4.3 RESEARCH DESIGN

Kerlinger (1986, p. 10) describes research as “... a systematic, controlled, empirical and critical investigation of natural phenomena guided by theory and hypothesis about the presumed relations among such phenomena”. Cooper and VandenBos (2013) note that the concepts and theories of psychology become more precise as psychology matures, and incorporate the advances in statistics, research design and new technologies.

The systematic nature of research requires a disciplined approach within certain categories. Mouton and Marais (1990) identify at least three categories of research design: explanatory, exploratory, and descriptive. The research in the present study was of an explanatory nature. Mouton and Marais (1990) note that an explanatory research design intends to find causality between events of variables. Additionally, in explanatory research, the researcher also wants to determine the direction of the causality between the variables or events.

For May (2001), the difference between positivism and empiricism is that positivism is theory-driven with the aim to test the accuracy of a theory. Empiricism, on the other hand, has the underlying premise that objectivity exists and does not explicitly depend on a theory guiding the data collection. The latter is essentially trying to work from data to theory and not the other way around. Bhattacharjee (2012) distinguishes between two categories of research: positivist methods and interpretive methods. Positivist methods, such as laboratory experiments and survey research, are typically aimed at theory or hypotheses testing. Interpretive methods include action research and ethnography chosen for theory building.

The present research therefore used positivist methods as a deductive approach to research was followed where theory and hypotheses were tested using empirical data and quantitative analysis.

Stevens (1968, p. 850) defines measurement as “the assignment of numbers to aspects of objects or events according to one or another rule or convention”. In the

present research, the process to assign numbers was part of a systematic process following a blueprint. A research design is the plan or blueprint needed to guide the research (De Vos, Delport, Fouchè, & Strydom, 2002). In line with Chow (2002), this blueprint or plan followed the following sequence in the present research:

- a theory was proposed in Chapters 2 and 3 to explain a phenomenon using conceptual skills;
- deductive logic was used next used to formulate the hypotheses from a specific body of theory;
- a research design or plan was subsequently used to collect data systematically;
- potential interpretation from the data was made based on the inductive rule of logic, which underlies the experimental design (i.e. making certain inferences from the data possible);
- appropriate statistical analysis was used to analyse and tabulate the data; and
- lastly, deductive logic was used to draw conclusions.

As an exploratory and descriptive research design was chosen for the purposes of the present research, the research questions were answered using quantitative analysis whilst statistical aspects, such as validity and reliability, were simultaneously accounted for.

On completion of the initial data gathering (survey completion) phase, and quantitative exploratory analysis, it was therefore essential to test whether postulated relationships between variables indeed existed.

The dependent variable (organisational trust) is a vital ingredient in effective performance management and measurement (Davis et al., 2000; Dirks, 1999; Karkatsoulis et al., 2005; Robinson, 1996). The magnitude of this positive relationship as well as the direction of the relationship between organisational trust and aspects of what is referred to as viable performance management was evaluated. The viable performance management systems model was primarily based on the work of Beer (1985) and has been applied to numerous organisations for better understanding of internal and external dynamics, including pathologies (Perez Rios, 2010).

In the present research, the independent variables were accountability, authority, strategic execution, operational management, top management involvement, team co-ordination, autonomy, and the PMS. Variables that were included but not measured on

an ordinal scale were proficiency, span of control (number of employees reporting to the same manager) and contact frequency.

#### **4.3.1 Participants**

The research was conducted using an SA private security services provider with approximately 36 000 employees and has been in existence for 57 years.

The organisation where the research was conducted sees leadership development, infrastructure, excellence and corporate governance and proactively staying in the frontiers of the security field as part of their value proposition. It values its commitment to transformation and training colleges as pioneering by developing, amongst other, first learnership programmes for security officers with SASSETA (Safety and Security Sector Education and Training Authority) (NQF Level 3). The current research was conducted using participants from this learnership.

The research sample of 352 taken from a total population of 400 participants in a learnership meant that 89% of the employees from this group participated in the research.

#### **4.3.2 The measuring instruments**

The measuring instruments were as follows:

##### ***4.3.2.1 Justification for using the instrument***

###### ***4.3.2.1.1 The Viable Performance Indicator (VPTI)***

The VPTI is a measure that is concerned with the organisational environment in which performance and organisational trust influence each other, referring to aspects such as viable organisational structure (Beer, 1985), the PMS and the effect of the MAH (Jaques, 1996).

Regarding the items referring to the organisational trust, the research used the Trust Questionnaire of Martins (2000) with the underlying measurement model. The other items of the VPTI were generated using the methodology that will be explained below in the phases of the instrument design.

#### 4.3.2.1.2 *The Trust Questionnaire*

Permission was granted by Martins to use The Trust Questionnaire (Martins, 2000) in the research. This questionnaire was chosen to measure the dependent variable, trust, especially because it deals with trust in the workplace. As trust measurement questionnaires often focus primarily on personality aspects (Büssing, 2002), the questionnaire with its focus on constructs such as credibility, work support, information sharing and team management fitted well with the total model of the present research.

The Trust Questionnaire was adjusted and used as an integrated part of the VPTI. More specifically, only the questions relating to managerial practices were used and questions relating to the Big Five (see 4.3.2.1.3) used by Martins (2000) were omitted. This was done to shorten the questionnaire and to remain focused aspects affecting performance measurement and trust.

#### 4.3.2.1.3 *Background to the Trust Questionnaire*

Martins (2000) says that in 1995/1996, the Centre of Industrial and Organisational Psychology at Unisa showed the possible importance of personal factors and managerial practices in terms of trust in organisations. In pursuit of a trust model, Martins (2000) therefore included the so-called “Big Five” personality measures (Costa & McCrae, 1992; Kramer & Tyler, 1996) in the Trust Questionnaire. This five-factor model is well known and accepted in the field of psychology (Denissen & Penke, 2008; John & Srivastava, 1999). Martins (2000) included 35 of these personality questions in the Trust Questionnaire.

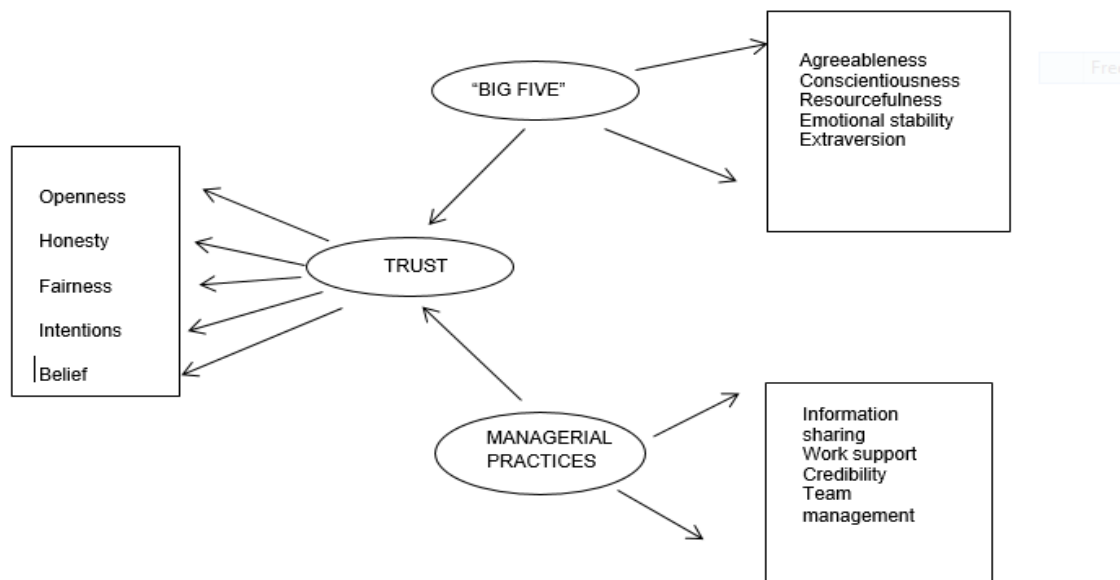
The five personality measures are –

- emotional stability (absence of nervousness or anxiety, depression, worry, i.e. moving away from neuroticism);
- extroversion (sociable and assertive tendencies as well as the experience of positive emotions and moving away from being introverted, quiet and reserved);
- openness to experience/resourcefulness (preference for novelty, broad-mindedness, creativity and moving away from close-mindedness);
- agreeableness (co-operation, tendency to trust, courteousness, co-operativeness, responsibility and a disposition towards tender-mindedness and moving away from coldness, rudeness and independence); and



- conscientiousness (i.e. a preference for order, persistence, determination, achievement, focusing on goals and moving away from irresponsibility).

In Figure 4.1, the “Big Five” personality measures and four components of managerial trust practices are depicted:



**Figure 4.1: The “big five” and managerial practices**

Source: Martins (2002, pp. 757–760)

Costa and McCrae (1992) believe personality measures, as enduring qualities, are important as they give an indication of how people will approach power and make decisions. A personality questionnaire then provides reasonable stable information of how people will react in certain situations.

The managerial dimensions in the model of Martins (2000, p. 757) were a result of the statistical analysis.

- **Credibility** – relates to the manager being willing to listen to subordinates, allows for mistakes, expression of feeling and submission of proposals. The manager also ensures that his or her subordinates are seen as prestigious and credible in the organisation.
- **Team management** – relates to the successful resolution of conflict in the group and the effective management of individual and group goals.

- **Information sharing** – relates to giving the subordinates honest feedback and information on aspects in the organisation and their performance levels.
- **Work support** – relates to the willingness of the manager to support his or her subordinates when required as well as to provide the necessary information related to their job activities to support them to achieve goals.

Martins (2000) also included in the questionnaire five questions about trust dealing with aspects of trust between the immediate supervisor and the employee. This aspect refers to dimensions such as fairness, honesty, intention to motivate employees and openness.

#### 4.3.2.1.4 *The psychometric properties of the Trust Questionnaire*

In Table 4.2 below, the Cronbach's alpha coefficients for the items of the Trust Questionnaire from Martins (2000, p. 29) are displayed.

*Table 4.2*  
*Cronbach's alpha coefficients for the items of the trust questionnaire*

Dimensions	Number of questions	Cronbach's alpha
Conscientiousness	8	0,929
Agreeableness	8	0,947
Emotional stability	5	0,870
Resourcefulness	7	0,871
Extraversion	7	0,887
Credibility	13	0,939
Team management	9	0,888
Information sharing	4	0,841
Work support	3	0,824
Trust relationship	5	0,908

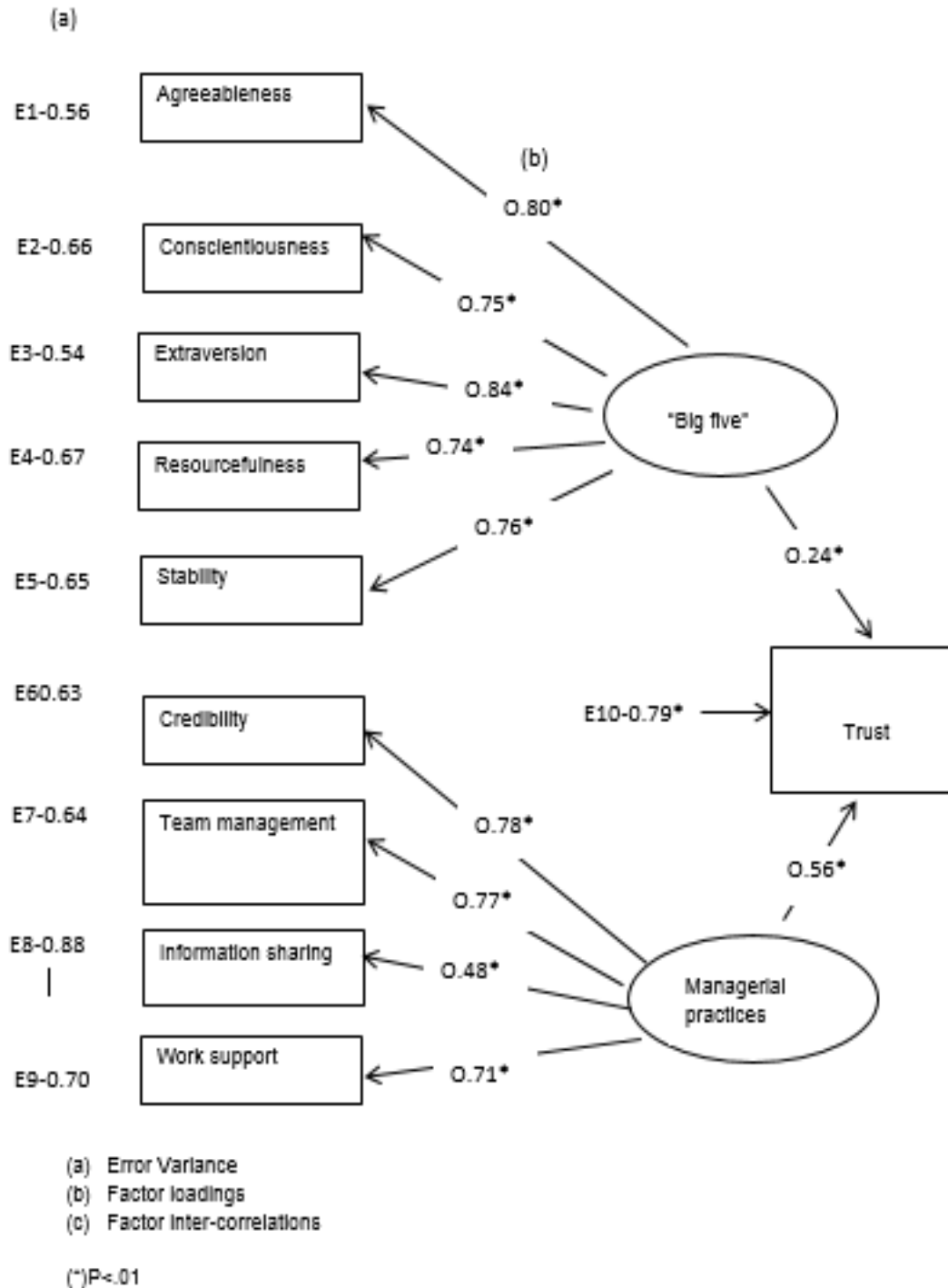
Source: Martins (2000, p. 29)

The reported GFI of the Trust Questionnaire was 0.95, the adjusted GFI (AGFI) was 0.91, the parsimony GFI (PGFI) 0.50, and the score on the comparative fit index (CFI) was 0.890 (Martins, 2000).

The reliability of the questionnaire reported was 0.82 and 0.95 for the five-factor model of personality characteristics as well as managerial practices (Martins, 2000). The correlation of the latter with trust was significant with factor inter-correlation was 0.580 (Martins, 2000).

Martins (2000) concluded in his research that the dimensions of the personality and managerial practices included in his questionnaire were indeed manifestations of the construct of trust with parameter estimates on the 5% significance levels. Martins (2000) reports that the relationship between trust relationships and managerial practices could be confirmed in his study. However, from the study of Martins (2000) it seems that the trust employees have in their managers is not directly related to their personalities.

The statistical parameters for the trust model of Martins (200) are depicted in Figure 4.2. Martins (2000) concluded from this empirical evidence that all the dimensions of the “Big Five” personality aspects and the managerial practices were manifestations of trust.



**Figure 4.2: Empirical evaluation of trust relationship model**

Source: Martins (2000, p. 30)

More recently, Van den Berg and Martins (2013) used the Trust Questionnaire in their studies and confirmed in their research the trust model of Martins (2000). As can be seen in Table 4.3, extraversion reflected in the study by Van den Berg and Martins (2013) the highest mean of 7.0113 and conscientiousness, the second highest mean

(6.8725). As far as managerial practices is concerned, team management had the highest mean of 3.9372; followed by trust relationship (3.9261). The results are reflected in Table 4.3 below.

**Table 4.3**

*The means and standard deviations of the dimensions of organisational trust*

Dimension		N	Mean	Standard deviation (SD)
Organisational trust				
Personality	Conscientiousness	203	6.8725	1.78531
	Extraversion	203	7.0113	1.53068
	Agreeableness	203	6.7204	1.91986
	Emotional stability	203	6.5596	1.89552
	Resourcefulness	203	6.6369	1.45027
Management practices	Trust relationship	203	3.9261	0.93250
	Credibility	203	3.6608	0.89743
	Work support	203	3.7968	1.12450
	Information sharing	203	3.5554	0.89778
	Team management	203	3.9372	0.97782
	Change which has occurred	203	3.0009	1.02827
	Interpersonal trust	203	3.6333	0.77020

Source: Van den Berg and Martins (2013, p. 78)

Van den Berg and Martins (2013, p. 81) remark that the factors within the Organisational Trust questionnaire show strong internal reliability with scores ranging from 0.602 on information sharing being the lowest to agreeableness with the highest score of 0.980. The results can be seen in Table 4.4 below.

**Table 4.4**  
*Results from the reliability analysis*

Dimension		Cronbach's alpha	N of items
Personality	Conscientiousness	0.954	8
	Extraversion	0.940	7
	Agreeableness	0.980	8
	Emotional stability	0.952	5
	Resourcefulness	0.852	7
Management practices	Trust relationship	0.941	5
	Credibility	0.944	25
	Work support	0.945	4
	Information sharing	0.602	4
	Team management	0.947	8
	Change which has occurred	0.940	11
	Interpersonal trust	0.874	9

Source: Van den Berg & Martins, 2013, p. 81)

Van den Berg and Martins (2013, p. 82) compared their Cronbach's alpha scores with those obtained by Von der Ohe, Martins & Rhooide (2004) as depicted in Table 4.5 below:

**Table 4.5**  
*A comparison of the alpha coefficients between van den Berg and Martins (2013, p. 82) and Von der Ohe et al. (2004)*

Construct	Von der Ohe et al. (2004)	Van den Berg and Martins (2013)
Trust relationship	0.93	0.94
Credibility	0.95	0.94
Agreeableness	0.95	0.98
Conscientiousness	0.93	0.95
Extraversion	0.89	0.94
Resourcefulness	0.87	0.85
Emotional stability	0.91	0.95

Note: Von der Ohe et al. (2004) included only trust relationship and credibility in their research. Further comparisons were therefore not possible.

Questions with high factor loadings on the managerial practices measure of the Trust Questionnaire were incorporated in the VPTI. The factor loadings from a study from Von der Ohe (2014) were used to identify these items. See Table 4.6 below for the list of items from Von der Ohe (2014).

*Table 4.6*  
*Rotated factor matrix*

Rotated factor matrix – management practices (N=10803 listwise)	Factor 1	Factor 2	Factor 3
q60 tm60 know what S expects	0,701	0,257	0,333
q59 tm59 S ensures same goals	0,674	0,313	0,332
q64 tm64 S expl how my work influences comp	0,613	0,348	0,230
q55 is55 S gives straight feedback	0,610	0,370	0,349
q58 tm58 S confronts culprits	0,607	0,230	0,241
q50 tm50 S ensures acceptable performance	0,594	0,381	0,340
q45 ws45 S gives information	0,567	0,321	0,413
q47 is47 S feedback on performance	0,560	0,402	0,353
q56 tm56 S handles conflict well	0,557	0,449	0,340
q66 cr66 S ensures prestige and credibility	0,541	0,474	0,340
q54 tm54 S freely talks/gives opinions	0,538	0,297	0,263
q57 is57 S reveals comp information	0,532	0,401	0,357
q65 ws65 S supports me when needed	0,529	0,451	0,428
q61 cr61 S encourages expr. feelings	0,512	0,455	0,325
q52 tm52 S conducts effective meetings	0,511	0,421	0,310
q67 cr67 S tells truth about future	0,499	0,444	0,309
q51 tm51 S is self-disciplined	0,491	0,377	0,406
q43 cr43 S analyses problems	0,485	0,418	0,428
q44 ws44 S is there when needed	0,479	0,361	0,443
q62 cr62 S keeps promises	0,475	0,467	0,411
q48 cr48 S accepts our decisions	0,321	0,673	0,334
q49 cr49 S implements our decisions	0,440	0,611	0,307
q68 cr68 S considers my proposals	0,419	0,607	0,348
q53 cr53 S accepts negative feedback	0,329	0,578	0,296
q41 cr41 S respects diff opinions	0,305	0,566	0,437
q46 cr46 S allows expression of feelings	0,388	0,509	0,435
q42 cr42 S listens and clarifies	0,402	0,508	0,437
q63 cr63 S tolerates mistakesa	0,263	0,481	0,233
q69 is69 S asks feedback on S performance	0,448	0,461	0,201
q39 tr39 S has good intentions	0,317	0,334	0,720
q36 tr36 has open and trusting relationship with S	0,289	0,324	0,707
q40 tr40 can believe what S says	0,325	0,306	0,693
q38 tr38 Fair judging of performance	0,318	0,306	0,676
q37 tr37 S reveals important facts	0,382	0,253	0,655

Note: Extraction method: maximum likelihood.

Rotation method: Varimax with Kaiser normalization.

a. Item with communality < 0,400

Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy: 0.988

Source: Von der Ohe (2014)

The questionnaire was designed for the SA market taking the local environment in consideration. Furthermore, the psychometric properties of the questionnaire, such as validity, reliability and fairness, were well documented and reproduced subsequent to the original validation studies.

#### *4.3.2.1.5 Other instruments used to design questions in the VPTI*

Although not directly obtained from a measuring instrument, the model of Beer (1985) strongly influenced the questions around the viability of the current organisational functions. Especially three questions related directly to this:

- I am capable of higher performance levels with the existing resources if I exert more effort (Question 40);
- When the constraints are removed, I can potentially achieve better performance results (Question 41); and
- When resources are increased, I can potentially achieve better performance results (Question 42).

#### **4.3.2.2 Development of the remaining items of the VPTI**

The objectives of the design of the VPTI questionnaire were –

- the research hypothesis had to be operationalised;
- the participants had to understand clearly what was asked; and
- data had to be obtained in a structured way.

The methodology of Kelly, Clark, Brown, and Sitzia (2003) was used to design the questionnaire. Kelly et al. (2003) summarise the phases for survey research as follows:

- planning the content of the questionnaire;
- deciding the layout of the questionnaire;
- deciding on the questions;
- piloting the questionnaire; and
- designing the covering letter.

More detail on each phase is provided below:

#### **Step 1: Planning the content of the questionnaire**

For Kerlinger (1986), the usefulness of surveys in research is hampered by at least two factors: low participation and an inability to ensure that the participant delivers work only.



Kelly et al. (2003) remark that the advantages of survey research are that the data is obtained from real-life events, a wider audience can be covered, and a large amount of data can be obtained in a relatively short time. The danger of this type of research, say Kelly et al. (2003), is that when a too large range of data is obtained in a single survey, detail and depth and a high response rate could be lacking.

Kelly et al. (2003) further say that, as far as planning is concerned, it is helpful to involve experts in the process, use tools that have been researched, and use tools that fit the purpose and participants.

Aspects of importance in planning a questionnaire according to Kelly et al. (2003) are

—

- the methodology used to generate items;
- the layout of the questionnaire;
- the selection of the target group sample;
- the methodology and project plan to distribute the questionnaire and get sufficient participation;
- the methodology used to extract and check the data;
- the data analysis itself; and
- how the questionnaire is supporting the analysis and the purpose of the analysis in the first place.

All these aspects will be addressed in the sections that follow.

## **Step 2: Deciding the layout of the questionnaire**

Kelly et al. (2003) believe the questionnaire layout should be clear and the questions should be presented properly. The questions should be ordered and numbered and appropriate headings provided. The questions should be asked properly to all participants and in the same order (Kelly et al., 2003).

Fowler (1995) is of the opinion that a good question provides meaningful information on the subject, provides answers that are comparable, is properly understood by participants and should be compiled in such a manner that participants would be willing to provide answers to the questions.

Fowler (1995) describes three steps a researcher could take to reduce response distortion:

- assure confidentiality;

- communicate the importance of response accuracy; and
- reduce the role of an interviewer.

Maintaining confidentiality reduces distortion (Fowler, 1995). Fowler (1995) believes confidentiality involves the minimising of identifying information as well as storing and disposing of the questionnaires appropriately. Fowler (1995) advises that the researcher should never have information indicating which participant produced which results.

Fowler (1995) claims a question should ask respondents about their first-hand experience and avoid information obtained second-handedly or by hearsay, is mere hypothetical information or speculating about causality, or being of a complex that impose assumptions or hidden contingencies.

Questions should be clear, with all respondents understanding their meaning with definitions provided if necessary. It is important that participants share meaning regarding the wording of the questions. This aspect also includes that the time periods referred to in questions should be unambiguous, referring to specific periods of time.

The wording of questions should be sufficient enough for participants to understand clearly what is being expected by the question. It is important that participants know exactly what a proper answer to a question constitutes. The answering of questions should therefore be made as easy as possible.

Lastly, all participants should be oriented in the same way to ensure consistency.

In the present research, the researcher adhered to all these criteria in the development of the questionnaire.

### **Step 3: Deciding the questions**

For the present research, the generation of items took place through thorough literature and theoretical research. The purpose of the questionnaire was to get participants to provide information about the situation at the organisation at the time of the research. Kelly et al. (2003) reasons a survey provides an impression of how things are at a given time. As there is no attempt to control or manipulate events or people's responses, a survey is especially suited for descriptive studies, exploring certain aspects of situations, seek explanations or test hypotheses (Kelly et al., 2003).

In the present research, the theoretical framework, as it was compiled from the literature, informed the constructs and the postulated relationships between the constructs. The constructs were organisational trust, accountability, authority, strategic execution, operational management, top management involvement, team co-ordination, autonomy, and the PMS. Variables that were included but not measured on an ordinal scale were proficiency, span of control (number of employees reporting to the same manager) and contact frequency.

Each of these aspects was researched in the current literature and operationalised as statements that participants had to rate according to a measurement scale.

The socio-demographic variables that were included in the study were age, gender, qualification, proficiency, span of control and contact frequency.

As far as deciding the measurement scale is concerned, it was noted from Fowler (1995) that the extent to which participants differ in their way of using the scale, may account for measurement error. A measurement scale therefore has to be clear, consistent and sufficiently differentiated.

A Likert-type scale was used to quantify the participants' responses. Participants had a choice to select on a 5-point scale to what extent they agreed or disagreed with a statement. The five points of the scale were provided with a qualitative description above the numbers 1 to 5 as follows: Strongly disagree, Disagree, Neutral/unsure, Agree or Strongly agree with a statement. The scale is depicted in Table 4.7 below.

*Table 4.7**Likert-type scale used in the questionnaire*

Strongly disagree	Disagree	Neutral/unsure	Agree	Strongly agree
1	2	3	4	5

In the case of some of the questions, a monkey puzzle format was followed where participants had to select the appropriate description. An example is provided in Table 4.8.

*Table 4.8**An example of a monkey puzzle-type question in the VPTI*

Below are statements on your current state of proficiency in your present job. Please mark the appropriate statement.	Mark <u>one</u> of the following as the appropriate level for you
I stick to taught rules or plans. At this stage I still have no discretionary judgment and still need lots of instruction.	
Sometimes I can use my own judgement, but I still need supervision/instruction for the overall job. I still find it difficult to distinguish priorities in my job.	
I have a basic understanding of my actions in relation to goals and I can plan tasks, formulate routines and am able to achieve most tasks using my own judgement.	
I can easily prioritise importance of aspects, note deviations from the normal patterns and standards and am able to take full responsibility for my own work.	
I have a deep, tacit understanding of my job and am able to take responsibility for going beyond existing standards and expectations.	

In some other questions, one qualitative description out of a selection had to be chosen. An example can be seen in Table 4.9.

*Table 4.9:*

*An example of question in the VPTI where participants selected a single statement from a list*

What is the frequency of contact with your manager?	Mark <u>one</u> of the following as the appropriate level for you
Several times an hour	
Every hour	
A few times a day	
A few times a week	
A few times a month	
A few times a year	
Almost never	

#### **Step 4: Piloting the questionnaire**

Kelly et al. (2003) advise that, in the piloting phase, a sample of the target population should be exposed to the process first to gauge whether the questions and instructions are clearly understood, questions are systematically viewed by participants, and sufficient response categories are provided.

A potential set of items were identified for inclusion based on relevance in terms of the theoretical framework. The VPI was shown to subject matter experts to scrutinise the items on the basis of face validity. Their feedback was used to amend the questions.

The following remarks were obtained:

- the questionnaire was too long;
- some questions were measuring more than one aspect;
- some questions were ambiguous or difficult to understand; and
- some measurements overlapped.

The questionnaire was adjusted appropriately and shortened to some extent. Each construct had to be measured with at least five items to enable proper statistical analysis. This resulted in constraints to shorten the questionnaire further.

As the Trust Questionnaire (Martins, 2000) also deals with measures regarding communication and operational management, it was decided to take items out of the original questionnaire to shorten it. Martins' (2000) operationalisation of these aspects was therefore accepted as covering these areas adequately.

### **Step 5: Designing the covering letter**

In the last phase, the cover letter was compiled. Kelly et al. (2003) advise that information should be provided about the aim of the study, how participants were selected, informed consent, potential benefits and harm as well as what will happen with the information obtained. The researcher should also provide contact details for further enquiries. The cover letter was attached as the first page of the questionnaire.

### **The administration and data collection methodology of the VPTI**

The survey was administered to a population of 400 participants, from whom 352 surveys were recovered. The methodology used was as follows:

- Permission was requested to distribute the VPTI questionnaires to the learnerships within their class sessions.
- The participants were briefed about the purpose and content of the survey and research, and opportunity was given to ask questions;
- The researcher subsequently read the front page (i.e. the covering letter) of the questionnaire out aloud and handed the participants the questionnaire.
- There were no time constraints and the researcher collected the completed surveys from the participants.
- The same procedure was followed with all three groups of the learnership programmes.
- The researcher's contact details were provided to the participants should they require more information or assistance.

### **Data analysis**

The responses obtained from the participants were captured in Excel format to perform certain analyses on. The purpose of the analysis was to confirm or reject the postulated hypotheses. In the first part of the analysis, descriptive statistics were used. Inferential statistics were subsequently used to obtain a deeper insight into the data.

The literature review informed the general hypotheses and statements. A total of 10 hypotheses were tested to determine whether statistically significant relationships existed between the independent and dependent variables as well as the inter-relationships between the variables.

The data was analysed using the Statistical Package for the Social Sciences (SPSS), version 20, IBM, 2011 (Arbuckle, 2011).

The statistical analysis is described in 4.3.3 below.

### 4.3.3 Statistical methods and strategies for analysing quantitative data

The statistical analysis conducted were as follows:

#### 4.3.3.1 Statistical procedures

The statistical procedures used in this research were:

- Descriptive statistics
- Inferential statistics
  - Reliability analysis
  - Validity analysis
  - Factor analysis (confirmatory factor analysis, or CFA)
  - Regression analysis
  - SEM (multi-group CFA)

The hypotheses with statistically significant relationships are displayed in Table 4.10 as follows:

*Table 4.10*  
*Statistical compilations of the data*

Research aim	Statistical procedure and chapter
Research aim 1: To conceptualise viable performance management.	<ul style="list-style-type: none"> <li>• Cronbach's alpha coefficient, Pearson's product-moment correlations and CFA.</li> <li>• Reported in Chapter 5</li> </ul>
Research aim 2: To develop a measurement model of viable performance to verify the theoretical model and to determine whether any new construct emerged.	<ul style="list-style-type: none"> <li>• Factorial validity (exploratory factor analysis, or EFA) and CFA (SEM)</li> <li>• Reported in Chapter 5</li> </ul>
Research aim 3: To confirm the statistical validity and reliability of the Trust Questionnaire for a security environment.	<ul style="list-style-type: none"> <li>• Cronbach's alpha coefficient, Pearson's product-moment correlations and CFA (SEM).</li> <li>• Reported in Chapter 5</li> </ul>
Research aim 4: To confirm the measurement model of trust for a security environment.	<ul style="list-style-type: none"> <li>• Factorial validity EFA and CFA (SEM)</li> <li>• Reported in Chapter 5</li> </ul>
Research aim 5: To develop a combined model of viable performance and trust to verify the theoretical model and to determine whether any new constructs emerged in a security environment.	<ul style="list-style-type: none"> <li>• CFA (SEM)</li> <li>• Reported in Chapter 5</li> </ul>

Research aim	Statistical procedure and chapter
Research aim 6: To determine whether invariance existed for the group variables.	<ul style="list-style-type: none"> <li>Comparing calculated means on the groups and invariance testing.</li> <li>Reported in Chapter 5</li> </ul>
Research aim 7: How can conclusions, limitations and recommendations be derived from the empirical study?	<ul style="list-style-type: none"> <li>Reported in Chapter 6</li> </ul>

Each of the techniques is described shortly below:

#### 4.3.3.1.1 *Descriptive statistics*

- **Mean**

McDonald (2008) describes the arithmetic mean as the sum of the values obtained on measure divided by the number of values on the measures. Descriptive statistics are especially useful in cases of normal distribution of data (see McDonald, 2008).

- **Standard deviation (SD)**

McDonald (2008) says the SD shows the distance of measures from the mean. In other words, it shows the amount of variation between individual measures. Thompson (2009) argues that, as a measure, the SD minimises the effects of data outliers on the calculation of variance of all the measures in a sample. It represents a measure of the average distance a measure lies from the mean (Thompson, 2009).

The SD provides a better estimate of the parametric SD of the total population as the sample size increases (McDonald, 2008). McDonald (2008) avers that, if the measures fit a normal probability distribution, 68.3% of the values would be within one SD of the mean, 95.4% within two SDs, and 99.7% within three SDs.

- **Correlation analysis (Pearson's product-moment correlational analysis)**

McDonald (2008) says correlation is used to determine whether measures covary and if so, what the strength of this relationship between these variables is. When a relationship is found, the researcher might want to determine whether it is a cause-and-effect relationship (McDonald, 2008).

The Spearman correlation coefficient is used to see whether the ranks of variables covary, and is often used as a non-parametric alternative to correlation or regression analysis (McDonald, 2008).



The Pearson product-moment correlation (PPMC) was used in the present research. The PPMC is parametric and is calculated from the sample covariance of the values on the measures of the sample. Thompson (2009) believes that, because Pearson's coefficient can be used descriptively, it is often used as an inferential statistic. A correlation of +1 would mean that there is a perfect positive linear correction between two variables while -1 would mean a perfect negative linear relationship between the variables.

Cook, Netuveli, and Sheikh (2004) warn that the Pearson's product-moment correlation – although widely used – should be guarded against when there are a number of outlier data items, as the PPMC is sensitive to deviations from normality. Significance tests should subsequently establish the likelihood that chance was responsible for the correlation coefficients. The square of the Pearson correlation coefficient provides a meaningful value of the amount of variation of a variable that can be explained by another variable (Cook et al., 2004).

#### 4.3.3.1.2 *Reliability analysis*

To confirm the reliability (internal consistency) of the postulated factors of the VPI, a Cronbach's alpha was used. The purpose of the coefficient is to determine the degree of accuracy or reliability of the items in measuring the factors.

The measure is concerned with the average of the inter-correlations between items and the coefficient alpha (Cronbach's coefficient). This reliability is concerned with the test components, and measures how well the items measure a characteristic within the questionnaire.

The range of the Cronbach's alpha coefficient is 0 to 1.00, with values close to 1.00 indicating high internal consistency. Wells and Wollack (2003) claim a researcher can increase the reliability score of tests by increasing the number and quality of items.

For purposes of the present research, the threshold of the coefficient was deemed as significant at  $\alpha \geq 0.70$ .

Drost (2011) says reliability refers to the extent to which measurements are repeatable, including when various people conduct the measurements, as well as on different occasions and conditions with alternative instruments, which measure the same entity. Bollen (2007) sees reliability as that part of a measure that is free of random error. Reliability is about a correlation between an independent criterion and the test

outcomes either concurrently (concurrent validity) or after the initial measure (predictive validity).

Four types of validity can be distinguished: predictive validity, concurrent validity, content validity and construct validity. *Predictive* and *concurrent* validity is about the researcher trying to predict some criterion (Cronbach & Meehl, 1955).

*Content* validity is about showing that the sample items of a questionnaire are representative of the total possible test items and are determined deductively (see Cronbach & Meehl, 1955).

Cronbach and Meehl (1955, p. 176) say, “construct validity must be investigated whenever no criterion is universe of content is accepted as entirely adequate to define the quality to be measured”. *Construct* validity had to do with “A numerical statement of the degree of construct validity would be a statement of the proportion of the test score variance that is attributable to the construct variable” (Cronbach & Meehl, 1955, p. 186). The researcher wants to establish which constructs account for the variance in test scores. A construct is defined implicitly by a network of associations or proportions in which it occurs (Cronbach & Meehl, 1955, p. 200).

Wells and Wollack (2003) are of the opinion that reliability gives an indication of measurement error. This measurement error is caused by factors such as motivation, concentration, fatigue, boredom, momentary lapses of memory and/or carelessness in the completion of the questionnaire by the subject and/or test-specific factors, such as the type of questions, ambiguous items, poor directions, and/or scoring-specific factors, such as poor scoring guidelines, carelessness, or scoring errors.

Drost (2011) reasons that reliability could be increased by making a questionnaire longer, writing clearly and making instructions as clear as possible. Long questionnaires however have an obvious disadvantage, i.e. participants get bored or do not have the time or energy to complete it with sufficient concentration and truthfulness. It is acknowledged that the questionnaire in the presents research was lengthy. The number of constructs was reduced to the minimum to compensate for this.

If the items are measuring the same underlying concept, then each item should correlate with the total score of the questionnaire or domain (Priest, McColl, Thomas, & Bond, 1995).

#### 4.3.3.1.3 *Validity analysis*

Drost (2011) sees validity as a measure to determine whether a questionnaire is measuring what it is intended to measure. In line with Bowling's (1997) advice, the VPI questionnaire was compiled from the literature reviews as well as conversations with human resource (HR) practitioners as subject matter experts and possible respondents. This was to ensure content validity.

Cook and Beckman (2006, p. 166) say, "validity describes how well one can legitimately trust the results of a test as interpreted for a specific purpose." In terms of this view, "the results of any psychometric assessment have meaning [validity] only in the context of the construct they purport to assess".

Validity can be tested against five sources (Cook & Beckman, 2006):

- the content (whether the items are representative of the full construct);
- the response process, i.e. the relationship between the measured construct and the perceptions of subjects;
- the internal structure (the reliability and factor structure);
- the correlation with scores from another instrument presuming assessing the same construct(s); and
- the consequences (whether scores really make a difference in reality/practice).

In the initial development of the questionnaire, face validity was used. Factorial validity (EFA) was used to determine the content validity of the VPTI.

#### 4.3.3.1.4 *Structural equation modelling (multi-group CFA)*

SEM is the multivariate analysis technique that was used to determine the relationship between the constructs of the Trust Questionnaire and the VPI to test the postulated model or to inform the structure of alternative models. CFA, path analysis and regression analysis were used within this analysis to determine relationships between the variables. The GFI (goodness-of-fit) tests that were used were:

- chi-square ( $\chi^2$ );
- root mean square error of approximation (RMSEA);
- normed fit index (NFI);
- non-normed fit index (NNFI);
- goodness-of-fit index (GFI); and
- adjusted GFI (AGFI).

For Ullman (2006), SEM is a collection of statistical techniques (CFA, path analysis and regression analysis) that determine the relationships between one or more independent variables and one or more dependent variables. It provides information about the significance of relationships among variables (or items) within the postulated theoretical model as well as the best fit of theory to data. It is mostly used to test postulated models.

Rabe-Hesketh, Skrondal, and Pickles (2004) argue that SEM is used when variables cannot be measured directly. Sets of items (such as in the case of this research) reflecting postulated constructs are measured and dependence between them determined.

SEM is widely used in the behavioural sciences (Hox & Bechger, 2007). Hox and Bechger (2007) aver that SEM provides a structure of covariance between variables or factors and can be seen as a combination of factor analysis and regression or path analysis.

For Hox and Bechger (2007), SEM has its origins in path analysis. A path diagram (Wright, 1921) is found where a schematic representation of the causal relationships is drawn.

For Ullman (2006), one of the biggest advantages of SEM is that when relationships among factors are measured, measurement error is theoretically estimated and removed to expose common variance only. The same is true for reliability of measurement where measurement error is removed (Ullman, 2006).

SEM is based on covariances, which are less stable when estimated from small samples, hence the 352 test subjects selected in this study. In the present research, the null hypothesis was assessed on covariances between data characteristics and the variables of the postulated model.

Generally, sample sizes of more than 200 are needed for SEM analyses (Hair et al., 2006).

- ***Characteristics of structural equation modelling***

Weston and Gore (2006) see SEM as a hybrid between factor and path analysis. The goal is to get to an understanding of the interrelationships between variables using as little as possible resources. The added value in SEM is that it tests the relationship

between constructs. In SEM, multiple measures are used to represent constructs, and measurement error is provided for whilst allowing researchers to measure construct validity (Weston & Gore, 2006). Weston and Gore (2006) echo the view of other researchers that the power of SEM is in postulating relationships a priori and only then testing the relationships.

Ullman (2006) describes certain conventions that are used in SEM diagrams:

*Measured or observed variables* are shown by squares or rectangles. *Factors* (or *latent variables* (LVs) (Streiner, 2006) are shown by using ovals in the path diagrams, while rectangles are used to represent the measured variables (Streiner, 2006). The lines between blocks or circles indicate *relationships between variables*. Where there is no line connecting variables there is no direct relationship. Lines can have either one or two arrows. One arrow indicates a *hypothesised direct relationship* between variables. Where a line has an arrow at both ends, *covariance* with no implied direction of effect is implied. The circles show *disturbance or errors* (Streiner, 2006). Hox and Bechger (2007) explain how squares or rectangular boxes in these diagrams represent *observed or measured variables* while circles or ellipses indicate *latent or unmeasured variables*. The unexplained variances from these unknown variables indicate the ignorance from which these variances originate and possibly from unmeasured factors or chance variance (Iriondo, Albert, & Escudero, 2003).

Single-headed arrows show the direction of causal relationships (regression coefficients) and double-headed arrows, covariance or correlations (Hox & Bechger, 2007).

Above each line with an arrow is displayed a number called the *path coefficient*. This number is equivalent to the factor loadings in EFA (Streiner, 2006) and can range from -1.0 to 1.0, indicating the strength of the relationship. The numbers above the variables are called the *squared multiple correlations* (SMCs) and they reflect the squared values of the path coefficients explaining how much of the variance in one variable is explained (or is common) in the other connected variable.

Weston and Gore (2006) note that measurement and structural models can be distinguished in SEM. The measurement model refers to the description of the relationships (also called *parameters* or *paths*) between the observed variables (in the case of the present research, the item responses on the VPTI) and the hypothesised

constructs. The structural model describes the interrelationships among constructs (Weston & Gore, 2006).

Three types of parameters can be distinguished (see Weston and Gore, 2006): directional effects, variance and covariance.

The term *directional effects* refers to factor loadings (the relationships between variables and indicators) and path coefficients (the relationships between LVs and other LVs) (Weston & Gore, 2006).

As mentioned earlier, in SEM, error can be accommodated, rendering it a powerful technique (Weston & Gore, 2006).

For Weston and Gore (2006), the term *covariance* refers to non-directional relationships between variables.

- ***Steps of SEM analysis***

Streiner (2006) regards SEM is an extension of path analysis, which is an extension of multiple regression analysis. Rabe-Hesketh et al. (2004) share how SEM is used when variables cannot be measured directly. Sets of items (in the case of the present research) reflecting postulated constructs are measured and dependence between them determined. In the opinion of Rabe-Hesketh et al. (2004), the relationships between factors and observed variables (the structural part of the model) confirm or define a model.

Weston and Gore (2006) argue that the steps in SEM are model specification, model identification, data preparation and screening, model estimation, evaluation of fit, and modification.

- ***Model specification***

Streiner (2006) agrees with Weston and Gore (2006) that the first step in SEM is the model specification stage. This is the most important step setting up the model through theoretical knowledge. Streiner (2006) believes the primary cause of poor fitting is providing insufficient models. Streiner (2006) reminds us that knowledge and previous research should guide the model and not a mere reliance on statistical criteria in CFA. The theoretical model for the present research is portrayed in Figure 3.1.

Iriondo et al. (2003) describe how, in the specification step, the hypotheses are put in a series of equations represented in a causal or a path diagram showing the

relationships between all variables. These relationships are based on previous research, experience or theoretical models. The path diagram shows the causal relationships in the postulated model.

De Carvalho and Chima (2014) explain that this step involves stating a model by determining which parameters should be fixed and which should be free. For Bollen (2007), specification is the step to identify the LVs.

- ***Model identification***

Weston and Gore (2006) refer to the next step as identifying the model. The sometimes-complex output is then perused by focusing on each CFA to determine the paths from LVs to measured variables and from the LVs to other LVs (Streiner, 2006).

Streiner (2006) advise that aspects of importance are whether the relationships are significant, whether they are positive or negative, and whether the model should be amended by dropping or including other measures. Streiner (2006) argues that the magnitude of the correlations between variables is affected by the degree to which the constructs are related as well as the reliabilities of the questionnaires.

For De Carvalho and Chima (2014), this step involves having at least one unique solution for each parameter estimate.

Iriondo et al. (2003) confirm that this step involves checking whether the parameters of the postulated model can indeed be confirmed from the observable variances and covariances.

- ***Data preparation and screening***

The size of the sample affect aspects such as the reliability of parameter estimates, model fit, and ultimately the statistical power (Shah & Goldstein, 2006). As far as sample size is concerned, Schreiber, Nora, Stage, Barlow, and King (2006) are of the opinion that, although sample size is important in SEM, it is affected by the normality of the data as well as the estimation method used. This norm on sample size specifies 10 participants for every parameter to be estimated (Schreiber et al., 2006).

Weston and Gore (2006) say the data in SEM is represented as the variances and covariances in the compiled covariance matrix of the sample. Data points are the number of non-redundant sample variances and covariances, and should be more than the parameters in SEM (Ullman, 2006). The number of parameters is calculated by

adding the regression coefficients, variances and covariances to be calculated (usually indicated by way of asterisks in a diagrams) (Ullman, 2006). If there are too few data points, the model is under-identified and parameters cannot be identified (Ullman, 2006). Ullman (2006) suggest that parameters can be deleted or reduced by setting their values as fixed (setting it to a specific value) or constrained (setting its value equal to that of another parameter).

Shah and Goldstein (2006) say that, as far as data analysis is concerned, the researcher is looking for distributional characteristics and generating an input matrix, which will influence the researcher's choice of estimation methods and even the software chosen for the analysis. This also involves looking for missing data, influential outliers and distributional characteristics (Shah & Goldstein, 2006).

- ***Model estimation***

In this step, the value of the unknown parameters is estimated (Iriondo et al., 2003).

Schermelleh-Engel, Moosbrugger, and Müller (2003) explain that SEM is used to determine whether the covariance matrix of an implied model is equivalent to the empirical covariance matrix. However, according to these authors, as different measures of fit differ in conclusions about the extent of fit, it is not always an easy task to get to a conclusion of fit. Therefore, it is important that the researcher stipulate the method of estimation and elaborate on the relationship with the properties of the observed variables as the estimation method, data normality, sample size and the model specification are interlinked and should be consider as such by the researcher (Shah & Goldstein, 2006).

Bollen (2007) argue that, in the estimation step, aspects such as maximum likelihood (ML), generalised least squares (GLS), unweighted least squares (ULS) and weighted least squares (WLS) can be calculated. Olsson, Foss, Troye, and Howell (2000) are of the opinion that ML, GLS and WLS would produce similar results under ideal circumstances.

ULS estimates are consistent, have no distributional assumptions or associated statistical tests and are scale-dependent, i.e. changes in observed variables scales yield different solutions or sets of estimates. For Shah and Goldstein (2006), ULS is the simplest method of estimation as it has no distributional assumptions, is the most



used method, but is on the downside scale-invariant, lacking fit indices or standard errors (SEs) for estimates.

Of these methods, ML is the most frequently used (Iriondo et al., 2003). This was also the preferred estimate in the present research due to the relatively small sample size (i.e. 352 participants). Schermelleh-Engel et al. (2003) believe that the benefit of ML is that it allows for model fit for over-identified models and that it is in general scale-invariant and scale-free. The disadvantage is its strong assumption of multivariate normality, which is often problematic in practice (Schermelleh-Engel et al., 2003). The Satorra–Bentler scaled  $\chi^2$  can be computed to correct for non-normality.

- ***Evaluation of fit or model testing***

After the non-contributory variables have been dropped (or new ones added), the next step would be to look at the overall fit of the model. This is done with the various indexes of fit.

In this step, it is assessed whether or not the postulated model fits the data (Iriondo et al., 2003). The GFI test is used for this.

Hooper, Coughlan, and Mullen (2008) warn that a researcher can easily be overwhelmed by the range of indices of fit between the postulated model and data as great disagreement exists between theorists on the usefulness and cut-off points. Whilst at the extreme, theorists have even requested the abolishment in full of these indices due to the disparity, Hooper et al. (2008) advise that researchers should rather acquaint themselves with the most respectable techniques and best practices, and report on these indices.

Two indices can be distinguished: *absolute fit indices* and *incremental fit indices* (Hooper et al., 2008). The *absolute fit index* provides an indication of how well the postulated model fits the data compared to no model. The chi-squared test, RMSEA, GFI and the AGFI are examples of this type.

- ***Chi-square ( $\chi^2$ )***

Hoe (2008) explains that the  $\chi^2$  is also a very common statistic of fit where a  $\chi^2/\text{d.f.}$  ratio of 3 or less is desired. The calculated chi-square ( $\chi^2$ ) value is used to measure actual and predicted matrices. A low score, or non-significant value, indicates that there is not a considerable difference between the actual and predicted matrices.

Hooper et al. (2008) are of the opinion that the chi-square method remains popular despite large statistical problems. As it assumes multivariate normality and severe deviations from normality, model rejections based on false premises might occur. Secondly, as a statistical significance test, chi-square is both sensitive for large sample sizes (as it almost always rejects models tested with too large sample sizes) or may not discriminate sufficiently between models with small sample sizes.

- ***Root mean square error of approximation (RMSEA)***

Steiger (1990) explains that the RMSEA index measures the difference between the measured and estimated covariance matrices per degree of freedom. The values are not affected by sample size and are measured on a continuum from 0 to 1. A value less than 0.05 is taken as a good fit, a value between 0.05 and 0.08 as a reasonable fit and a value between 0.08 and 0.10 as a mediocre fit.

Hooper et al. (2008) reason that the RMSEA index indicates the fit of the model to the population's covariance matrix. Especially in recent years, this technique has become popular as an informative fit index due to being sensitive to the number of estimated parameters in models as well as providing for a confidence interval (Hooper et al., 2008).

- ***Goodness-of-fit index (GFI)***

Hoe (2008) remarks that, as far as the GFI value of the model is concerned, the null hypothesis in SEM is the hypothesised model. A high  $p$ -value (i.e. probability value) is desired as it is an indication that the observed model is not significantly different from what was expected.

Hooper et al. (2008) note that this index looks at how closely the model replicates the observed covariance matrix. When factor loadings and sample sizes are relatively small, a cut-off of 0.95 should be applied. Ordinarily a cut-off of 0.90 is accepted (Hooper et al., 2008).

Downsides of this technique are that the GFI increases as the number of parameters increases, and that it has an upward bias with large samples (Hooper et al., 2008).

- ***Adjusted goodness-of-fit Index (AGFI)***

The AGFI is similar to the GFI, with one difference, namely that the degrees of freedom are adjusted with more parsimonious models moving away from complicated models

(Hooper et al., 2008). In AGFI, the sample size is also increased. The values also range between 0 and 1 with a value of 0.90 or greater indicating a proper fit.

Hooper et al. (2008) believe that, being so susceptible to sample sizes, cause the GFI and AGFI to be indices that should not be used in isolation. Hooper et al. (2008, p. 54) however recommend that, due to their “historical importance”, these values should be reported on in research findings.

*Incremental fit indices* (also known as *comparative* or *relative fit indices*) compare the chi-square value to a baseline model assuming that all variables are uncorrelated as the null hypothesis (Hooper et al., 2008). Techniques under this umbrella include the normed fit index (NFI), non-normed fit index NNFI and the comparative fit index (CFI).

- ***Normed fit index (NFI)***

Hooper et al. (2008) describe the NFI as a statistic assessment where the  $\chi^2$  value of the model to the  $\chi^2$  of the model is compared to that of the null model. The null model (also known as the *independent model* assumes that all measured variables are uncorrelated. The values for this statistic range from 0 to 1 with a recommended cut-off criterion of  $NFI \geq .95$  (Hooper et al., 2008).

- ***Non-normed fit index (NNFI)***

Hoe (2008) explains that the NNFI (sometimes referred to as the Tucker–Lewis index, compares the fit of a proposed model to a nested baseline or null model and measures the degrees of freedom from the proposed model compared to the degrees of freedom of the null model. For Hoe (2008), an acceptable threshold for the NNFI is 0.90 or larger.

- ***Comparative fit index (CFI)***

Hoe (2008) sees the CFI as a non-centrality parameter-based index meant to overcome the limitation of small samples. The CFI values range from 0 to 1, with 0.90 or more being acceptable as an acceptable fit.

- ***Model modification or specification***

De Carvalho and Chima (2014) claim this step involves making model adjustments through specification searches. Iriondo et al. (2003) remark that this step is about finding a model that approaches reality and not just the sample (the data at hand). One way to achieve this is through multisampling analysis (see Iriondo et al., 2003).

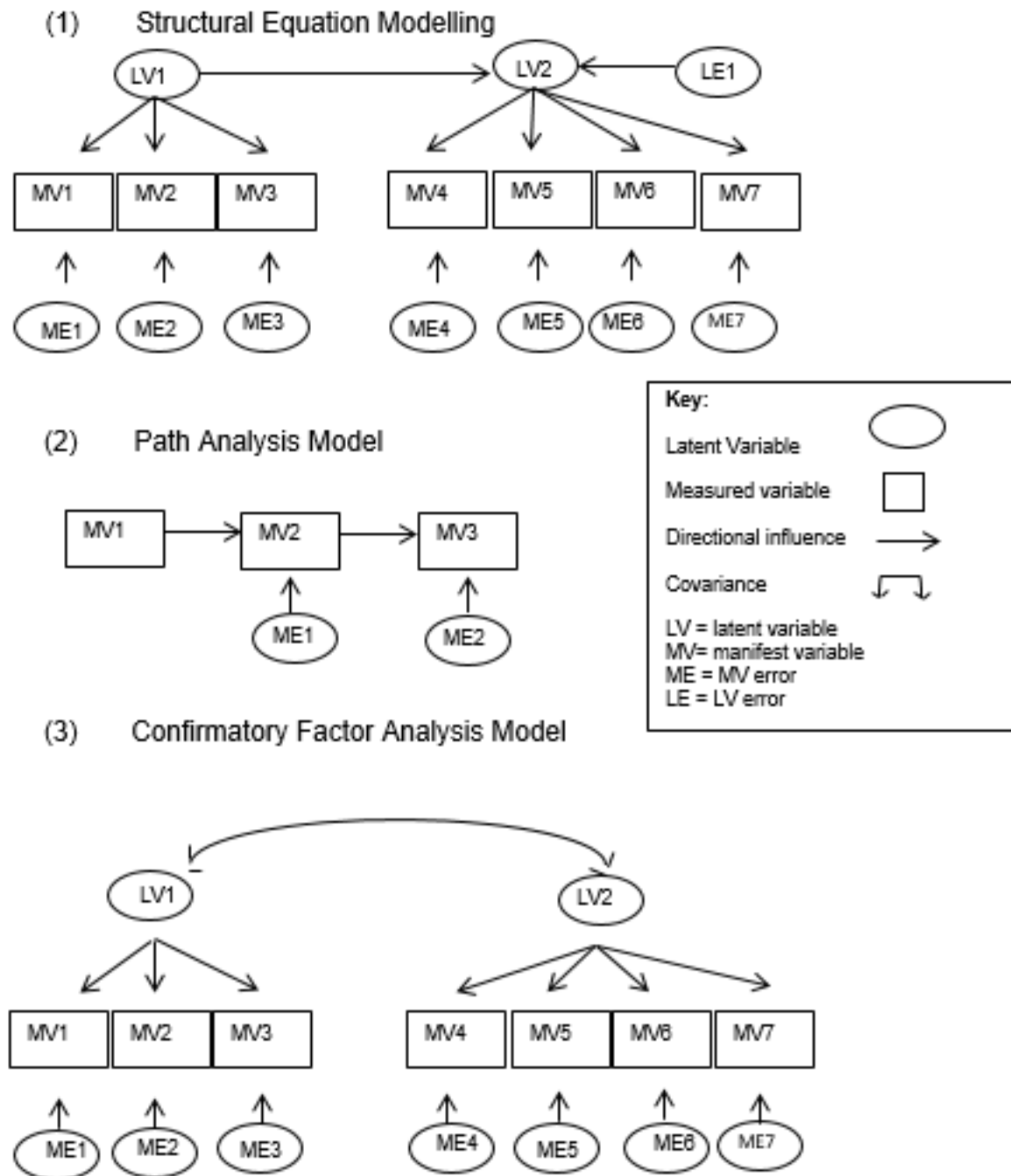
Anderson and Kellogg (1988) believe respecification should not be a statistical consideration only but theory and content considerations should also be kept in mind. According to these authors, this would reduce the number of alternative models to investigate and also the threat of taking advantage of the sampling error of the analysis.

In the step of respecification, convergence can be obtained for adjusting indicators to different constructs or excluding them from the analysis (Anderson & Kellogg, 1988). Anderson and Kellogg (1988) name as possible causes for inappropriate models the following:

- an incorrect model;
- sampling variations together with true parameter values being close to zero;  
and
- under-identification of the model.

Bollen (1989) is of the opinion that identification is about the sufficiency of variables and whether that information is sufficient to apply the equations to estimate coefficients and matrices.

Shah and Goldstein (2006) claim that path analysis (PA) models specify patterns of manifest variables. LVs (latent variables) in such an analysis are not available and therefore the analysis is used for testing structural relationships among MVs (manifest variables) (Shah & Goldstein, 2006). In the case of CFA, LVs and MVs should be specified before the analysis. In the schematic representation in Figure 4.3, the difference between SEM, PA and CFA is depicted.



**Figure 4.3: Schematic representation of SEM, path analysis and GFA models**

Source: Shah & Goldstein (2006, p. 150)

- **Advantages of SEM**

Structural equation modelling (SEM) has an advantage over standard multiple regression in that measurement error can be represented and estimated as it is controlled for (Kline, 2013). SEM can also simultaneously analyse multiple outcomes

(criteria) compared to a single criterion in standard multiple regression. Research in SEM is therefore more realistic (Kline, 2013).

It is common but poor practice in SEM to base the decision about whether to retain the model solely on values of model test statistics or approximate fit indexes while ignoring the residuals, or differences between observed (sample) covariance and those predicted by the model. If these residuals are excessively large, the model should be rejected even if values of its fit statistics look favourable (Kline, 2013, p. 212).

Kline (2013) reason that, if several of the absolute correlation residuals exceed 0.10, the postulated model should be rethought.

Weston and Gore (2006) argue that, although there are many new, easy-to-use software programs increasing the accessibility of the method, the method still requires a great deal of judgement from the researcher to be correctly interpreted. The power of SEM lies in its ability to use multiple measures to represent postulated constructs whilst guarding against measure-specific error allowing researchers to determine the construct validity of factors (Weston & Gore, 2006).

For Ullman (2006), path diagrams are essential for SEM as they allow the researcher to diagram the relationships between hypothesised relationships in the model. Streiner (2006) sees SEM as an extension of path analysis, and path analysis is an extension of multiple regression analysis. SEM allows for graphical paths to be visualised between LVs (or hypothetical constructs) but through their effect through the questionnaires (Streiner, 2006).

Ullman (2006) suggests at least three questions that can be answered with SEM:

- Does the postulated model (with the estimated structured covariance matrix) represent covariance matrix (estimated unstructured covariance matrix) of the measured sample?
- What are the relationships among the measured variables?
- Which model indicates the best fit to the data?
- Factor analysis (confirmatory factor analysis [CFA])

Factor analysis assisted in the identification, conceptualisation and operationalisation of performance measurement in an organisation to pursue the development of a valid and reliable measure (i.e. the VPTI).

Wells and Wollack (2003, p. 3) believe validity refers to –

[T]he extent to which the inferences made from a test ... [are] justified and accurate. Ultimately, validity is the psychometric property about which we are most concerned. However, formally assessing the validity of a specific use of a test can be a laborious and time-consuming process. Therefore, reliability analysis is often viewed as a first-step in the test validation process. If the test is unreliable, one needn't spend the time investigating whether it is valid – it will not be. If the test has adequate reliability, however, then a validation study would be worthwhile.

Factor analysis was used to confirm that the factorial structure of the VPTI measurement scale was equivalent for the functional, structural and strategic and trust subgroups. It was also used to confirm that the factorial structure of VPTI measurement scale was equivalent for age, gender, qualification, proficiency, span of control and contact frequency subgroups.

In line with the advice by Agius, Blenkin, Deary, Zealley, and Wood (1996), items with general loadings of 0.40 on more than one factor as well as weak loadings (failing to load above 0.39 on a factor) were regarded as weak items.

Ullman (2006) claims EFA is an exploratory technique where a set of variables and hypotheses about the relationships are tested to determine the underlying structure. The researcher does not fully understand the nature of the structure (Ullman, 2006). The present research aim to determine how many factors existed, what the relationships between factors were as well as how the variables (or items) were associated with the factors (Ullman, 2006).

Hox and Bechger (2007) believe a basic assumption of factor analysis is that the covariances between variables could be explained by a smaller number of latent factors. In the case of EFA, no prior assumptions exist about the number of these latent factors or the relationships with the observed variables. As it is assumed that all variables measure on all factors, a number of statistical methods (e.g. the Varimax rotation) could be used to interpret the results (Hox & Becher, 2007).

CFA is used (see Hox & Bechter, 2007) for the following reasons:

- it provides estimates of the parameters (i.e. factor loadings, variances and covariances of the factor and residual errors) of the observed variables; and
- it determines the fit of the model to the data.

In the path analysis diagram mentioned earlier the arrows from the factors to the observable variables represent the factor loadings. As the latent factors do not explain

the variation completely, the residual error is also shown in the representation (Hox & Bechter, 2007).

- ***Regression analysis***

In the present research, this statistical technique was used to predict the level of trust from the subscales of the VPTI. It was also used to determine whether the socio-demographic variables could significantly predict organisational trust.

Nathans, Oswald, and Nimon (2012) describe multiple regression analysis as a statistical technique used to consider the role(s) that multiple independent variables fulfil in the explanation of variance of a dependent variable. Cohen, Cohen, West, and Aiken (2003) argue multiple regression is a flexible statistical data analysis methodology where relationships between independent and dependent variables can be non-linear, quantitative or qualitative and the effects can be measured using single or multiple variables.

Nathans et al. (2012) warn against the effect of multi-collinearity where the correlations between the independent variables are significantly high, making clear-cut interpretation of variable importance difficult. According to these authors, the more predictors there are in a model, the greater the potential for multi-collinearity of some association between variables. Such influences emphasise the point of variable importance and therefore understanding the ways variables are operationalised, the different possible meanings of the variables, and how variables affect each other and the dependent variable.

#### **4.4 CHAPTER SUMMARY**

In this chapter, the research methodology and the rationale for statistical techniques were discussed. Each statistical technique was briefly explained as well as how it was used in the present study to test the hypothesis. The sample that was used in the research was also described as well as the methodology to select the participants.

The results of the analysis are presented in the following chapter.



## CHAPTER 5

### RESULTS OF THE EMPIRICAL RESEARCH

This chapter commences with a description of the biographical and demographic variables. Following that, the validated performance model and the results are reported through a factor analysis followed by item analysis. The same procedure was followed for the trust model, after which the models were combined and calculated averages compared on the selected biographical and demographic variables. Invariance testing was done on only two of the biographical variables of the trust model due to the limited size of the sample. The results are reported here. Lastly, testing of the models by means of SEM is reported.

The chapter will end with a summary of the findings and an introduction to the next chapter.

#### 5.1 BIOGRAPHICAL AND DEMOGRAPHIC PROFILE OF THE SAMPLE

The sample consisted of  $n=352$  employees out of a population of 400 (88%) who attended the training in a security solutions organisation. The training centre of the organisation is situated on the West Rand in Gauteng, a province of South Africa. The employees are from all geographical areas across Southern Africa.

There were quite a number of cases with missing values as can be seen in Table 5.1. In fact, there were only 90 cases with valid values for each of the questions.

Since the missing values seemed to be random and in an effort to preserve as many cases for analysis as possible, the missing values for each variable were replaced with the mean value for that variable. Using the mean value to impute missing values could have led to underestimation of the covariance but due to the exploratory nature of the research and to ensure that the same data was used for both exploratory and CFA, the mean value was selected for imputation (Schlomer, Bauman, & Card, 2010).

*Table 5.1*  
*Missing values*

Items	N	
	Valid	Missing
Q13 Conflicts between organisational units are addressed in the organisation.	309	47
Q14 We work together as a team in the organisation.	337	19
Q15 Work is well coordinated between the different organisational units.	334	22
Q16 Tasks get done as and when they are supposed to be done.	329	27
Q17 The process flow in the workplace is conducive to productivity.	329	27
Q18 The organisation plans sufficiently ahead to be ready for the future.	336	20
Q19 I am involved in information gathering for strategic purposes.	334	22
Q20 The organisation's strategy is realistic.	322	34
Q21 I am involved in decision-making in the wider organisation.	328	28
Q22 All effort in the company is directed at the execution of the strategy.	334	22
Q23 I have the necessary authority to initiate projects in my job.	329	27
Q24 I am allowed to enforce appropriate corrective steps when needed.	326	30
Q25 I am allowed to reward fellow employees appropriately.	333	23
Q26 I have a clear understanding who in the organisation makes which decisions.	341	15
Q27 In my section the overruling of authority levels occurs rarely.	329	27
Q28 Generally, I am proud to tell people where I work.	328	28
Q29 Top management is sufficiently involved in the levels below them.	328	28
Q30 Top management adequately communicates to lower levels.	326	30
Q31 Organisation policies are appropriately enforced.	333	23
Q32 Our top management acts in accordance with the values of the organisation.	328	28
Q33 I am held accountable for the correct aspects of my job.	335	21
Q34 I understand completely what I am being held accountable for.	329	27
Q35 Accountability is appropriately rewarded in my working environment.	328	28
Q36 Accountability levels are appropriately managed in my work.	320	36
Q37 Actions are taken when accountability expectations are not met.	336	20

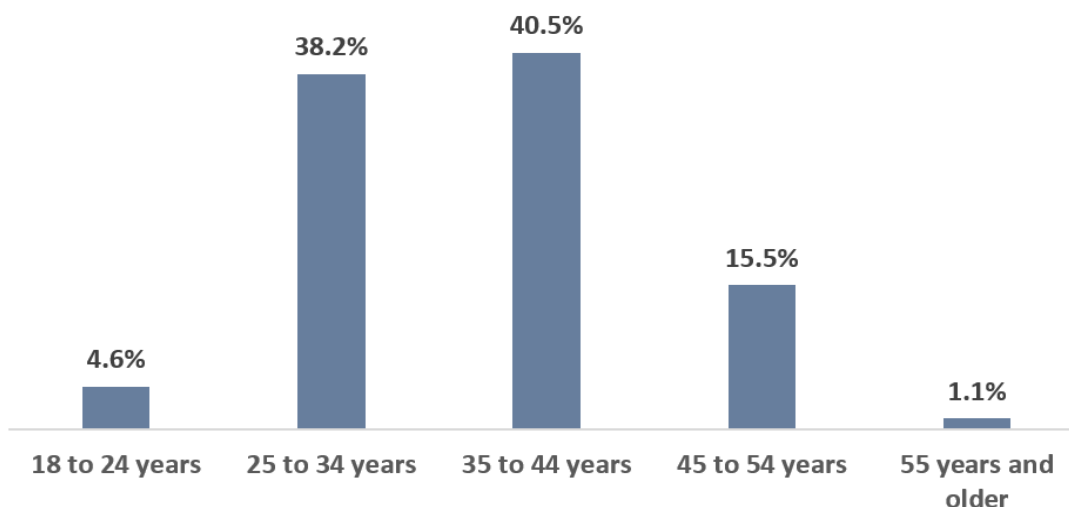
Items	N	
	Valid	Missing
Q38 I am being measured on aspects of real relevance in my job function.	322	34
Q39 I am being measured on realistic measures and targets.	322	34
Q40 I am capable of higher performance levels with the existing resources if I exert more effort.	339	17
Q41 When the constraints are removed, I can potentially achieve better performance results.	337	19
Q42 When resources are increased, I can potentially achieve better performance results.	342	14
Q43 The performance measurement system is applied consistently across all employment levels of the organisation.	339	17
Q44 Adjustments can be made to performance measures when necessary.	325	31
Q45 My performance measures strive towards continuous improvement.	332	24
Q46 My performance measures cover my total job function.	327	29
Q47 I am properly been recognised for my level of performance.	331	25
Q48 I am granted autonomy in my job.	326	30
Q49 I can exercise my own discretion in my job.	331	25
Q50 I control the priorities in my job within the pre-decided boundaries.	333	23
Q51 I can make adjustments to my job when necessary.	335	21
Q52 My direct supervisor/manager allows me to choose the way I achieve my objectives where possible.	337	19

A small number of biological and demographic variables formed part of the study. These variables were age, gender, qualifications, proficiency and frequency of contact with the participant's manager and the number of peers reporting to the same manager. The chosen biographical variables are discussed below in Figures 5.1 to 5.4.

### 5.1.1 Age

From Figure 5.1 below, it is clear that the sample comprised mainly people in the age group 35 to 44 years (40.5%) followed by 25 to 34 years (38.2%), 45 to 54 years (15.5%), 18 to 24 years (4.6%) and lastly 55 years and older (1.1%).

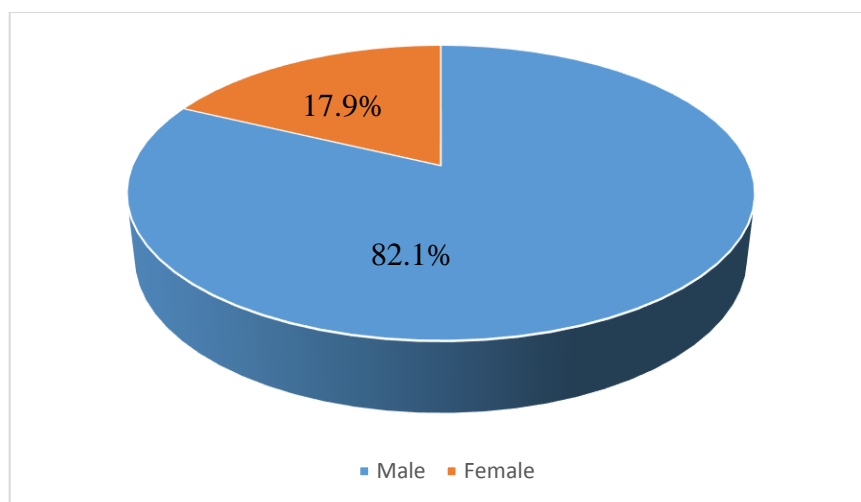
This seemed to be a fair reflection of the age population distribution of the organisation.



**Figure 5.1: Age distribution of the sample**

### 5.1.2 Gender

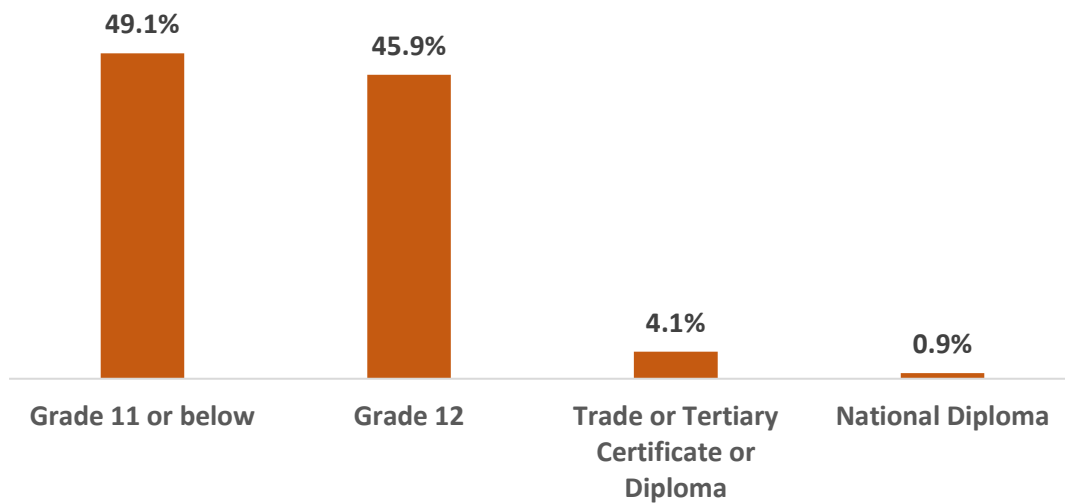
From Figure 5.2 below, it is clear that the sample comprised mainly males (82.1%) with the remaining respondents being females (17.9%). This seemed to be a fair reflection of the gender distribution in the organisation.



**Figure 5.2: Gender distribution of the sample**

### 5.1.3 Qualifications

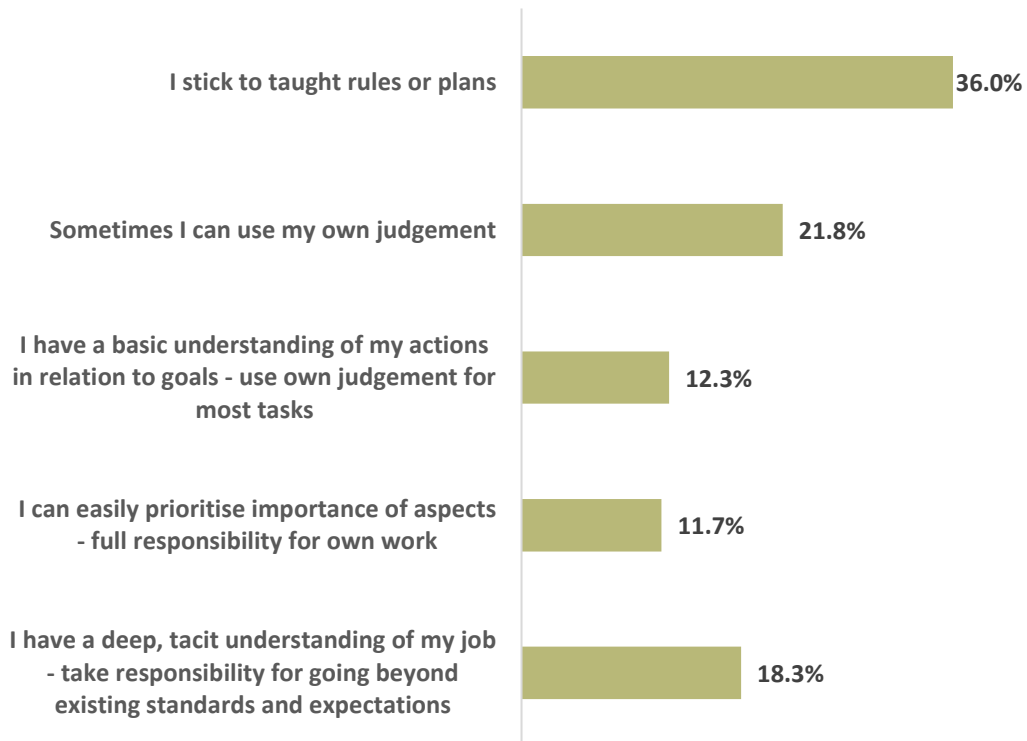
In Figure 5.3 below, the distribution of the qualifications of the sample is shown. Almost half of the respondents did not have matric (49.1%), whilst the remaining group had matric (45.9%), a trade or technical certificate or diploma (4.1%) or a national diploma (0.9%).



**Figure 5.3: Qualification distribution of the sample**

#### **5.1.4 Proficiency**

A nominal scale was designed for the participants to rate their own levels of proficiency. The results are shown in Figure 5.4 below. It is clear that, in the sample, only 18.3% of the respondents rated themselves as fully proficient, whilst 36% said that they stuck to taught rules or plans, 21.8% said that they could use their own judgement, 12.3% said that they had a basic understanding of their actions in relation to goals, and 11.7% said that they could easily prioritise the importance of their work aspects. The nature of the security industry could explain the high number of employees following the taught rules or plans.

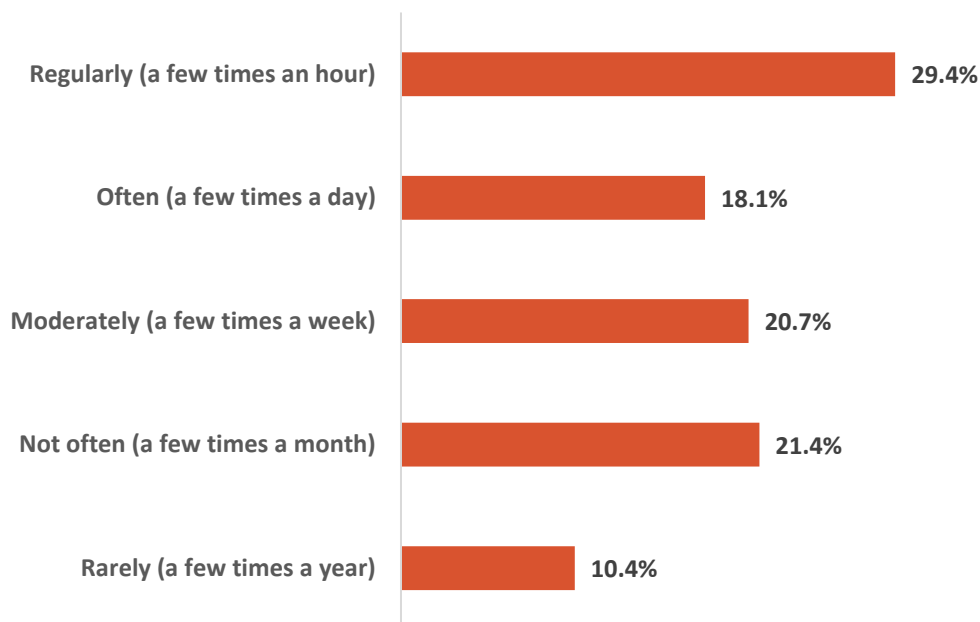


**Figure 5.4: Distribution of sample measures of the participants on the proficiency scale**

#### 5.1.5 Contact frequency with direct manager

Contact frequency with the direct manager was measured on a nominal scale in the study.

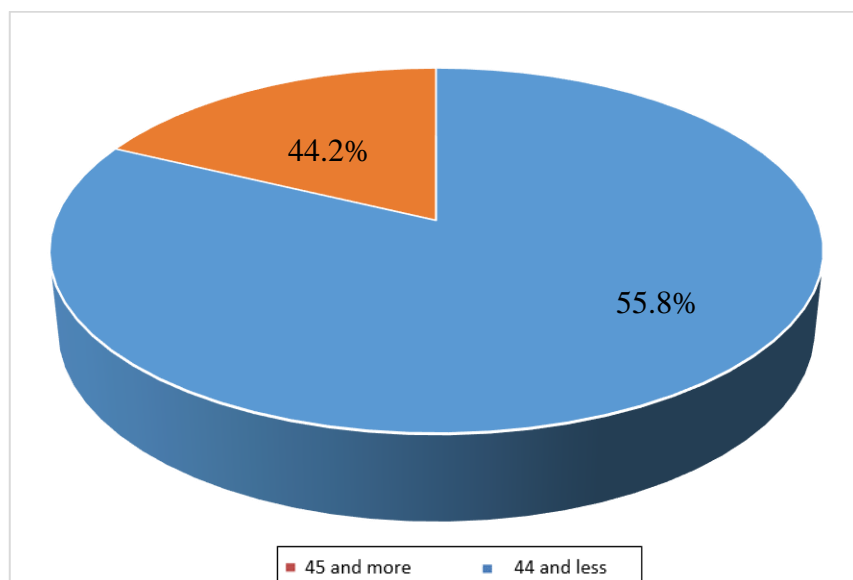
In Figure 5.5 below, the results are shown. It is clear that the sample comprised people who had regular contact with their direct manager (29.4%), followed by not often (21.4%), a few times a week (20.7%), often (18.1%), and rarely (10.4%). This variable indicated that fewer than a third of the employees reported having regular contact with their direct manager.



**Figure 5.5: Frequency of contact of participants with their managers**

#### 5.1.6 Number of peers reporting to the same manager

In Figure 5.6, the number of peers reporting to the same manager is shown. It is clear that 55.8% employees reported to a manager with 44.2% and fewer subordinates reporting to him.



**Figure 5.6: Number of employees reporting to the same manager**

## 5.2 MEASUREMENT OF VIABLE PERFORMANCE

The statistical analysis of viable performance was as follows:

### 5.2.1 Exploratory factor analysis (EFA)

The goal of factor analysis is to reduce “the dimensionality of the original space and to give an interpretation to the new space, spanned by a reduced number of new dimensions which are supposed to underlie the old ones” (Rietveld & Van Hout, 1993, p. 254). Principle axis factoring with IBM SPSS Statistics 22 was used for this purpose and to examine patterns of correlations among the questions used to measure the respondents’ perceptions.

Squared loading (the proportion of the variance of the variable, which is represented by the factor) was also used to interpret factors. This is known as the communality of each variable. The total communality, obtained by adding the individual sums of squares for each of the factors, represents the total amount of variance extracted by the factor solution (Hair et al., 1995).

Firstly, the communalities of the 35 items were extracted by means of the principle axis factoring (PAF) procedure. Initially, 39 items were subjected to PAF. Questions 23, 25, 27 and 36 were dropped due to insufficient loadings on the factors. The 35 items remaining loaded on nine factors. The results of the communality loadings of the items can be seen in Table 5.2.

Estimate of its shared (common) variance as accounted for by the factor solution it is an estimate of its shared (or common) variance as accounted for by the factor solution (Hair et al., 1995, p.387).

Although authors such as Hair et al. (1995, p. 387) advise that items with communalities of below 0.5 should be excluded from further analysis, a 0.3 cut-off was used in the analysis used for the present study.

The items that did not make the cut-off were Q13, Q17 and Q26. These items were therefore excluded from further analysis.

The communalities of 35 items are shown in Table 5.2 below. The total amount of variance an original variable shares with all other variables was included in the



analysis. Estimate of its shared (common) variance as accounted for by the factor solution. This is called the squared multiple correlations (SMC) in CFA.

*Table 5.2*

*Communalities of the items (principle axis factoring) of the viable performance model*

Items	Initial	Extraction
Q13 Conflicts between organisational units are addressed in the organisation.	.373	.321
Q14 We work together as a team in the organisation.	.582	.683
Q15 Work is well coordinated between the different organisational units.	.540	.577
Q16 Tasks get done as and when they are supposed to be done.	.520	.507
Q17 The process flow in the workplace is conducive to productivity.	.485	.497
Q18 The organisation plans sufficiently ahead to be ready for the future.	.573	.574
Q19 I am involved in information gathering for strategic purposes.	.606	.585
Q20 The organisation's strategy is realistic.	.658	.638
Q21 I am involved in decision-making in the wider organisation.	.560	.589
Q22 All effort in the company is directed at the execution of the strategy.	.628	.510
Q24 I am allowed to enforce appropriate corrective steps when needed.	.640	.584
Q26 I have a clear understanding who in the organisation makes which decisions.	.449	.345
Q28 Generally, I am proud to tell people where I work.	.525	.478
Q29 Top management is sufficiently involved in the levels below them.	.564	.616
Q30 Top management adequately communicates to lower levels.	.543	.524
Q31 Organisation policies are appropriately enforced.	.636	.588
Q32 Our top management acts in accordance with the values of the organisation.	.591	.522
Q33 I am held accountable for the correct aspects of my job.	.579	.576
Q34 I understand completely what I am being held accountable for.	.591	.511
Q35 Accountability is appropriately rewarded in my working environment.	.592	.488
Q37 Actions are taken when accountability expectations are not met.	.640	.631
Q38 I am being measured on aspects of real relevance in my job function.	.634	.538

Items	Initial	Extraction
Q39 I am being measured on realistic measures and targets.	.660	.619
Q40 I am capable of higher performance levels with the existing resources if I exert more effort.	.505	.406
Q41 When the constraints are removed, I can potentially achieve better performance results.	.522	.501
Q42 When resources are increased, I can potentially achieve better performance results.	.603	.630
Q43 The performance measurement system is applied consistently across all employment levels of the organisation.	.619	.594
Q44 Adjustments can be made to performance measures when necessary.	.673	.649
Q45 My performance measures strive towards continuous improvement.	.586	.515
Q46 My performance measures cover my total job function.	.694	.715
Q47 I am properly been recognised for my level of performance.	.616	.653
Q48 I am granted autonomy in my job.	.633	.613
Q49 I can exercise my own discretion in my job.	.588	.542
Q50 I control the priorities in my job within the pre-decided boundaries.	.611	.588
Q51 I can make adjustments to my job when necessary.	.700	.652

Extraction method: principal axis factoring.

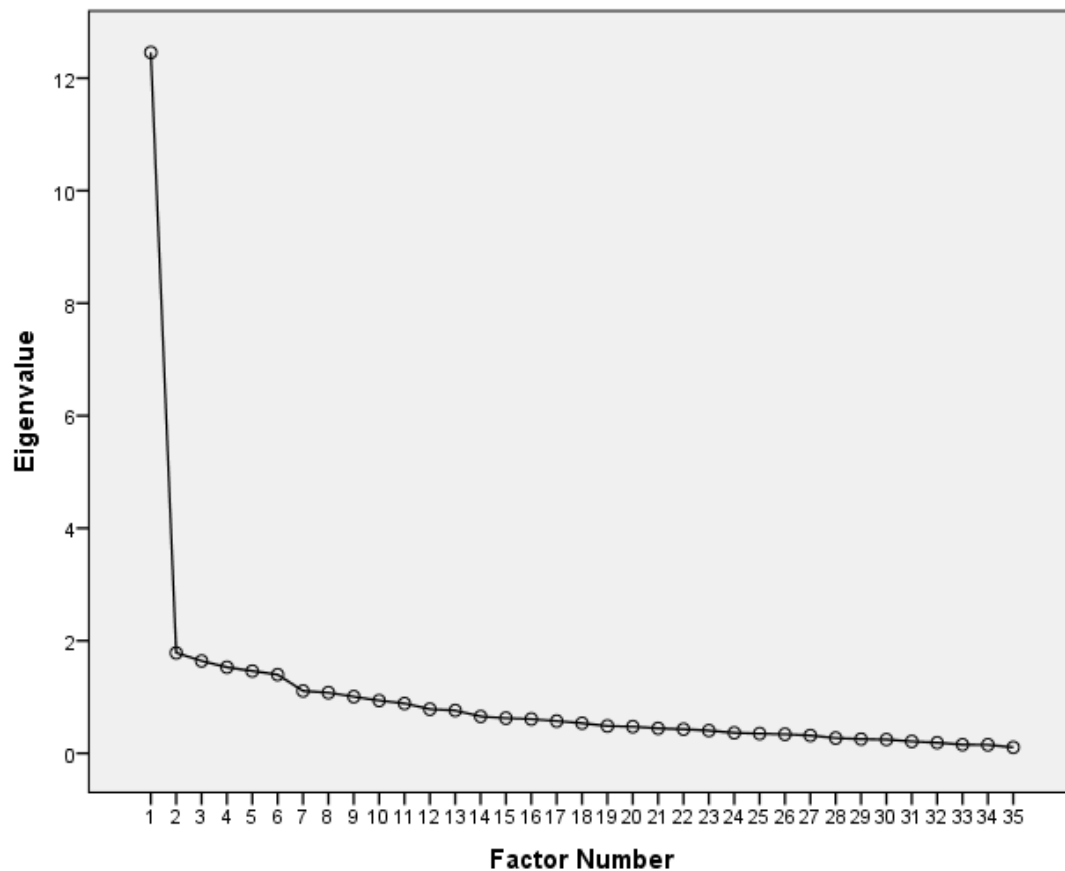
The factorability of the correlation matrix was investigated using Pearson's product-moment correlation coefficient. Preliminary distribution analyses indicated that the assumptions of normality, linearity and homoscedasticity were not violated.

The results of the KMO value of 0.871 were well above the recommended minimum value of 0.6 (Kaiser, 1970). The Bartlett's test of sphericity (Bartlett, 1954) reached statistical significance,  $p < .001$ . The results thus indicated that the correlations within the R-matrix were significantly different from zero to warrant factor analysis.

The scree test was generated by plotting the eigenvalues against the number of factors in the order of extraction. The point at which the line begins to straighten is, according to the scree test, regarded as the cut-off point for the number of factors to be extracted (Hair, Anderson, Tatham, & Black, 1995).

The scree test provides for a visual assessment where the curve, which normally starts with the first factor, is used to determine the cut-off point of the factors.

In Figure 5.7 below, the plot slopes steeply downwards and then slowly become a more or less horizontal line. Inspection of the scree test inflection clearly revealed six factors. All factors with eigenvalues above 1 were retained after the investigation of the results of the variances displayed in Table 5.3.



**Figure 5.7: The scree plot of the viable performance model**

In Table 5.3, the total variance explained is shown. A total of 55.88% of the variation in the data could be explained by the solution. The percentage of variance explained was deemed acceptable as per Hair et al. (1995) who concluded that a solution in the social sciences should account for 60% (or even less) of the variance.

Table 5.3

Total variance explained by exploratory factor analysis of the viable performance model

Factor	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of variance	Cumulative %
1	12.457	35.592	35.592	12.026	34.361	34.361
2	1.784	5.098	40.690	1.347	3.849	38.210
3	1.642	4.691	45.381	1.221	3.489	41.699
4	1.530	4.371	49.752	1.100	3.143	44.842
5	1.461	4.175	53.927	1.035	2.956	47.798
6	1.398	3.994	57.921	0.958	2.737	50.535
7	1.107	3.163	61.084	0.694	1.984	52.519
8	1.077	3.078	64.162	0.615	1.757	54.276
9	1.007	2.876	67.038	0.562	1.604	55.880
10	.938	2.680	69.718			
11	.886	2.531	72.249			
12	.784	2.239	74.488			
13	.760	2.172	76.660			
14	.655	1.871	78.531			
15	.625	1.785	80.316			
16	.608	1.737	82.053			
17	.572	1.635	83.687			
18	.534	1.526	85.214			
19	.485	1.384	86.598			
20	.473	1.350	87.948			
21	.443	1.267	89.215			
22	.428	1.223	90.439			
23	.403	1.151	91.590			
24	.364	1.041	92.631			
25	.350	1.000	93.631			
26	.337	.964	94.595			
27	.316	.904	95.499			
28	.270	.773	96.272			
29	.252	.721	96.993			
30	.244	.696	97.689			
31	.211	.603	98.292			
32	.188	.536	98.828			
33	.154	.439	99.267			
34	.150	.430	99.697			

Factor	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of Variance	Cumulative %	Total	% of variance	Cumulative %
35	.106	.303	100.000			

All the extracted factors, except coordinating tasks (factor 7) demonstrated acceptable internal consistency (being above 0.70) as illustrated by the Cronbach's alpha coefficients<sup>1</sup> listed in Table 5.4. The only exception was factor 7 with a loading of 0.527.

*Table 5.4*

*Internal consistency statistics for the nine extracted factors of the viable performance model*

Subscale	Description	N of items	Cronbach's alpha
F1	Strategic execution	4	0.730
F2	Operational management	6	0.796
F3	Performance measurement system (PMS)	5	0.776
F4	Top management involvement	5	0.791
F5	Autonomy	3	0.710
F6	Accountability	3	0.761
F7	Coordinating consistency	3	0.527
F8	Coordinating tasks	3	0.635
F9	Coordinating teamwork	3	0.708
Overall	All dimensions	35	0.946

In Table 5.5, the descriptive statistics of the nine extracted factors are depicted. The highest ranked factor was accountability (mean value of 3.62 and SD of 1.08), followed by coordinating teamwork tasks (mean value of 3.61 and an SD of 1.13), coordinating tasks (mean value of 3.60 and SD of 1.05 ), PMS (mean value of 3.54 and an SD of 1), Top management involvement (mean value of 3.37 and an SD of 1.05), coordinating consistency (mean value of 3.36 and an SD 1.04), operational management (mean value of 3.30 and an SD of 0.98), autonomy (mean value of 3.22 and an SD of 1.1) and lastly strategic execution (mean value of 3.21 and an SD of 1.06).

<sup>1</sup> "The generally agreed upon lower limit for Cronbach's alpha is 0.70, although it may decrease to 0.60 in exploratory research" (Hair et al., 2006, p. 137).

*Table 5.5**Descriptive statistics of the nine extracted factors of the viable performance model*

Factor	N	Minimum	Maximum	Mean	SD
Strategic execution	351	1.00	5.00	3.2085	1.05991
Operational management	351	1.00	5.00	3.3000	.97701
PMS	354	1.00	5.00	3.5392	.99382
Top management involvement	351	1.00	5.00	3.3686	1.05346
Autonomy	342	1.00	5.00	3.2232	1.11152
Accountability	343	1.00	5.00	3.6176	1.08040
Coordinating consistency	352	1.00	5.00	3.3627	1.04387
Coordinating tasks	354	1.00	5.00	3.5993	1.04507
Coordinating teamwork	349	1.00	5.00	3.6122	1.12808
Valid N (listwise)	330				

In Figure 5.8, the mean values of the factors are displayed. To illustrate the differences among them, they are depicted in a bar graph, which exaggerates these differences due to the scale not starting at 0 but at 3. It is important to note that the mean score for all factors are above the middle value of the scale and all below the fourth value of the 5-point measuring scale. It could be concluded from these relatively higher scores that, in general, the ratings were quite favourable on the dimensions.



**Figure 5.8: Mean factor scores of the viable performance model**

The results of the correlation analysis amongst the nine factors of the viable performance model is shown in Table 5.6. The correlation matrix contained a number of correlation coefficients of 0.3 and above. In conclusion, the correlation matrix was deemed factorable. Pearson's correlation coefficients among the original 35 items (N=352, pairwise) are shown in Annexure A.

Costello and Osborne (2005) advise that correlations between factors are expected as human behaviours are rarely independent from one another. All the correlations were in excess of 0.4 except coordinating teamwork and autonomy (0.342) and autonomy and accountability (0.372), which indicates a medium practical effect. A possible explanation for the relatively large correlations might be that there was another factor (possibly a second-order factor) to which all these factors related. The correlations were all significant at the 1% level of significance with  $p \leq 0.01$ .

Table 5.6

Correlations among the nine extracted factors of the viable performance model

Extracted factor		Strategic execution	Operational management	PMS	Top management involvement	Autonomy	Accountability	Coordinating consistency	Coordinating tasks	Coordinating teamwork
Strategic execution	Pearson's correlation	1								
	Sig. (2-tailed)									
	N	351								
Operational management	Pearson's correlation	<b>.643**</b>	1							
	Sig. (2-tailed)	.000								
	N	351	351							
PMS	Pearson's correlation	<b>.470**</b>	<b>.617**</b>	1						
	Sig. (2-tailed)	.000	.000							
	N	350	350	354						
Top management involvement	Pearson's correlation	<b>.638**</b>	<b>.689**</b>	<b>.536**</b>	1					
	Sig. (2-tailed)	.000	.000	.000						
	N	351	351	350			351			
Autonomy	Pearson's correlation	<b>.451**</b>	<b>.466**</b>	<b>.547**</b>	1		<b>.447**</b>			
	Sig. (2-tailed)	.000	.000	.000			.000			
	N	338	338	342	342		338			
Accountability	Pearson's correlation	<b>.489**</b>	<b>.659**</b>	<b>.547**</b>	<b>.372**</b>	1	<b>.605**</b>			
	Sig. (2-tailed)	.000	.000	.000	.000		.000			
	N	343	343	342	332	343	343			
Coordinating consistency	Pearson's correlation	<b>.543**</b>	<b>.514**</b>	<b>.624**</b>	<b>.572**</b>	<b>.443**</b>	<b>.481**</b>	1		
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000			
	N	348	348	352	342	340	348	352		



Extracted factor		Strategic execution	Operational management	PMS	Top management involvement	Autonomy	Accountability	Coordinating consistency	Coordinating tasks	Coordinating teamwork
Coordinating tasks	Pearson's correlation	.519**	.546**	.546**	.453**	.482**	.526**	.649**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		
	N	350	350	353	341	343	350	351	354	
Coordinating Teamwork	Pearson's correlation	.496**	.496**	.421**	.342**	.401**	.467**	.480**	.561**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	
	N	349	349	348	336	341	349	346	348	349

\*\* indicate a significant correlation

A Promax rotation<sup>2</sup> – a rotation method that allows for correlation among the latent factors – was performed. Factors with loadings of less than 0.3 were excluded (Thurstone, 1947). In Table 5.7, the results are shown. Cross-loadings were considered. Question 21 loaded on both factors 1 and 7. Theoretically, the item belonged in factor 1 although its loading was slightly lower than on factor 7. The other cross-loadings were not considered any further in the final solution.

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<sup>2</sup> Promax rotation was specifically chosen since it first rotates orthogonally and then rotates this solution again obliquely to allow for correlations among factors (Tabachnick & Fidell 2007, p. 640).

Table 5.7

Rotated pattern matrix: Principle axis factoring with Promax rotation (Kaiser normalization) of the viable performance model

Item	Factor								
	1	2	3	4	5	6	7	8	9
Q20 The organisation's strategy is realistic.	.784								
Q19 I am involved in information gathering for strategic purposes.	.780								
Q26 I have a clear understanding who in the organisation makes which decisions.	.434								
Q39 I am being measured on realistic measures and targets.		.753							
Q31 Organisation policies are appropriately enforced.		.604							
Q37 Actions are taken when accountability expectations are not met.		.528							
Q40 I am capable of higher performance levels with the existing resources if I exert more effort.		.387							
Q35 Accountability is appropriately rewarded in my working environment.		.353							
Q22 All effort in the company is directed at the execution of the strategy.		.308							
Q42 When resources are increased, I can potentially achieve better performance results.			.822						
Q51 I can make adjustments to my job when necessary.			.518				.387		
Q41 When the constraints are removed, I can potentially achieve better performance results.			.452						
Q45 My performance measures strive towards continuous improvement.			.419						

Item	Factor								
	1	2	3	4	5	6	7	8	9
Q44 Adjustments can be made to performance measures when necessary.			.336						
Q29 Top management is sufficiently involved in the levels below them.				.771					
Q28 Generally, I am proud to tell people where I work.				.648					
Q30 Top management adequately communicates to lower levels.				.488		.403			
Q32 Our top management acts in accordance with the values of the organisation.	.330			.452					
Q24 I am allowed to enforce appropriate corrective steps when needed.				.331					
Q48 I am granted autonomy in my job.	.400				.714				
Q49 I can exercise my own discretion in my job.					.707				
Q47 I am properly been recognised for my level of performance.			.303		.464				
Q33 I am held accountable for the correct aspects of my job.						.765			
Q34 I understand completely what I am being held accountable for.						.491			
Q38 I am being measured on aspects of real relevance in my job function.						.472			
Q13 Conflicts between organisational units are addressed in the organisation.							.582		
Q43 The performance measurement system is applied consistently across all employment levels of the organisation.							.486		

Item	Factor								
	1	2	3	4	5	6	7	8	9
Q21 I am involved in decision-making in the wider organisation.	.448						.451		
Q50 I control the priorities in my job within the pre-decided boundaries.					.368		.371		
Q18 The organisation plans sufficiently ahead to be ready for the future.								.748	
Q17 The process flow in the workplace is conducive to productivity.								.651	
Q46 My performance measures cover my total job function.								.608	
Q14 We work together as a team in the organisation.		-.332					.452		.621
Q15 Work is well coordinated between the different organisational units.									.541
Q16 Tasks get done as and when they are supposed to be done.									.415

Extraction method: principal axis factoring.

Rotation method: Promax with Kaiser Normalization.a

a. Rotation converged in 24 iterations.

Question 14 loaded on operational management (-0.332), coordinating consistency (0.452) and coordinating tasks (0.621). Question 21 loaded on strategic execution (0.448) and coordinating consistency (0.451). Question 24 had a cross-loading on strategic execution (0.330) and top management involvement (0.331). Question 30 had a cross-loading on top management involvement (0.488) and accountability (0.403). Question 47 had cross-loadings on strategic execution (0.400), PMS (0.303) and autonomy (0.464). Question 51 loaded on PMS (0.518) and coordinating consistency (0.387).

Where cross-loadings existed, the items were retained under the construct where they loaded the strongest in general.

Based on the EFA analysis, factor 7 (coordinating consistency) was omitted as well as factor 8 (coordinating tasks). Item 50 loading initially on factor 7 also loaded on autonomy (factor 5) and was moved there. Questions 13, 43 and 21 were left out from the rest of the analysis.

The items under factor 8 (coordinating tasks), were moved to other factors as follows:

- Question 18 theoretically related to factor 1 (strategic execution), and was moved there;
- Question 17 theoretically related to factor 9 (coordinating Teams) and was moved there; and
- Question 46 theoretically related factor 3 (PMS) to and was moved there.

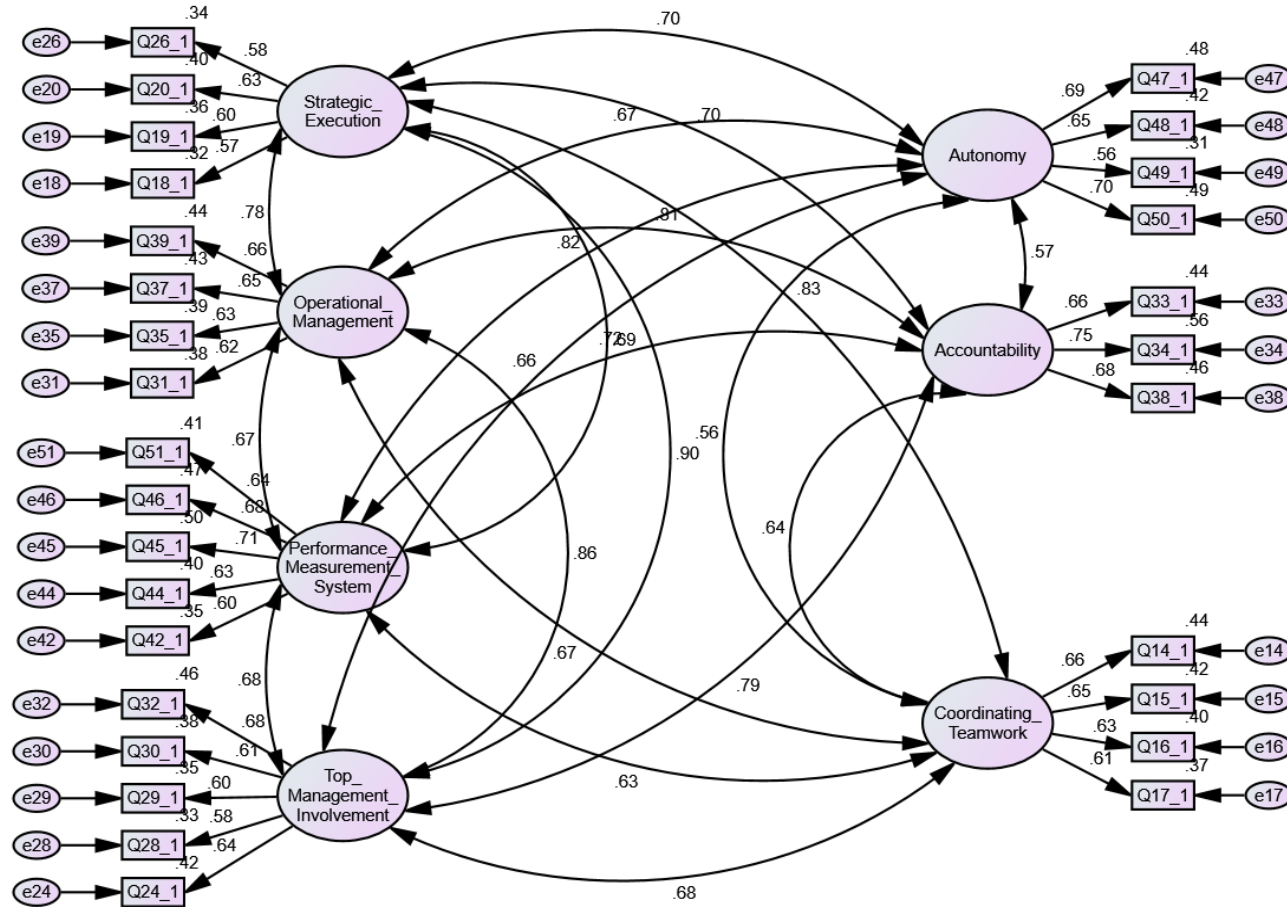
A seven-factor solution remained as follows:

- Factor 1: Strategic execution
- Factor 2: Operational management
- Factor 3: PMS
- Factor 4: Top management involvement
- Factor 5: Autonomy
- Factor 6: Accountability
- Factor 7: Coordinating teamwork

### **5.2.2 The measurement model for viable performance (CFA)**

SEM was used to determine whether the model was valid. As SEM allows for the modelling of measurement error it was used to estimate the relationships between

latent dimensions. In Figure 5.9, the results of the SEM analysis can be seen. The measured variables are shown in the rectangles and the latent (or unobserved) variables in the ovals. The concaved lines with the double arrows show correlations between the variables in the standardised model and covariance in the unstandardised model. As can be seen from the results, all the LVs indicated high correlations.



**Figure 5.9: The standardised measurement model of viable performance**



The straight lines with a single arrow show a direct relationship as well as the direction of the relationship and indicate that the items or questions are directly related to the factors or dimensions.

Table 5.8 displays the unstandardised estimate, its standard error (abbreviated SE), and the estimate divided by the standard error, resulting in the critical ratio (abbreviated CR). The unstandardised regression coefficients represent the amount of change in the dependent or mediating variable for each unit change in the variable predicting it. The CR scores were all above 2, indicating significance at the 0.1% level of significance.

Questions 22, 40 and 41 were subsequently omitted from the solution due to SMC score being lower than the desired 0.3 level. These items obtained SMC scores of 0.286, 0.278 and 0.283 respectively.

*Table 5.8*  
*Maximum likelihood estimates of the viable performance model (regression weights)*

Item		Variable	Estimate	SE	CR	P
Q14_1	<---	Coordinating_Teamwork	1.000			
Q15_1	<---	Coordinating_Teamwork	.955	.098	9.774	***
Q16_1	<---	Coordinating_Teamwork	.872	.091	9.595	***
Q19_1	<---	Strategic_Execution	1.000			
Q20_1	<---	Strategic_Execution	.962	.102	9.402	***
Q26_1	<---	Strategic_Execution	.994	.113	8.832	***
Q31_1	<---	Operational_Management	1.000			
Q35_1	<---	Operational_Management	1.026	.108	9.481	***
Q37_1	<---	Operational_Management	1.133	.116	9.795	***
Q39_1	<---	Operational_Management	1.002	.101	9.909	***
Q44_1	<---	Performance_Measurement_System	1.000			
Q45_1	<---	Performance_Measurement_System	1.065	.099	10.707	***
Q46_1	<---	Performance_Measurement_System	1.095	.105	10.449	***
Q51_1	<---	Performance_Measurement_System	1.063	.107	9.977	***
Q24_1	<---	Top_Management_Involvement	1.000			
Q28_1	<---	Top_Management_Involvement	.857	.092	9.325	***
Q29_1	<---	Top_Management_Involvement	.870	.091	9.598	***
Q30_1	<---	Top_Management_Involvement	.922	.094	9.855	***
Q32_1	<---	Top_Management_Involvement	.982	.092	10.669	***

Item		Variable	Estimate	SE	CR	P
Q47_1	<---	Autonomy	1.000			
Q48_1	<---	Autonomy	.920	.088	10.465	***
Q49_1	<---	Autonomy	.807	.088	9.138	***
Q33_1	<---	Accountability	1.000			
Q34_1	<---	Accountability	1.057	.094	11.254	***
Q38_1	<---	Accountability	.934	.089	10.484	***
Q50_1	<---	Autonomy	1.016	.091	11.149	***
Q18_1	<---	Strategic_Execution	.893	.103	8.656	***
Q17_1	<---	Coordinating_Teamwork	.868	.093	9.351	***
Q42_1	<---	Performance_Measurement_System	.980	.104	9.381	***

In Table 5.9 below, the standardised regression weights of the items on each dimension can be seen. In terms of coordinating teamwork, Q14 (0.662) appeared to have the largest effect on predicting the factor, and Q17 (.610) the least. In terms of strategic execution, Q20 (0.633) appeared to have the largest effect on predicting the factor, and Q18 (0.566) the least. In terms of the PMS, Q45 (0.706) appeared to have the largest effect on predicting the factor, and Q42 (0.596) the least. In terms of operational management, Q31 (0.619) appeared to have the largest effect on predicting the factor, and Q39 (0.664) the least. In terms of top management involvement, Q32 (0.678) appeared to have the largest effect on predicting the factor, and Q28 (0.575) the least. In terms of autonomy, Q50 (0.701) appeared to have the largest effect on predicting the factor, and Q49 (0.557) the least. In terms of accountability, Q34 (0.748) appeared to have the greatest effect on predicting the factor, and Q33 (0.661) the least. These weights were all above 0.5, indicating that these dimensions all affected the factors significantly, i.e. explained a significant part of the variance.

*Table 5.9*  
*Standardised regression weights of the VPI*

Item		Variable	Estimate
Q14_1	<---	Coordinating_Teamwork	.662
Q15_1	<---	Coordinating_Teamwork	.646
Q16_1	<---	Coordinating_Teamwork	.630
Q19_1	<---	Strategic_Execution	.597
Q20_1	<---	Strategic_Execution	.633
Q26_1	<---	Strategic_Execution	.581
Q31_1	<---	Operational_Management	.619
Q35_1	<---	Operational_Management	.625
Q37_1	<---	Operational_Management	.653
Q39_1	<---	Operational_Management	.664
Q44_1	<---	Performance_Measurement_System	.634
Q45_1	<---	Performance_Measurement_System	.706
Q46_1	<---	Performance_Measurement_System	.683
Q51_1	<---	Performance_Measurement_System	.643
Q24_1	<---	Top_Management_Involvement	.644
Q28_1	<---	Top_Management_Involvement	.575
Q29_1	<---	Top_Management_Involvement	.595
Q30_1	<---	Top_Management_Involvement	.615
Q32_1	<---	Top_Management_Involvement	.678
Q47_1	<---	Autonomy	.695
Q48_1	<---	Autonomy	.649
Q49_1	<---	Autonomy	.557
Q33_1	<---	Accountability	.661
Q34_1	<---	Accountability	.748
Q38_1	<---	Accountability	.678
Q50_1	<---	Autonomy	.701
Q18_1	<---	Strategic_Execution	.566
Q17_1	<---	Coordinating_Teamwork	.610
Q42_1	<---	Performance_Measurement_System	.596

In Table 5.10, the covariance between the variables is seen. The p-value of \*\*\* was an indication that it was almost zero and therefore the covariance was highly meaningful ( $p < 0.05$ ).

Table 5.10  
Covariances of the VPI

Variable	Variable relation	Estimate	SE	CR	P
Coordinating_Teamwork	<--> Strategic_Execution	.614	.085	7.211	***
Coordinating_Teamwork	<--> Operational_Management	.502	.075	6.697	***
Coordinating_Teamwork	<--> Performance_Measurement_System	.467	.071	6.615	***
Coordinating_Teamwork	<--> Top_Management_Involvement	.567	.082	6.920	***
Coordinating_Teamwork	<--> Autonomy	.479	.076	6.276	***
Coordinating_Teamwork	<--> Accountability	.511	.076	6.682	***
Strategic_Execution	<--> Operational_Management	.521	.076	6.887	***
Strategic_Execution	<--> Performance_Measurement_System	.458	.069	6.638	***
Strategic_Execution	<--> Top_Management_Involvement	.674	.090	7.504	***
Strategic_Execution	<--> Autonomy	.538	.079	6.845	***
Strategic_Execution	<--> Accountability	.501	.075	6.707	***
Operational_Management	<--> Performance_Measurement_System	.445	.067	6.686	***
Operational_Management	<--> Top_Management_Involvement	.642	.086	7.507	***
Operational_Management	<--> Autonomy	.514	.075	6.833	***
Operational_Management	<--> Accountability	.582	.079	7.347	***
Performance_Measurement_System	<--> Top_Management_Involvement	.503	.073	6.903	***
Performance_Measurement_System	<--> Autonomy	.629	.082	7.698	***
Performance_Measurement_System	<--> Accountability	.516	.072	7.124	***
Top_Management_Involvement	<--> Autonomy	.566	.081	6.975	***
Top_Management_Involvement	<--> Accountability	.630	.085	7.453	***
Autonomy	<--> Accountability	.472	.074	6.408	***

Note: SE = standard error; CR = critical ratio;  $p$  = probability value.

In Table 5.11 below, the estimates between the factors are portrayed. All factors indicated estimates above 0.500.

Table 5.11  
Correlations of the VPI

Variable	Variable relation	Estimate
Coordinating_Teamwork	<--> Strategic_Execution	.825
Coordinating_Teamwork	<--> Operational_Management	.674
Coordinating_Teamwork	<--> Performance_Measurement_System	.631
Coordinating_Teamwork	<--> Top_Management_Involvement	.684
Coordinating_Teamwork	<--> Autonomy	.561
Coordinating_Teamwork	<--> Accountability	.644
Strategic_Execution	<--> Operational_Management	.775
Strategic_Execution	<--> Performance_Measurement_System	.685
Strategic_Execution	<--> Top_Management_Involvement	.901
Strategic_Execution	<--> Autonomy	.699
Strategic_Execution	<--> Accountability	.699
Operational_Management	<--> Performance_Measurement_System	.665
Operational_Management	<--> Top_Management_Involvement	.857
Operational_Management	<--> Autonomy	.667
Operational_Management	<--> Accountability	.812
Performance_Measurement_System	<--> Top_Management_Involvement	.676
Performance_Measurement_System	<--> Autonomy	.821
Performance_Measurement_System	<--> Accountability	.724
Top_Management_Involvement	<--> Autonomy	.661
Top_Management_Involvement	<--> Accountability	.790
Autonomy	<--> Accountability	.575

In Table 5.12, the CR values are all above 2 and the p-values were all significant at the  $p \leq 0.001$  level.

*Table 5.12*  
*Variances of the VPI*

Variable	Estimate	SE	CR	P
Coordinating_Teamwork	.824	.131	6.294	***
Strategic_Execution	.672	.118	5.702	***
Operational_Management	.672	.113	5.961	***
Performance_Measurement_System	.665	.107	6.202	***
Top_Management_Involvement	.833	.131	6.366	***
Autonomy	.882	.129	6.821	***
Accountability	.764	.119	6.416	***

In Table 5.13, the fit indices are shown. The RMSEA showed a good fit, whereas the GFI, AGFI, NFI were below the 0.9 cut-off point. The CMIN/DF, NNFI, TLI, IFI, CFI indices all indicate proper fits. The chi-square value was 610.301 with 356 degrees of freedom and the probability of 0.000, which could have been due to the sample being large.

*Table 5.13*  
*The model fit indexes for viable performance*

Model	GFI	CMIN/DF	AGFI	NFI	NNFI	RFI	IFI	TLI	CFI	RMSEA
Index	0.897	1.836	0.874	0.844	0.903	0.822	0.929	0.917	0.928	0.045

It could therefore be concluded that the CFA, which followed from the theory and EFA, confirmed the structure of the dimensions.

### 5.3 MEASURING ORGANISATIONAL TRUST

#### 5.3.1 Exploratory factor analysis

To reduce the dimensionality of the data, principle component analysis (PCA) with IBM SPSS Statistics 22 was used to examine patterns of correlation among the questions



used to measure the respondents' perceptions regarding their relationship with their direct managers.

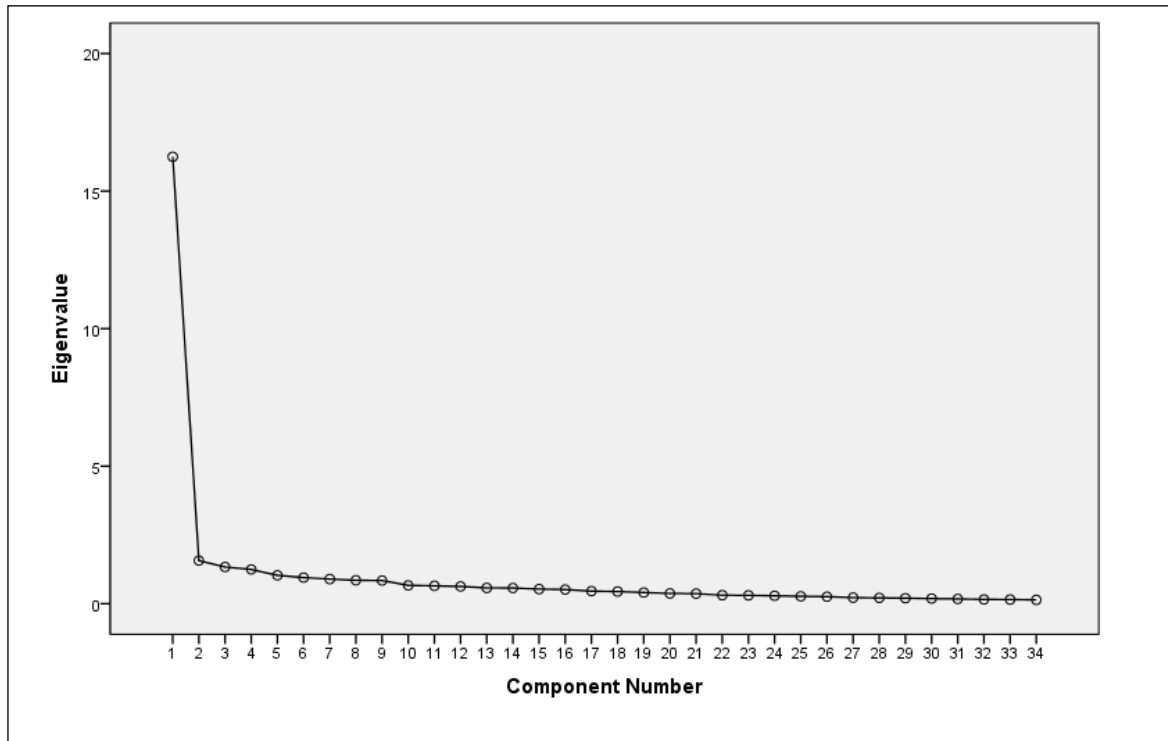
In Table 5.14, the communalities of the 34 items (PCA) are shown. The communalities give an indication of how much each variable contributed to the solution. There were no items that were below 0.3 (Hair et al., 1995) so all items were included in the solution.

*Table 5.14*  
*The communalities of the 34 items of the trust model*

Item	Initial	Extraction
Q64 My direct manager/supervisor ensures that my colleagues and I work towards the same goals.	1.000	.723
Q65 My direct manager/supervisor ensures that I know what he/she expects from me.	1.000	.687
Q66 My direct manager/supervisor encourages me to openly express my feelings during team discussions.	1.000	.693
Q67 My direct manager/supervisor keeps his/her promises.	1.000	.616
Q68 My direct manager/supervisor tolerates work-related mistakes which are made.	1.000	.408
Q69 My direct manager/supervisor explains to me how the work I do influences the rest of the company.	1.000	.727
Q70 My direct manager/supervisor supports me when I need him/her.	1.000	.603
Q71 My direct manager/supervisor ensures that my colleagues and I enjoy prestige and credibility in the company.	1.000	.627
Q72 My direct manager/supervisor tells the truth about future changes within the company.	1.000	.532
Q73 My direct manager/supervisor seriously considers the proposals I make.	1.000	.607
Q74 My direct manager/supervisor asks us feedback on his/her performance.	1.000	.634
Q75 My direct manager/supervisor respects differences of opinions and ideas among the colleagues I work with.	1.000	.681
Q76 My direct manager/supervisor listens carefully to my colleagues and I, and clarifies misunderstandings.	1.000	.610
Q77 My direct manager/supervisor carefully analyses problems when things go wrong.	1.000	.660
Q78 My direct manager/supervisor is there when I need him/her.	1.000	.667
Q79 My direct manager/supervisor gives me the information I need to do my job properly.	1.000	.612
Q80 My direct manager/supervisor allows me to freely express my feelings towards him/her.	1.000	.615

Item	Initial	Extraction
Q81 My direct manager/supervisor gives me feedback on my performance.	1.000	.632
Q82 My direct manager/supervisor accepts decisions made by my colleagues and I.	1.000	.605
Q83 My direct manager/supervisor ensures that decisions made by my colleagues and I are implemented.	1.000	.643
Q84 My direct manager/supervisor ensures that colleagues and I perform at an acceptable level.	1.000	.661
Q85 My direct manager/supervisor is a self-disciplined person.	1.000	.687
Q86 My direct manager/supervisor conducts meetings in an effective manner.	1.000	.568
Q87 My direct manager/supervisor accepts negative feedback which he/she receives for my colleagues and I.	1.000	.652
Q88 My direct manager/supervisor freely talks about his/her opinions on how things should be done around here.	1.000	.508
Q89 My direct manager/supervisor gives me straightforward feedback on my performances.	1.000	.545
Q90 My direct manager/supervisor is good at handling conflict in my team.	1.000	.711
Q91 My direct manager/supervisor honestly reveals company related information to me.	1.000	.542
Q92 My direct manager/supervisor confronts the culprits when things go wrong.	1.000	.506
Q93 I have an open, trusting relationship with the person I directly report to.	1.000	.698
Q94 The person I report directly to, openly and honestly reveals important work related facts to me.	1.000	.645
Q95 The person I report directly to is fair in judging my performances.	1.000	.724
Q96 The person I report directly to demonstrates good intentions and motives towards me.	1.000	.740
Q97 I can believe what the person I report to directly says.	1.000	.654

The scree test was generated by plotting the eigenvalues against the number of factors in the order of extraction. The point at which the line begins to straighten is, according to the scree test, regarded as the cut-off point for the number of factors to be extracted (Hair, Anderson, Tatham, & Black, 1995). The scree plot is shown in Figure 5.10 below.



**Figure 5.10: Scree plot for the trust components of the trust model**

The items were subsequently subjected to EFA and this resulted in a 5-component solution that explained 63.01% of the variation in the data. Total variance explained by EFA is portrayed in Table 5.15.

**Table 5.15**

*The total variance explained by the EFA of the trust model*

Component	Initial eigenvalues			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	16.248	47.788	47.788	5.444	16.012	16.012
2	1.566	4.607	52.395	4.966	14.605	30.617
3	1.333	3.919	56.314	4.882	14.358	44.974
4	1.247	3.667	59.981	3.507	10.315	55.289
5	1.031	3.032	63.012	2.626	7.723	63.012
6	.949	2.792	65.804			
7	.895	2.633	68.437			
8	.852	2.505	70.942			
9	.841	2.474	73.417			
10	.666	1.958	75.375			
11	.650	1.913	77.288			

Component	Initial eigenvalues			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
12	.626	1.843	79.130			
13	.575	1.691	80.822			
14	.571	1.680	82.501			
15	.530	1.560	84.062			
16	.515	1.514	85.576			
17	.457	1.346	86.921			
18	.441	1.297	88.218			
19	.406	1.193	89.411			
20	.373	1.096	90.507			
21	.366	1.076	91.583			
22	.308	.907	92.491			
23	.302	.890	93.380			
24	.287	.845	94.225			
25	.268	.787	95.013			
26	.255	.749	95.762			
27	.222	.652	96.414			
28	.212	.625	97.039			
29	.201	.591	97.629			
30	.187	.550	98.179			
31	.173	.507	98.686			
32	.157	.461	99.147			
33	.151	.445	99.592			
34	.139	.408	100.000			

Considering the exploratory nature of the research, the five extracted constructs all demonstrated acceptable internal consistency as illustrated by the Cronbach's alpha coefficients<sup>3</sup> listed in Table 5.16.

<sup>3</sup> "The generally agreed upon lower limit for Cronbach's alpha is 0.70, although it may decrease to 0.60 in exploratory research" (Hair et al., 2006, p. 137).

*Table 5.16*

*Cronbach's alpha (internal consistency) statistics for the five extracted components of the trust model*

Subscale	Description	N of items	Cronbach's alpha
C1	Work support	10	0.903
C2	Team management	9	0.887
C3	Trust relationship	7	0.873
C4	Information sharing	5	0.796
C5	Objectivity	3	0.652
Overall	All dimensions	34	0.966

In Table 5.17, the descriptive statistics of the five extracted factors can be seen. The highest ranked factor was information sharing (mean value of 3.43 and an SD of 0.967), followed by work support tasks (mean value of 3.35 and an SD. of 0.98), trust relationship (mean value of 3.27 and an SD of 1.02), team management (mean value of 3.17 and an SD of 0.99) and objectivity (mean value of 3.00 and an SD of 1.05). The values were relatively high indicating that these variables were favourably viewed by the participants. The only exception was team management with a score of 3.17.

*Table 5.17*

*Descriptive statistics for the five extracted components of the trust model*

Dimensions	N	Minimum	Maximum	Mean	SD
Work support	338	1.00	5.00	3.3546	.98472
Team management	340	1.00	5.00	3.1713	.99022
Trust relationship	346	1.00	5.00	3.2711	1.01800
Information sharing	344	1.00	5.00	3.4278	.96693
Objectivity	301	1.00	5.00	3.0033	1.04332
Valid N (listwise)	290				

In Table 5.18, the Pearson correlation coefficients among the 34 items (N=352, Pairwise) are shown. The correlation matrix, demonstrated high correlations, and all were above 0.5. The KMO value was 0.947, well above the recommended minimum value of 0.6 (Kaiser, 1970) and the Bartlett's test of sphericity (Bartlett, 1954) reached statistical significance,  $p < .001$ . Thus, the correlation matrix was deemed factorable. Annexure B contains the correlation matrix of the factors found in the Trust model.

Table 5.18

*Pearson correlations among the five extracted components of the trust model*

Dimensions	Work support	Team management	Trust relationship	Information sharing	Objectivity
Work support	1				
Team management	.814**	1			
Trust relationship	.765**	.813**	1		
Information sharing	.758**	.779**	.720**	1	
Objectivity	.606**	.647**	.646**	.588**	1

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

In Table 5.19 the Varimax rotation,<sup>4</sup> a rotation table is shown. This method endeavours to minimise correlation among the latent constructs, and was performed to ease the interpretation of the latent factors. Excluding factor loadings of less than 0.4 resulted in a reasonably simple structure (Thurstone, 1947), with each of the five components demonstrating a number of strong loadings, although there were a number of cross-loadings. Cross-loadings are seen in the rotated component matrix. Cross-loadings are found where items measure on more than one dimension. In such cases, the postulated theory was used to determine where an item would fit better under which dimension.

<sup>4</sup> Varimax was chosen specifically since it results in a clearer separation of factors (Hair et al., 2006, p. 126).

Table 5.19

*The rotated component matrix of the trust model*

Item	1	2	3	4	5
Q66 My direct manager/supervisor encourages me to openly express my feelings during team discussions.	.705				
Q67 My direct manager/supervisor keeps his/her promises.	.697				
Q71 My direct manager/supervisor ensures that my colleagues and I enjoy prestige and credibility in the company.	.602				
Q70 My direct manager/supervisor supports me when I need him/her.	.601				
Q74 My direct manager/supervisor asks us feedback on his/her performance.	.574				
Q64 My direct manager/supervisor ensures that my colleagues and I work towards the same goals.	.574			.554	
Q81 My direct manager/supervisor gives me feedback on my performance.	.571				
Q78 My direct manager/supervisor is there when I need him/her.	.506		.472		
Q72 My direct manager/supervisor tells the truth about future changes within the company.	.505				
Q79 My direct manager/supervisor gives me the information I need to do my job properly.	.464				
Q75 My direct manager/supervisor respects differences of opinions and ideas among the colleagues I work with.		.682			
Q76 My direct manager/supervisor listens carefully to my colleagues and I, and clarifies misunderstandings.	.406	.609			
Q82 My direct manager/supervisor accepts decisions made by my colleagues and I.		.557			
Q90 My direct manager/supervisor is good at handling conflict in my team.		.555	.464		
Q83 My direct manager/supervisor ensures that decisions made by my colleagues and I are implemented.		.546			.464
Q85 My direct manager/supervisor is a self-disciplined person.	.425	.509			

Item	1	2	3	4	5
Q86 My direct manager/supervisor conducts meetings in an effective manner.		.469	.421		
Q88 My direct manager/supervisor freely talks about his/her opinions on how things should be done around here.		.438		.433	
Q80 My direct manager/supervisor allows me to freely express my feelings towards him/her.	.434	.437			
Q95 The person I report directly to is fair in judging my performances.			.734		
Q94 The person I report directly to, openly and honestly reveals important work related facts to me.			.703		
Q93 I have an open, trusting relationship with the person I directly report to.			.694		
Q96 The person I report directly to demonstrates good intentions and motives towards me.			.657		
Q97 I can believe what the person I report to directly says.		.493	.565		
Q89 My direct manager/supervisor gives me straightforward feedback on my performances.		.405	.468		
Q73 My direct manager/supervisor seriously considers the proposals I make.			.460		
Q69 My direct manager/supervisor explains to me how the work I do influences the rest of the company.				.714	
Q65 My direct manager/supervisor ensures that I know what he/she expects from me.				.710	
Q84 My direct manager/supervisor ensures that colleagues and I perform at an acceptable level.		.490		.550	
Q77 My direct manager/supervisor carefully analyses problems when things go wrong.	.426	.445		.492	
Q92 My direct manager/supervisor confronts the culprits when things go wrong.				.445	
Q87 My direct manager/supervisor accepts negative feedback which he/she receives for my colleagues and I.					.759
Q68 My direct manager/supervisor tolerates work related mistakes which are made.					.499
Q91 My direct manager/supervisor honestly reveals company related information to me.					.489



Of the 34 items of the Trust Questionnaire, 11 cross-loaded on more than one factor. Items with cross-loadings were –

- question 76 loaded 0.406 on factor 1 (work support) and 0.609 on factor 2 (team management);
- question 80 loaded 0.434 on factor 1 (work support) and 0.437 on factor 2 (team management);
- question 83 loaded 0.546 on factor 2 (team management) and 0.464 on factor 5 (objectivity);
- question 85 loaded 0.425 on factor 1 (work support) and 0.509 on factor 2 (team management);
- question 86 loaded 0.469 on factor 2 (team management) and 0.421 on factor 3 (trust relationships);
- question 88 loaded 0.438 on factor 2 (team management) and 0.433 on factor 4 (information sharing);
- question 90 loaded 0.555 on factor 2 (team management) and 0.464 on factor 3 (trust relationships);
- question 97 loaded 0.493 on factor 2 (team management) and 0.565 on factor 4 (information sharing);
- question 89 loaded 0.405 on factor 2 (team management) and 0.468 on factor 3 (trust relationships);
- question 84 loaded 0.490 on factor 2 (team management) and 0.550 on factor 4 (information sharing); and
- question 77 loaded 0.426 on factor 1 (work support), 0.445 on factor 2 (team management) and 0.492 on factor 4 (information sharing).

The subscales for the extracted components were obtained by calculating the mean of the items loading on each of the subscales. This resulted in five latent constructs being calculated and named as follows:

- Component 1: work support
- Component 2: team management
- Component 3: trust relationship
- Component 4: information sharing
- Component 5: objectivity

The matrix in Table 5.20 shows the correlations between the viable performance constructs and the organisational trust constructs. It is therefore clear that the correlations were mostly in the large and medium effect ranges.

Strategic execution had large practical correlations with work support, team management and trust relationship, and medium effects with information sharing and objectivity. Operational management had large practical correlations with work support, team management, trust relationship and information sharing, and a medium practical effect with objectivity. The PMS had large positive correlations with work support, team management, trust relationship and information sharing, and a medium practical effect with objectivity. Top management involvement had medium practical effect with work support, team management, trust relationship, information sharing and objectivity. Autonomy had large practical effect with work support, team management and trust relationship, and medium practical effects with information sharing and objectivity. Accountability had medium practical effects with work support, team management, trust relationship, information sharing and objectivity. Coordinating teamwork had medium practical effects with work support, team management, trust relationship and information sharing, and a weak practical effect with objectivity. As can be seen from the results, the construct objectivity correlated in the mean and weak practical effect ranges.

*Table 5.20*

*Pearson correlations among the five extracted trust components and the nine viable performance components*

Variable	Work support	Team management	Trust relationship	Information sharing	Objectivity
Strategic execution	.535**	.520**	.513**	.456**	.422**
Operational management	.533**	.556**	.560**	.515**	.434**
PMS	.539**	.525**	.517**	.542**	.408**
Top management involvement	.498**	.482**	.482**	.420**	.368**
Autonomy	.551**	.514**	.541**	.484**	.433**
Accountability	.440**	.479**	.449**	.471**	.358**
Coordinating teamwork	.461**	.391**	.357**	.439**	.273**

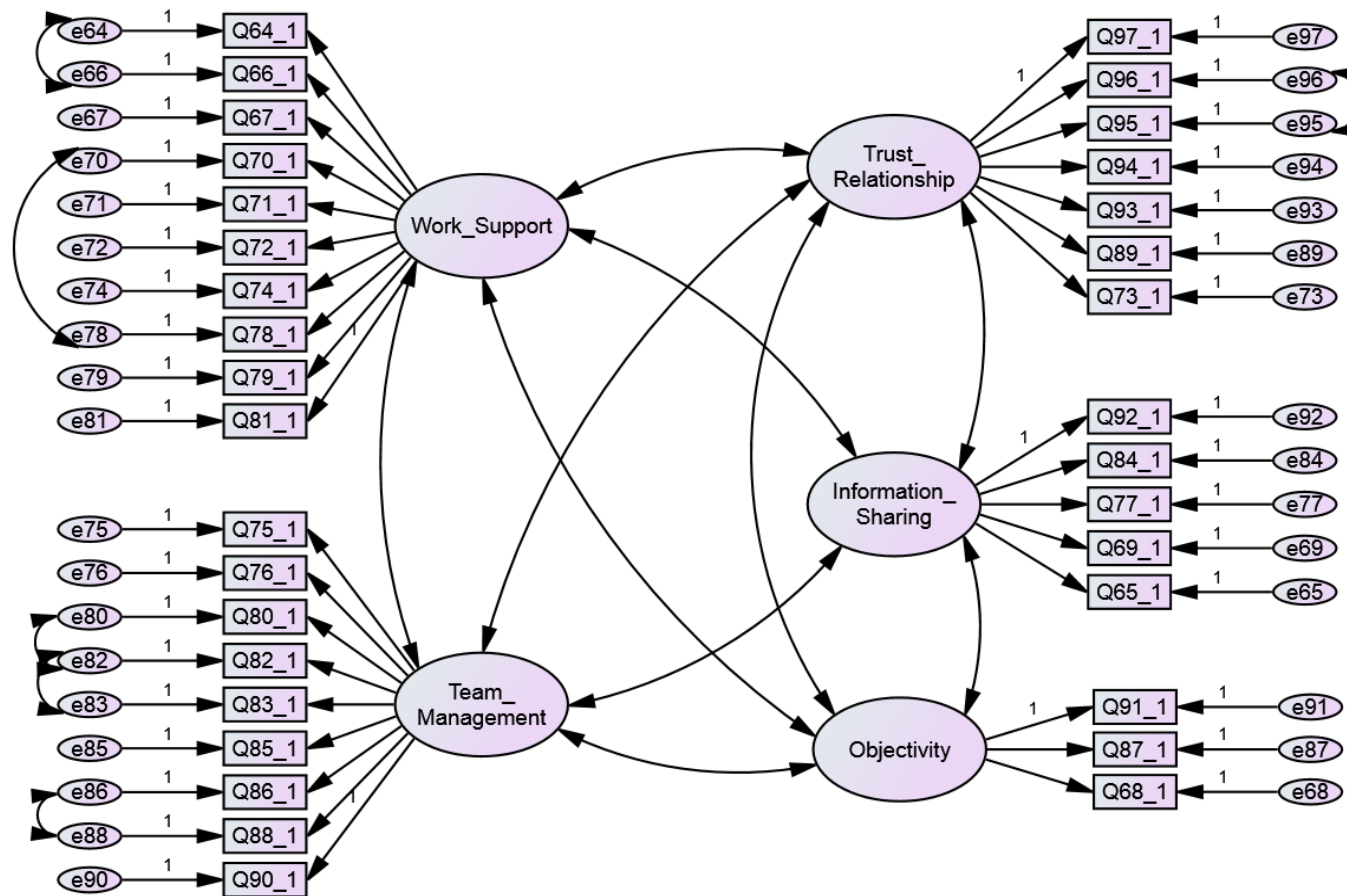
A correlation of  $r \geq 0.30 \leq 0.49$  is a medium practical effect and  $r \geq 0.50$  is a large practical effect.

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

### **5.3.2 The measurement model for trust (CFA)**

During the EFA, the dimensionality of the data was reduced, identifying which items loaded on the different latent components. The number of retained components was established using primarily the eigenvalues (greater than 1), the scree plot and the factor loadings. The results of the EFA were used to specify the measurement model to determine to which extent the relationships were valid and to test the composite reliability.

In Figure 5.11, the five components of organisational trust are shown. The straight lines with directional arrows shows direct relationships, while the curved lines with arrows on both sides show correlations.



**Figure 5.11: The measurement model for the trust components**

In the CFA, for the trust model, a low (0.286) SMC was estimated for question 68 under the factor objectivity. The other two items, question 87 and question 91 had SMCs of 0.421 and 0.415 respectively. A decision was made to retain question 68 and re-evaluate its value after the CFA had been done. This model resulted in reasonable fit when allowing question 68 (with a SMC of 0.286) to remain part of the model even though its SMC was less than 0.3 and by allowing correlations among the error variances of items loading the same constructs. The reason for retaining this item was that it was one of only three items loading on the objectivity construct and was supported by the theory. As can be seen in Figure 5.11, the item was retained. This made theoretical sense as the toleration of mistakes is part of the performance management and measurement process (Moss & Sanchez, 2004), and it also relates to objectivity and trust during the process (Latham, Almost, Mann, & Moore, 2005).

The constructs of work support, team management and information sharing were similar to the constructs described by Martins (2002) and Kreitner and Kinicki (1995). Martins obtained a four-factor model: information sharing, work support, credibility and team support as the managerial practices related to trust. The constructs of trust relationships were similar to the constructs of fairness and respect of Kreitner and Kinicki (1995).

Objectivity was defined in the current study as the manager's qualities of being open, honest and tolerant towards mistakes (questions 68, 91 and 87). The construct objectivity was similar to the concept of authentic introduced leadership by Luthans and Avolio (2003). Authentic leadership is built upon four dimensions: balanced processing, relational transparency, and self-awareness. Martins' (2002) construct *credibility* refers to a willingness to tolerate mistakes, to listen, to consider proposals, to allow others the freedom to express feelings, and to ensure that employees enjoy prestige and credibility. This construct shares similarities with objectivity.

Table 5.21 displays the unstandardised estimate, its SE and CR. The unstandardised regression coefficients represent the amount of change in the dependent or mediating variable for each unit change in the variable predicting it. The CR scores were all above 2, indicating significance.

Table 5.21

*Maximum likelihood estimates of the trust model (regression weights)*

Item		Variable	Estimate	SE	CR	P
Q81_1	<---	Work_Support	1.000			
Q79_1	<---	Work_Support	.892	.072	12.435	***
Q78_1	<---	Work_Support	.931	.075	12.397	***
Q74_1	<---	Work_Support	.954	.081	11.838	***
Q72_1	<---	Work_Support	.935	.080	11.707	***
Q71_1	<---	Work_Support	.981	.078	12.497	***
Q70_1	<---	Work_Support	.961	.080	12.068	***
Q67_1	<---	Work_Support	.847	.079	10.734	***
Q66_1	<---	Work_Support	.898	.079	11.431	***
Q64_1	<---	Work_Support	.949	.082	11.508	***
Q90_1	<---	Team_Management	1.000			
Q88_1	<---	Team_Management	.813	.077	10.591	***
Q86_1	<---	Team_Management	1.001	.083	11.997	***
Q85_1	<---	Team_Management	1.069	.078	13.630	***
Q83_1	<---	Team_Management	.838	.076	11.049	***
Q82_1	<---	Team_Management	.891	.077	11.601	***
Q80_1	<---	Team_Management	.962	.080	12.093	***
Q76_1	<---	Team_Management	.926	.078	11.807	***
Q75_1	<---	Team_Management	.944	.078	12.075	***
Q97_1	<---	Trust_Relationship	1.000			
Q96_1	<---	Trust_Relationship	.952	.075	12.687	***
Q95_1	<---	Trust_Relationship	.887	.072	12.316	***
Q94_1	<---	Trust_Relationship	.854	.075	11.450	***
Q93_1	<---	Trust_Relationship	.990	.075	13.189	***
Q89_1	<---	Trust_Relationship	.929	.079	11.729	***
Q73_1	<---	Trust_Relationship	.889	.074	12.095	***
Q92_1	<---	Information_Sharing	1.000			
Q84_1	<---	Information_Sharing	1.231	.116	10.577	***
Q77_1	<---	Information_Sharing	1.193	.113	10.580	***
Q69_1	<---	Information_Sharing	1.084	.112	9.701	***
Q65_1	<---	Information_Sharing	.997	.102	9.778	***
Q91_1	<---	Objectivity	1.000			
Q87_1	<---	Objectivity	.810	.086	9.431	***
Q68_1	<---	Objectivity	.678	.080	8.501	***

Note: SE = standard error; CR = critical ratio; P = probability value.

In Table 5.22 below, the relative regression weights of the items on each dimension can be seen. In work support, teamwork Q81 (0.706) appeared to have the greatest effect on predicting the factor, and Q67 (0.596) the least. In terms of team management, Q85 (0.756) appeared to have the greatest effect on predicting the factor, and Q88 (0.584) the least.

*Table 5.22*  
*Standardised regression weights*

Item		Variable	Estimate
Q81_1	<---	Work_Support	.706
Q79_1	<---	Work_Support	.692
Q78_1	<---	Work_Support	.691
Q74_1	<---	Work_Support	.659
Q72_1	<---	Work_Support	.651
Q71_1	<---	Work_Support	.696
Q70_1	<---	Work_Support	.673
Q67_1	<---	Work_Support	.596
Q66_1	<---	Work_Support	.636
Q64_1	<---	Work_Support	.640
Q90_1	<---	Team_Management	.700
Q88_1	<---	Team_Management	.584
Q86_1	<---	Team_Management	.663
Q85_1	<---	Team_Management	.756
Q83_1	<---	Team_Management	.609
Q82_1	<---	Team_Management	.641
Q80_1	<---	Team_Management	.668
Q76_1	<---	Team_Management	.652
Q75_1	<---	Team_Management	.667
Q97_1	<---	Trust_Relationship	.714
Q96_1	<---	Trust_Relationship	.704
Q95_1	<---	Trust_Relationship	.684
Q94_1	<---	Trust_Relationship	.634
Q93_1	<---	Trust_Relationship	.731
Q89_1	<---	Trust_Relationship	.650
Q73_1	<---	Trust_Relationship	.670

Item		Variable	Estimate
Q92_1	<---	Information_Sharing	.600
Q84_1	<---	Information_Sharing	.703
Q77_1	<---	Information_Sharing	.703
Q69_1	<---	Information_Sharing	.624
Q65_1	<---	Information_Sharing	.631
Q91_1	<---	Objectivity	.711
Q87_1	<---	Objectivity	.587
Q68_1	<---	Objectivity	.523

In Table 5.23, the covariance between the variables is seen. The p-value of \*\*\* is an indication that it was almost zero and therefore the covariance was highly meaningful ( $p < .05$ ).

*Table 5.23*  
*Covariances*

Variable		Variable relation	Estimate	SE	CR	P
Work_Support	<-->	Team_Management	.841	.093	9.021	***
Work_Support	<-->	Trust_Relationship	.813	.092	8.843	***
Work_Support	<-->	Information_Sharing	.650	.080	8.108	***
Work_Support	<-->	Objectivity	.699	.087	8.037	***
Team_Management	<-->	Trust_Relationship	.865	.096	9.051	***
Team_Management	<-->	Information_Sharing	.673	.082	8.202	***
Team_Management	<-->	Objectivity	.750	.090	8.335	***
Trust_Relationship	<-->	Information_Sharing	.644	.080	8.018	***
Trust_Relationship	<-->	Objectivity	.798	.094	8.468	***
Information_Sharing	<-->	Objectivity	.557	.076	7.337	***
e66	<-->	e64	.343	.066	5.191	***
e82	<-->	e80	.270	.057	4.728	***
e88	<-->	e86	.276	.065	4.266	***
e96	<-->	e95	.233	.053	4.375	***
e78	<-->	e70	.215	.055	3.913	***
e83	<-->	e82	.209	.056	3.756	***

Note: SE = standard error; CR = critical ratio; P= probability value.



In Table 5.24, the correlations between the variables are seen. The correlations vary between 0.769 and 0.947. The correlations were therefore all deemed significant. The low correlations were between the error variances, and were tolerated as they fitted the model (as shown by the modification indices).

The significance of the correlations as implied through the covariance can be seen in Table 5.24 below.

*Table 5.24*  
*Correlations of the trust model*

Variable		Variable relation	Estimate
Work_Support	<-->	Team_Management	.947
Work_Support	<-->	Trust_Relationship	.883
Work_Support	<-->	Information_Sharing	.910
Work_Support	<-->	Objectivity	.772
Team_Management	<-->	Trust_Relationship	.946
Team_Management	<-->	Information_Sharing	.947
Team_Management	<-->	Objectivity	.834
Trust_Relationship	<-->	Information_Sharing	.874
Trust_Relationship	<-->	Objectivity	.856
Information_Sharing	<-->	Objectivity	.769
e66	<-->	e64	.310
e82	<-->	e80	.268
e88	<-->	e86	.245
e96	<-->	e95	.271
e78	<-->	e70	.234
e83	<-->	e82	.204

In Table 5.25, the CR values are all above 2, indicating that the variance measured was significant for all the factors.

*Table 5.25*  
*Variances of the trust model*

Variable	Estimate	SE	CR	P	Label
Work_Support	.893	.120	7.439	***	
Team_Management	.883	.119	7.422	***	
Trust_Relationship	.948	.126	7.524	***	
Information_Sharing	.571	.096	5.945	***	
Objectivity	.916	.137	6.676	***	

Note: SE = standard error; CR = critical ratio; P = probability Value.

In Table 5.26, the fit indices for the trust components are shown. The RMSEA showed a reasonable fit, whereas mediocre fits were found with regard to the GFI, AGFI, NFI, RFI, NNFI and TLI indicated a mediocre fits close to 0.9. The IFI, CMIN/DF and the CFI indices did indicate proper fits. The Chi-square value was 1107.220 with 511 degrees of freedom and a probability level of 0.000. It could therefore be concluded that the model did fit the data.

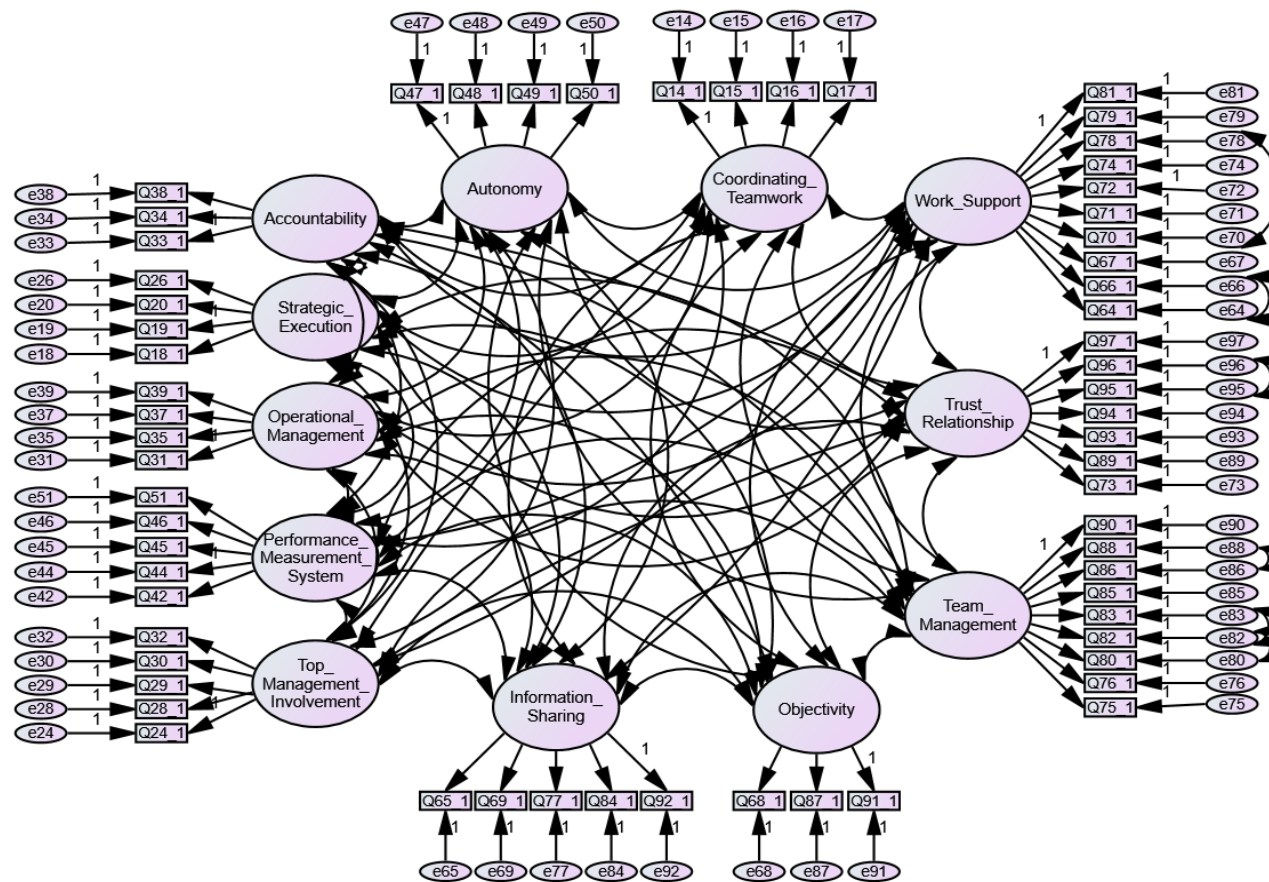
*Table 5.26*  
*Model fit indices for the trust components*

Model	GFI	CMIN/DF	AGFI	NFI	RFI	NNFI	IFI	TLI	CFI	RMSEA
Index	0.848	2.167	0.823	0.833	0.816	0.892	0.902	0.892	0.902	0.057

#### **5.4 THE COMBINED VIABLE PERFORMANCE AND TRUST MODEL (CFA ANALYSIS)**

Following the EFA and CFA for the viable performance and trust models, it was necessary to combine the factors and to validate a single model for the VPTI. Conducting a single CFA for the combined factors, a statistical fit for the combined model was established. The confirmation of the model had to confirm the postulated theory.

In Figure 5.12, the combined measurement model for viable performance and trust is shown. This model resulted in reasonable fit when allowing question 68 to remain part of the model even though its SMC was less than 0.3 and by allowing correlations among the error variances of items loading on the same constructs, as discussed.



**Figure 5.12: The combined measurement model for the viable performance and trust model (Annexure Q)**

In Table 5.27, the regression weights for the unstandardised estimate are shown below. The CR values well above 2 indicate significance.

Table 5.27

The regression weights for the combined model

Item	Variable	Estimate	SE	CR	P
Q14_1	<--- Coordinating_Teamwork	1.000			
Q15_1	<--- Coordinating_Teamwork	.948	.095	9.956	***
Q16_1	<--- Coordinating_Teamwork	.865	.089	9.757	***
Q19_1	<--- Strategic_Execution	1.000			
Q20_1	<--- Strategic_Execution	.964	.100	9.673	***
Q26_1	<--- Strategic_Execution	.975	.109	8.928	***
Q31_1	<--- Operational_Management	1.000			
Q35_1	<--- Operational_Management	1.016	.106	9.544	***
Q37_1	<--- Operational_Management	1.146	.114	10.020	***
Q39_1	<--- Operational_Management	.990	.099	9.962	***
Q44_1	<--- Performance_Measurement_System	1.000			
Q45_1	<--- Performance_Measurement_System	1.089	.101	10.799	***
Q46_1	<--- Performance_Measurement_System	1.115	.106	10.507	***
Q51_1	<--- Performance_Measurement_System	1.076	.108	9.993	***
Q24_1	<--- Top_Management_Involvement	1.000			
Q28_1	<--- Top_Management_Involvement	.850	.092	9.287	***
Q29_1	<--- Top_Management_Involvement	.868	.090	9.617	***
Q30_1	<--- Top_Management_Involvement	.910	.093	9.776	***
Q32_1	<--- Top_Management_Involvement	1.001	.092	10.876	***
Q33_1	<--- Accountability	1.000			
Q34_1	<--- Accountability	1.059	.093	11.402	***
Q38_1	<--- Accountability	.924	.088	10.505	***

Item	Variable	Estimate	SE	CR	P
Q18_1	<--- Strategic_Execution	.871	.100	8.707	***
Q17_1	<--- Coordinating_Teamwork	.844	.090	9.357	***
Q42_1	<--- Performance_Measurement_System	.981	.105	9.317	***
Q81_1	<--- Work_Support	1.000			
Q79_1	<--- Work_Support	.893	.071	12.534	***
Q78_1	<--- Work_Support	.924	.075	12.404	***
Q74_1	<--- Work_Support	.946	.080	11.819	***
Q72_1	<--- Work_Support	.934	.079	11.782	***
Q71_1	<--- Work_Support	.981	.078	12.595	***
Q70_1	<--- Work_Support	.963	.079	12.177	***
Q67_1	<--- Work_Support	.844	.078	10.769	***
Q66_1	<--- Work_Support	.897	.078	11.503	***
Q64_1	<--- Work_Support	.960	.082	11.727	***
Q90_1	<--- Team_Management	1.000			
Q88_1	<--- Team_Management	.808	.077	10.530	***
Q86_1	<--- Team_Management	1.004	.083	12.046	***
Q85_1	<--- Team_Management	1.074	.078	13.689	***
Q83_1	<--- Team_Management	.837	.076	11.040	***
Q82_1	<--- Team_Management	.890	.077	11.597	***
Q80_1	<--- Team_Management	.966	.080	12.139	***
Q76_1	<--- Team_Management	.919	.078	11.725	***
Q75_1	<--- Team_Management	.944	.078	12.075	***
Q97_1	<--- Trust_Relationship	1.000			

Item		Variable	Estimate	SE	CR	P
Q96_1	<---	Trust_Relationship	.944	.074	12.723	***
Q95_1	<---	Trust_Relationship	.882	.071	12.381	***
Q94_1	<---	Trust_Relationship	.847	.074	11.463	***
Q93_1	<---	Trust_Relationship	.989	.074	13.325	***
Q89_1	<---	Trust_Relationship	.916	.078	11.676	***
Q73_1	<---	Trust_Relationship	.897	.073	12.326	***
Q92_1	<---	Information_Sharing	1.000			
Q84_1	<---	Information_Sharing	1.237	.117	10.603	***
Q77_1	<---	Information_Sharing	1.176	.112	10.464	***
Q69_1	<---	Information_Sharing	1.117	.113	9.904	***
Q65_1	<---	Information_Sharing	1.032	.103	10.021	***
Q91_1	<---	Objectivity	1.000			
Q87_1	<---	Objectivity	.821	.086	9.545	***
Q68_1	<---	Objectivity	.679	.080	8.510	***
Q47_1	<---	Autonomy	1.000			
Q48_1	<---	Autonomy	.939	.089	10.548	***
Q49_1	<---	Autonomy	.827	.089	9.242	***
Q50_1	<---	Autonomy	1.040	.092	11.266	***

Note: SE = standard error; CR = critical ratio; P = probability value.

In Table 5.28 the regression weights of the items on each dimension can be seen. The estimates ranged from 0.521 to 0.759. Most items had regression weights above 0.6 with the exceptions of Q18 measuring 0.559 on strategic execution, Q67 measuring 0.595 on work support, Q90 measuring 0.580 on team management, Q87 and Q67 measuring 0.592 and 0.21 respectively on objectivity and Q49 measuring 0.562 on autonomy.

*Table 5.28*

*The standardised regression weights for the combined model*

Item		Variable	Estimate
Q14_1	<---	Coordinating_Teamwork	.669
Q15_1	<---	Coordinating_Teamwork	.648
Q16_1	<---	Coordinating_Teamwork	.632
Q19_1	<---	Strategic_Execution	.604
Q20_1	<---	Strategic_Execution	.642
Q26_1	<---	Strategic_Execution	.577
Q31_1	<---	Operational_Management	.620
Q35_1	<---	Operational_Management	.621
Q37_1	<---	Operational_Management	.662
Q39_1	<---	Operational_Management	.657
Q44_1	<---	Performance_Measurement_System	.626
Q45_1	<---	Performance_Measurement_System	.713
Q46_1	<---	Performance_Measurement_System	.687
Q51_1	<---	Performance_Measurement_System	.643
Q24_1	<---	Top_Management_Involvement	.644
Q28_1	<---	Top_Management_Involvement	.570
Q29_1	<---	Top_Management_Involvement	.594
Q30_1	<---	Top_Management_Involvement	.605
Q32_1	<---	Top_Management_Involvement	.690
Q33_1	<---	Accountability	.663
Q34_1	<---	Accountability	.752
Q38_1	<---	Accountability	.673
Q18_1	<---	Strategic_Execution	.559
Q17_1	<---	Coordinating_Teamwork	.600
Q42_1	<---	Performance_Measurement_System	.589
Q81_1	<---	Work_Support	.706
Q79_1	<---	Work_Support	.693
Q78_1	<---	Work_Support	.687
Q74_1	<---	Work_Support	.653
Q72_1	<---	Work_Support	.651
Q71_1	<---	Work_Support	.697
Q70_1	<---	Work_Support	.674



Item		Variable	Estimate
Q67_1	<---	Work_Support	.595
Q66_1	<---	Work_Support	.636
Q64_1	<---	Work_Support	.649
Q90_1	<---	Team_Management	.700
Q88_1	<---	Team_Management	.580
Q86_1	<---	Team_Management	.665
Q85_1	<---	Team_Management	.759
Q83_1	<---	Team_Management	.609
Q82_1	<---	Team_Management	.640
Q80_1	<---	Team_Management	.671
Q76_1	<---	Team_Management	.647
Q75_1	<---	Team_Management	.667
Q97_1	<---	Trust_Relationship	.716
Q96_1	<---	Trust_Relationship	.700
Q95_1	<---	Trust_Relationship	.682
Q94_1	<---	Trust_Relationship	.631
Q93_1	<---	Trust_Relationship	.732
Q89_1	<---	Trust_Relationship	.642
Q73_1	<---	Trust_Relationship	.678
Q92_1	<---	Information_Sharing	.595
Q84_1	<---	Information_Sharing	.701
Q77_1	<---	Information_Sharing	.688
Q69_1	<---	Information_Sharing	.638
Q65_1	<---	Information_Sharing	.648
Q91_1	<---	Objectivity	.708
Q87_1	<---	Objectivity	.592
Q68_1	<---	Objectivity	.521
Q47_1	<---	Autonomy	.684
Q48_1	<---	Autonomy	.652
Q49_1	<---	Autonomy	.562
Q50_1	<---	Autonomy	.706

In Table 5.29, the covariance for the combined model is shown. The CR values were well above 2, which indicated that the factors were significantly related.

Table 5.29  
The covariances for the combined model

Variable	Variable relation	Estimate	SE	CR	P
Coordinating_Teamwork	<--> Strategic_Execution	.624	.086	7.293	***
Coordinating_Teamwork	<--> Operational_Management	.508	.075	6.754	***
Coordinating_Teamwork	<--> Performance_Measurement_System	.465	.070	6.626	***
Coordinating_Teamwork	<--> Top_Management_Involvement	.571	.082	6.954	***
Coordinating_Teamwork	<--> Accountability	.516	.077	6.717	***
Coordinating_Teamwork	<--> Work_Support	.515	.075	6.862	***
Coordinating_Teamwork	<--> Team_Management	.462	.072	6.423	***
Coordinating_Teamwork	<--> Trust_Relationship	.435	.072	6.015	***
Coordinating_Teamwork	<--> Information_Sharing	.423	.065	6.472	***
Coordinating_Teamwork	<--> Objectivity	.358	.074	4.833	***
Coordinating_Teamwork	<--> Autonomy	.475	.076	6.284	***
Strategic_Execution	<--> Operational_Management	.527	.076	6.954	***
Strategic_Execution	<--> Performance_Measurement_System	.455	.068	6.649	***
Strategic_Execution	<--> Top_Management_Involvement	.678	.090	7.561	***
Strategic_Execution	<--> Accountability	.506	.075	6.751	***
Strategic_Execution	<--> Work_Support	.567	.077	7.314	***
Strategic_Execution	<--> Team_Management	.509	.073	6.923	***
Strategic_Execution	<--> Trust_Relationship	.542	.077	7.029	***
Strategic_Execution	<--> Information_Sharing	.422	.064	6.569	***
Strategic_Execution	<--> Objectivity	.488	.078	6.290	***
Strategic_Execution	<--> Autonomy	.535	.078	6.862	***
Operational_Management	<--> Performance_Measurement_System	.440	.066	6.690	***

Variable		Variable relation	Estimate	SE	CR	P
Operational_Management	<-->	Top_Management_Involvement	.643	.085	7.542	***
Operational_Management	<-->	Accountability	.586	.079	7.392	***
Operational_Management	<-->	Work_Support	.469	.069	6.797	***
Operational_Management	<-->	Team_Management	.487	.070	6.931	***
Operational_Management	<-->	Trust_Relationship	.541	.075	7.186	***
Operational_Management	<-->	Information_Sharing	.411	.062	6.627	***
Operational_Management	<-->	Objectivity	.468	.074	6.300	***
Operational_Management	<-->	Autonomy	.505	.074	6.821	***
Performance_Measurement_System	<-->	Top_Management_Involvement	.496	.072	6.888	***
Performance_Measurement_System	<-->	Accountability	.511	.072	7.114	***
Performance_Measurement_System	<-->	Work_Support	.544	.072	7.507	***
Performance_Measurement_System	<-->	Team_Management	.512	.070	7.296	***
Performance_Measurement_System	<-->	Trust_Relationship	.534	.073	7.325	***
Performance_Measurement_System	<-->	Information_Sharing	.463	.065	7.133	***
Performance_Measurement_System	<-->	Objectivity	.459	.071	6.434	***
Performance_Measurement_System	<-->	Autonomy	.611	.080	7.641	***
Top_Management_Involvement	<-->	Accountability	.631	.084	7.472	***
Top_Management_Involvement	<-->	Work_Support	.566	.078	7.274	***
Top_Management_Involvement	<-->	Team_Management	.508	.074	6.859	***
Top_Management_Involvement	<-->	Trust_Relationship	.548	.078	7.011	***
Top_Management_Involvement	<-->	Information_Sharing	.391	.063	6.254	***
Top_Management_Involvement	<-->	Objectivity	.474	.078	6.056	***
Top_Management_Involvement	<-->	Autonomy	.557	.080	6.958	***

Variable	Variable relation	Estimate	SE	CR	P
Accountability	<--> Work_Support	.465	.070	6.655	***
Accountability	<--> Team_Management	.494	.072	6.889	***
Accountability	<--> Trust_Relationship	.475	.072	6.579	***
Accountability	<--> Information_Sharing	.416	.063	6.590	***
Accountability	<--> Objectivity	.427	.074	5.756	***
Accountability	<--> Autonomy	.465	.073	6.393	***
Work_Support	<--> Team_Management	.841	.093	9.036	***
Work_Support	<--> Trust_Relationship	.816	.092	8.880	***
Work_Support	<--> Information_Sharing	.644	.079	8.109	***
Work_Support	<--> Objectivity	.696	.087	8.034	***
Work_Support	<--> Autonomy	.630	.081	7.763	***
Team_Management	<--> Trust_Relationship	.868	.096	9.077	***
Team_Management	<--> Information_Sharing	.665	.081	8.185	***
Team_Management	<--> Objectivity	.746	.090	8.323	***
Team_Management	<--> Autonomy	.578	.078	7.422	***
Trust_Relationship	<--> Information_Sharing	.640	.080	8.025	***
Trust_Relationship	<--> Objectivity	.797	.094	8.475	***
Trust_Relationship	<--> Autonomy	.638	.083	7.684	***
Information_Sharing	<--> Objectivity	.549	.075	7.316	***
Information_Sharing	<--> Autonomy	.452	.067	6.788	***
Objectivity	<--> Autonomy	.547	.082	6.692	***

Note: SE = standard error; CR = critical ratio; P = probability value.

The correlations between the factors for the combined model are depicted in Table 5.30. The correlations ranged from 0.947 to 0.511. The strongest correlations were between team management and trust relationship (0.947), work support and team management (0.947), and team management and information sharing (0.944). The weaker correlations (below 0.6) were between accountability and objectivity (0.511), top management involvement and objectivity (0.545), accountability and trust relationship (0.554), autonomy (0.573) and team Management (0.599).

Table 5.30  
The correlations for the combined model

Variable	Variable relation	Estimate
Coordinating_Teamwork	<--> Strategic_Execution	.820
Coordinating_Teamwork	<--> Operational_Management	.674
Coordinating_Teamwork	<--> Performance_Measurement_System	.629
Coordinating_Teamwork	<--> Top_Management_Involvement	.683
Coordinating_Teamwork	<--> Accountability	.641
Coordinating_Teamwork	<--> Work_Support	.593
Coordinating_Teamwork	<--> Team_Management	.536
Coordinating_Teamwork	<--> Trust_Relationship	.486
Coordinating_Teamwork	<--> Information_Sharing	.614
Coordinating_Teamwork	<--> Objectivity	.410
Coordinating_Teamwork	<--> Autonomy	.561
Strategic_Execution	<--> Operational_Management	.774
Strategic_Execution	<--> Performance_Measurement_System	.681
Strategic_Execution	<--> Top_Management_Involvement	.898
Strategic_Execution	<--> Accountability	.695
Strategic_Execution	<--> Work_Support	.723
Strategic_Execution	<--> Team_Management	.653
Strategic_Execution	<--> Trust_Relationship	.670
Strategic_Execution	<--> Information_Sharing	.679
Strategic_Execution	<--> Objectivity	.618
Strategic_Execution	<--> Autonomy	.697
Operational_Management	<--> Performance_Measurement_System	.665

Variable		Variable relation	Estimate
Operational_Management	<-->	Top_Management_Involvement	.859
Operational_Management	<-->	Accountability	.813
Operational_Management	<-->	Work_Support	.604
Operational_Management	<-->	Team_Management	.631
Operational_Management	<-->	Trust_Relationship	.674
Operational_Management	<-->	Information_Sharing	.667
Operational_Management	<-->	Objectivity	.598
Operational_Management	<-->	Autonomy	.666
Performance_Measurement_System	<-->	Top_Management_Involvement	.675
Performance_Measurement_System	<-->	Accountability	.722
Performance_Measurement_System	<-->	Work_Support	.714
Performance_Measurement_System	<-->	Team_Management	.676
Performance_Measurement_System	<-->	Trust_Relationship	.678
Performance_Measurement_System	<-->	Information_Sharing	.766
Performance_Measurement_System	<-->	Objectivity	.598
Performance_Measurement_System	<-->	Autonomy	.820
Top_Management_Involvement	<-->	Accountability	.789
Top_Management_Involvement	<-->	Work_Support	.656
Top_Management_Involvement	<-->	Team_Management	.593
Top_Management_Involvement	<-->	Trust_Relationship	.615
Top_Management_Involvement	<-->	Information_Sharing	.573
Top_Management_Involvement	<-->	Objectivity	.545
Top_Management_Involvement	<-->	Autonomy	.661

Variable		Variable relation	Estimate
Accountability	<-->	Work_Support	.561
Accountability	<-->	Team_Management	.599
Accountability	<-->	Trust_Relationship	.554
Accountability	<-->	Information_Sharing	.633
Accountability	<-->	Objectivity	.511
Accountability	<-->	Autonomy	.573
Work_Support	<-->	Team_Management	.947
Work_Support	<-->	Trust_Relationship	.884
Work_Support	<-->	Information_Sharing	.909
Work_Support	<-->	Objectivity	.772
Work_Support	<-->	Autonomy	.721
Team_Management	<-->	Trust_Relationship	.947
Team_Management	<-->	Information_Sharing	.944
Team_Management	<-->	Objectivity	.834
Team_Management	<-->	Autonomy	.666
Trust_Relationship	<-->	Information_Sharing	.874
Trust_Relationship	<-->	Objectivity	.856
Trust_Relationship	<-->	Autonomy	.707
Information_Sharing	<-->	Objectivity	.768
Information_Sharing	<-->	Autonomy	.652
Objectivity	<-->	Autonomy	.621



In Table 5.31 below, the CR value for all the variances of the measurement model is above 2, indicating that the variances estimated for the factors were all significant.

*Table 5.31*

*The variances for the combined model*

Variable	Estimate	SE	CR	P
Coordinating_Teamwork	.842	.131	6.408	***
Strategic_Execution	.687	.118	5.811	***
Operational_Management	.674	.112	6.013	***
Performance_Measurement_System	.650	.106	6.154	***
Top_Management_Involvement	.831	.130	6.377	***
Accountability	.769	.119	6.463	***
Work_Support	.894	.120	7.472	***
Team_Management	.882	.119	7.423	***
Trust_Relationship	.954	.126	7.576	***
Information_Sharing	.562	.095	5.932	***
Objectivity	.908	.136	6.668	***
Autonomy	.854	.127	6.744	***

Note: SE = standard error; CR = critical ratio; P = probability value.

In Table 5.32, the Cronbach's alpha scores for the combined model with all 12 constructs is shown. As can be seen from the table, most of the measures were above the desired 0.7 level, except for objectivity (0.652) and strategic execution (0.681). In terms of the internal consistency of objectivity and strategic execution, the items were not loading sufficiently enough on the construct and had to be revised. With the low number of items, 3 and 4 respectively, more items could be added with a possibility of higher internal consistency as it is known that the number of items does have an influence on the Cronbach's alpha score - the higher the number of items, the higher the score.

*Table 5.32*  
*Cronbach's alpha for the combined model*

Construct	No of items	Cronbach's alpha
Work support	10	.890
Team management	9	.878
Trust relationship	7	.863
Information sharing	5	.789
Objectivity	3	.652
Strategic execution	4	.681
Operational management	4	.732
PMS	5	.786
Top management involvement	5	.761
Autonomy	4	.750
Accountability	3	.735
Coordinating teamwork	4	.731

In Table 5.33, the fit indices are shown. The indices of fit for the combined model were noticeably lower than for the individual viable performance and trust component measurement models. The CMIN/DF and the RMSEA showed good fits, whereas NNFI, IFI, TLI and CFI were slightly below adequate fits. The TCFI, AGFI, NFI and the RFI showed weak fits. The chi-square value was 3137.225 with 1818 degrees of freedom and a probability level of 0.000. It could therefore be concluded that the model adequately fitted the data.

*Table 5.33*  
*The model fit indices for the combined model*

Model	GFI	CMIN/DF	AGFI	NFI	NNFI	RFI	IFI	TLI	CFI	RMSEA
Index	0.788	1.726	0.765	0.745	0.863	0.726	0.874	0.863	0.873	0.045

## 5.5 COMPARING CALCULATED MEANS OF THE CONSTRUCTS

With the sample sizes not being large enough, the combined measurement model of the VPTI was too complex to test invariance among groups as defined by the group variables. The two models, viable performance and trust, were subsequently used independently to test for invariance. This option was not possible. In the case of the trust model, which was less complex than the viable performance model, two group

variables, Q61 (proficiency) and Q62 (frequency of contact with the direct manager), did render stable results.

The values for each of the latent constructs were subsequently determined through calculating the average of the items that loaded on them as confirmed using SEM. The group variables were recoded into two groups, and independent samples t-tests were done.

### 5.5.1 Descriptive values for the variables

In Table 5.34, the descriptive values for the grouping variables can be seen. Except for the gender group, these dichotomous groups had comparable sizes.

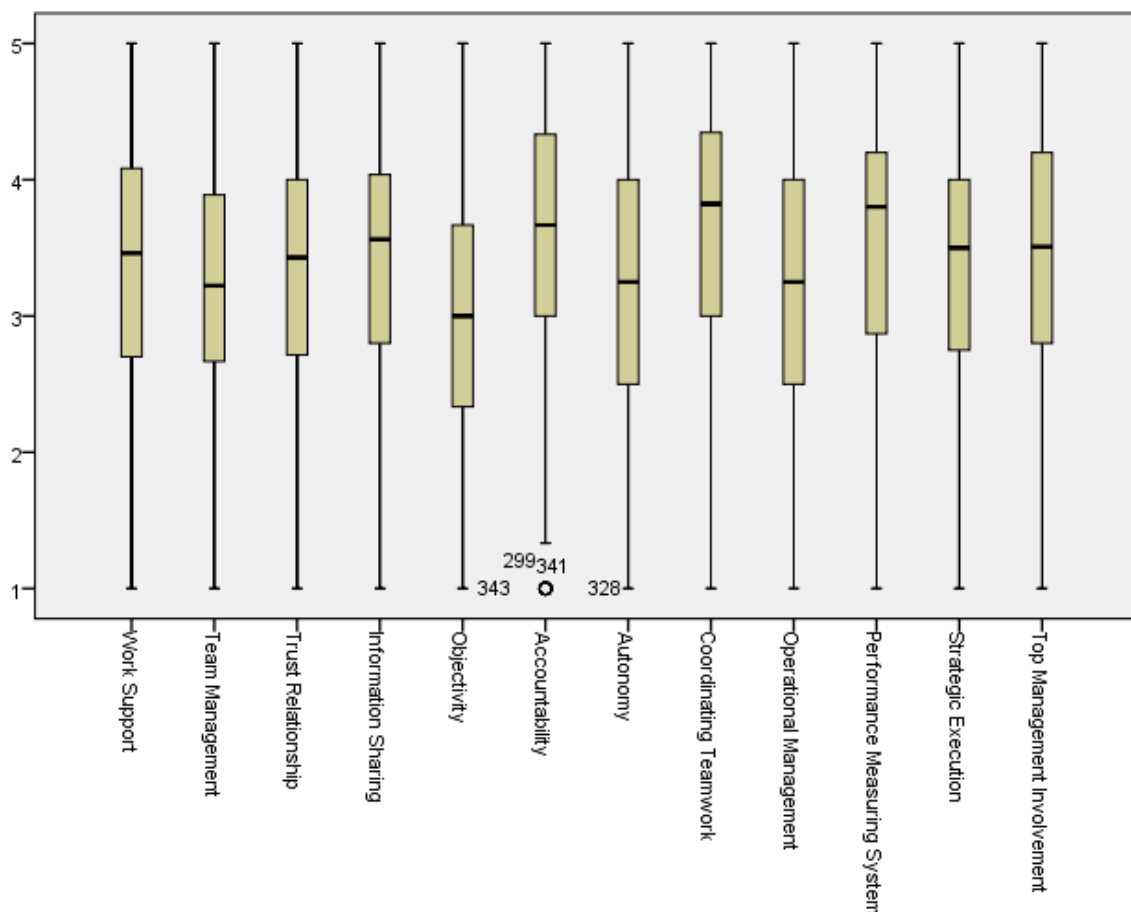
*Table 5.34*  
*Descriptive values for the group variables*

Variable		Count	Column N %
Age	Younger than 35 years	149	42.9%
	35 years and older	199	57.1%
	Total	348	100.0%
Q3 Please provide your gender:	Male	285	82.1%
	Female	62	17.9%
	Total	347	100.0%
Q6 Please provide your highest qualification:	Less than Gr12	169	49.1%
	Gr12 or higher	175	50.9%
	Total	344	100.0%
Q11 How many employees are reporting to the same manager as you do?	< = 45 employees	148	55.8%
	> 45 employees	117	44.2%
	Total	265	100.0%
Q61 Below are statements on your current state of proficiency in your present job. Please mark the appropriate statement:	Little proficiency	183	57.7%
	Good to high proficiency	134	42.3%
	Total	317	100.0%
Q62 What is the frequency of contact with your direct manager:	Less to infrequently	162	52.5%
	Frequently	147	47.5%
	Total	309	100.0%

### 5.5.2 Testing for normality of the variables

The values for the constructs were created by calculating the mean of all the items that loaded on a construct. The Kolmogorov–Smirnov and Shapiro–Wilk tests were used to test for normality of the mean distributions of the created constructs (see Annexure C for the normality of these values and Annexure D for the tests of normality). It was found that the constructs deviated significantly from normality. However, since sample size was large and the visual distributions of the scores (see Annexure E) indicated that the deviations were not large, parametric measures for inferential testing were subsequently used for further analysis.

In Figure 5.13, the box plots of the calculated means of constructs are depicted. From the graph, it is evident that skewness tended to be in the same direction. The difference in variation observable in this graph was acceptable as the sizes of the groups compared were not very disparate. The t-test also provided a robust result in the case of deviation from the homogeneity of variance assumption.



**Figure 5.13: Box plots of the calculated means of the constructs**

### **5.5.3 The group mean comparisons**

Only the group variables with significant differences are discussed below.

#### **5.5.3.1 Age**

In order to determine whether being younger or older than 35 years had an effect on any of the created constructs on average, the independent samples t-test was used to test the null hypothesis of the two group means being equal.

The Levene's test for equality of variance, was used to test the null hypothesis (i.e. that the variance in the two groups was the same). In case the null hypothesis could not be rejected ( $p > .05$ ); the equality of variance had to be assumed. If the null hypothesis was rejected, the equality of variance could not be assumed and the results in the equal variances not assumed had to be interpreted.

The t-test ( $N=346$ ) found that this age dichotomy had a marginal effect on team management ( $t=-1.967$  ( $p=0.05$ )). The older group ( $M=3.28$ ,  $SD=0.938$ ) scored higher on team management than the younger group ( $M=3.08$ ,  $SD=.972$ ). The results of the independent samples test are reflected in Annexure F.

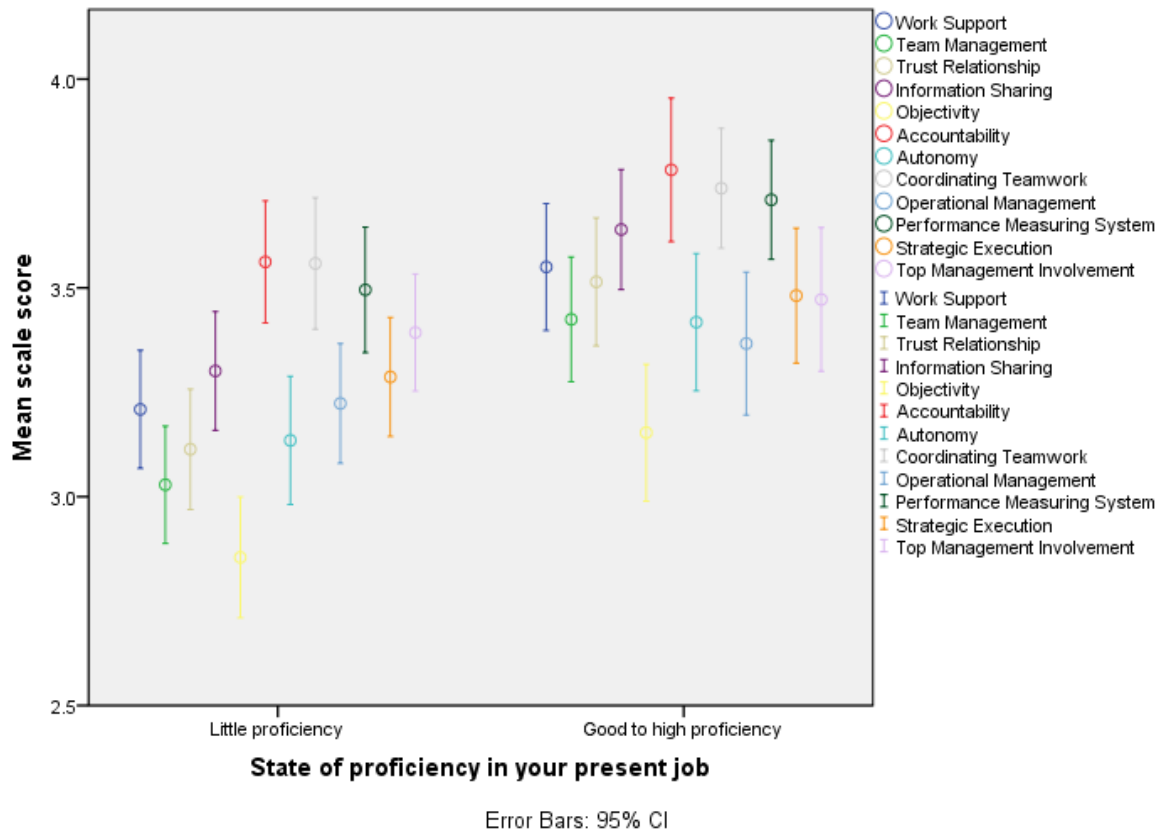
Age did not have any effect on any of the other constructs and it could therefore be assumed that these constructs were group-invariant with respect to the group means. The group statistics for age are shown in Annexure G.

In the error bars graph (see Annexure H), the overlap of age group confidence intervals for the constructs indicated that significant differences were not typically expected.

#### **5.5.3.2 Gender**

In order to determine whether being male or female had an effect on any of the created constructs on average, the independent samples t-test was used to test the null hypothesis of the two group means being equal.

As shown in Figure 5.14 below, a number of the proficiency group confidence intervals for the different constructs did not overlap, a strong indication that significant mean differences were to be expected.



**Figure 5.14: The group confidence intervals for proficiency**

Levene's test for equality of variance tests was again used in the analysis. The t-test found that this gender dichotomy did not have any effect on any of the constructs. Thus, it could be assumed that all the constructs were group-invariant with respect to the group means. The independent samples test is shown in Annexure I. The group statistics for gender are shown in Annexure J.

The overlap of gender group confidence intervals for the constructs is depicted in Annexure I.

### 5.5.3.3 Qualification

In order to determine the effect of qualification on the calculated means of the constructs, the groups were divided in having less schooling than Grade 12 or having Grade 12 or higher. The independent samples t-test and Levene's test for equality were used to test the null hypothesis of the two group means being equal.

The t-test found that this education dichotomy did not have any effect on any of the constructs. Thus, it could be assumed that all the constructs were group-invariant with respect to the group means. The group statistics are shown in Annexure L.

The independent samples test is reflected in Annexure M.

The group intervals for the constructs showed that no significant differences were typically expected (see Annexure N).

#### **5.5.3.4 *Number of peers reporting to the same manager***

The groups were divided in having fewer than 45 or more than 45 employees reporting to the same manager as the respondent. The independent samples t-test and Levene's test for equality were used to test the null hypothesis of the two group means being equal.

The t-test found that this reporting peer's dichotomy did not have any effect on any of the constructs. Thus, it could be assumed that all the constructs were group-invariant with respect to the group means. The group statistics are shown in Annexure O.

The independent samples test is reflected in Annexure P, and group confidence intervals in Annexure Q. No significant differences were to be expected considering the group confidence intervals.

#### **5.5.3.5 *Proficiency in current job***

In order to determine whether having little proficiency or high proficiency had an effect on any of the created constructs on average, the independent samples t-test and the Levene's test for equality were used to test the null hypothesis of the two group means being equal.

The t-test found that this proficiency dichotomy had a significant effect on work support ( $t(315)=-3.202$ ,  $p=0.01$ ), team management ( $t(315)=-3.758$ ,  $p=0.001$ ), trust relationship ( $t(315)=-3.708$ ,  $p=0.001$ ), information sharing ( $t(315)=-3.235$ ,  $p=.01$ ), objectivity ( $t(315)=-2.686$ ,  $p=0.01$ ), autonomy ( $t(315)=-2.453$ ,  $p=0.05$ ) and the PMS ( $t(312)=-2.055$ ,  $p=0.05$ ). In stances, the higher proficiency group scored higher than the little proficiency group on each of the constructs. The independent samples test is reflected in Annexure R.

Thus, it could be expected that a number of the constructs were not group-invariant with respect to the group means. The group statistics are shown in Table 5.35.

*Table 5.35*  
*The group statistics for proficiency*

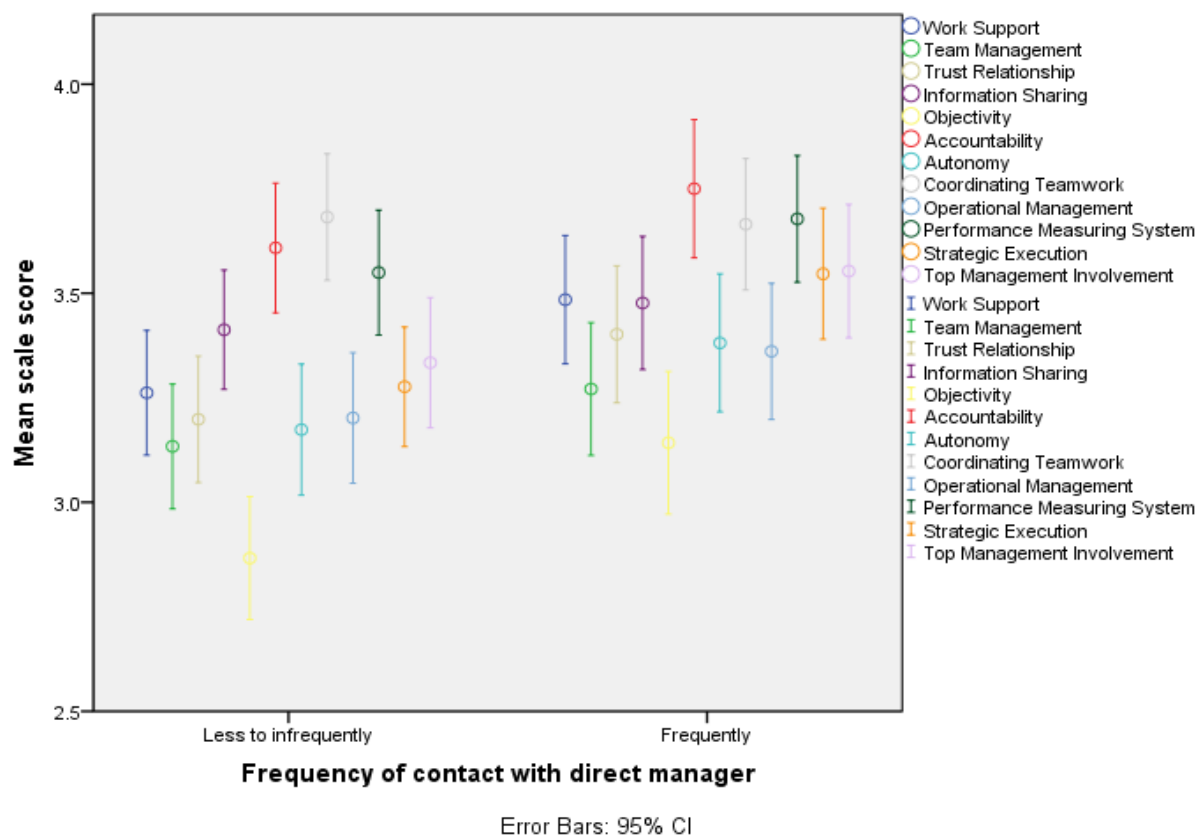
Construct	Q61 Below are statements on your current state of proficiency in your present job. Please mark the appropriate statement:	N	Mean	SD	SE mean
Work support	Little proficiency	183	3.2091	.96995	.07170
	Good to high proficiency	134	3.5501	.88936	.07683
Team management	Little proficiency	183	3.0285	.96378	.07124
	Good to high proficiency	134	3.4246	.87384	.07549
Trust relationship	Little proficiency	183	3.1135	.98804	.07304
	Good to high proficiency	134	3.5144	.89698	.07749
Information sharing	Little proficiency	183	3.3010	.97487	.07206
	Good to high proficiency	134	3.6397	.84055	.07261
Objectivity	Little proficiency	183	2.8545	.99226	.07335
	Good to high proficiency	134	3.1533	.95849	.08280
Accountability	Little proficiency	183	3.5623	1.00133	.07402
	Good to high proficiency	134	3.7827	1.00475	.08680
Autonomy	Little proficiency	183	3.1348	1.05275	.07782
	Good to high proficiency	134	3.4179	.96176	.08308
Coordinating teamwork	Little proficiency	183	3.5584	1.08093	.07990
	Good to high proficiency	134	3.7387	.83883	.07246
Operational management	Little proficiency	183	3.2234	.98379	.07272
	Good to high proficiency	134	3.3667	1.00151	.08652
Performance measuring system	Little proficiency	183	3.4954	1.02992	.07613
	Good to high proficiency	134	3.7109	.83473	.07211
Strategic execution	Little proficiency	183	3.2867	.97616	.07216
	Good to high proficiency	134	3.4815	.94659	.08177
Top management involvement	Little proficiency	183	3.3931	.96054	.07100
	Good to high proficiency	134	3.4723	1.00644	.08694



### 5.5.3.6 Contact frequency

In order to determine whether having less or more frequent contact with the direct manager had an effect on any of the created constructs on average, the independent samples t-test and the Levene's test for equality were used to test the null hypothesis of the two group means being equal.

The group confidence intervals is shown in Figure 5.15 below. Work support, objectivity and strategic execution had the least overlap, indicating that if there were significant mean differences, it would have been for these constructs.



**Figure 5.15: Group confidence intervals for contact frequency**

The t-test found that the contact frequency dichotomy had indeed a significant effect on work support ( $t(307)=-2.054$ ,  $p=0.05$ ), objectivity ( $t(307)=-2.434$ ,  $p=0.05$ ) and strategic execution ( $t(307)=-2.521$ ,  $p=0.05$ ). On average, those respondents with frequent contact with their direct managers scored higher on each of these constructs than those with less to infrequent contact with their direct managers. The group statistics for contact frequency are depicted in Table 5.36 below. The independent samples test results are depicted in Annexure S.

*Table 5.36*  
*Group statistics for contact frequency*

Construct	Q62 What is the frequency of contact with your direct manager?	N	Mean	SD	SE mean
Work support	Less to infrequently	162	3.2618	.96138	.07553
	Frequently	147	3.4845	.94209	.07770
Team management	Less to infrequently	162	3.1337	.96144	.07554
	Frequently	147	3.2709	.97475	.08040
Trust relationship	Less to infrequently	162	3.1985	.97379	.07651
	Frequently	147	3.4017	1.00480	.08287
Information sharing	Less to infrequently	162	3.4125	.91965	.07225
	Frequently	147	3.4765	.97661	.08055
Objectivity	Less to infrequently	162	2.8664	.94728	.07443
	Frequently	147	3.1424	1.04550	.08623
Accountability	Less to infrequently	162	3.6084	.99943	.07852
	Frequently	147	3.7498	1.01386	.08362
Autonomy	Less to infrequently	162	3.1736	1.00984	.07934
	Frequently	147	3.3812	1.01241	.08350
Coordinating teamwork	Less to infrequently	162	3.6823	.97521	.07662
	Frequently	147	3.6649	.96439	.07954
Operational management	Less to infrequently	162	3.2016	1.00540	.07899
	Frequently	147	3.3610	.99858	.08236
Performance measuring system	Less to infrequently	162	3.5494	.96270	.07564
	Frequently	147	3.6777	.92923	.07664
Strategic execution	Less to infrequently	162	3.2762	.92163	.07241
	Frequently	147	3.5464	.96173	.07932
Top management involvement	Less to infrequently	162	3.3338	1.00316	.07882
	Frequently	147	3.5530	.97795	.08066

The independent samples test is reflected in Annexure L, and the confidence intervals in Annexure M.

#### **5.5.4 Internal consistency measures**

Internal consistency was determined to establish to what extent the items measured the same construct as well as to identify problematic items. Ideally, the items would

vary enough to measure different facets of the characteristic, but still relate to the same construct.

Authors such as Nunnally (1978) and Lance, Butts, and Michels (2006) are of the opinion that an acceptable level of internal consistency depends on the stage and purpose of the research. In the case of early, exploratory research, it is acceptable to work with low scores.

The Cronbach's alpha's score is a measure of how well the items in a unidimensional scale are related to each other (i.e. whether they measure the same construct. In the present study, unidimensionality itself was shown by EFA and confirmed through CFA. Cronbach's alpha is affected by the inter-correlations of items and, importantly, the number of items.

Disappointingly low Cronbach's alpha scores were obtained for –

- objectivity in the age group (0.663 for the younger group and 0.649 for the older group) (Table 5.37) and in the gender group (0.632 for males) (Table 5.38);
- qualifications (0.619 for the group with less schooling than Grade 12 and 0.680 for the other group) (Table 5.39); and
- reporting relationship (0.690 for the group of 45 and younger and 0.618 for the other group) (Table 5.40).

The fact that the current research was of an exploratory nature rendered some motivation to proceed with the construct objectivity even with the low Cronbach's alpha score. Although authors such as Nunnally and Bernstein (1994) and Aron and Aron (1998) accept a Cronbach's alpha score as low as 0.6, it was felt that more robust analysis would be achieved with higher values (around 0.7 as mentioned by Nunnally, 1978).

Low Cronbach's alpha scores were also measured for –

- the younger group (younger than years) on age (0.686) (Table 5.37)
- the female gender group on strategic execution (0.669) (Table 5.38);
- the group with Grade 12 and less schooling on strategic execution (0.687); and for this group on accountability (0.677) (Table 5.39).

Inversely, where Cronbach's alpha scores were larger than 0.90 (Streiner, 2003), it may have suggested that some items were redundant as they might have been asking the same questions with different wording. High scores were measured in –

- work support (0.900) for the female group (Table 5.38);

- peer reporting (0.912) for the group of fewer than 45 employees reporting to a manager (Table 5.40);
- team management (0.906) for the peer reporting group of 45 employees and fewer reporting to a manager (Table 5.40); and
- qualifications (0.907) for the group with Grade 12 or higher (Table 5.39).

Cronbach's alpha is commonly used to measure internal consistency (Green & Salkind, 2014). Kline (2013) argues that, where internal consistency measures low, the content of items may be so heterogeneous that the total score is not the best measure of analysis.

*Table 5.37*  
*Cronbach's alpha scores for the age groups*

Construct	Number of items	Cronbach's alpha	
		Younger than 35 years	35 years and older
Work support	10	.879	.899
Team management	9	.882	.877
Trust relationship	7	.860	.869
Information sharing	5	.770	.802
Objectivity	3	.663	.649
Accountability	3	.768	.711
Autonomy	4	.780	.724
Coordinating teamwork	4	.731	.727
Operational management	4	.794	.737
Performance measuring system	5	.823	.777
Strategic execution	4	.728	.686
Top management involvement	5	.814	.785

*Table 5.38*  
*Cronbach's alpha scores for the gender groups*

Construct	Number of items	Cronbach's alpha	
		Male	Female
Work support	10	.886	.900
Team management	9	.873	.897
Trust relationship	7	.854	.888
Information sharing	5	.789	.774
Objectivity	3	.632	.735
Accountability	3	.743	.711
Autonomy	4	.736	.785
Coordinating teamwork	4	.713	.808
Operational management	4	.773	.675
Performance measuring system	5	.783	.825
Strategic execution	4	.719	.669
Top management involvement	5	.798	.738

*Table 5.39*  
*Cronbach's alpha scores for the qualification groups*

Construct	Number of items	Cronbach's alpha	
		Less schooling than GR 12	GR 12 or higher
Work support	10	.874	.907
Team management	9	.858	.900
Trust relationship	7	.848	.879
Information sharing	5	.801	.794
Objectivity	3	.619	.680
Accountability	3	.677	.779
Autonomy	4	.737	.770
Coordinating teamwork	4	.705	.752
Operational management	4	.749	.776
Performance measuring system	5	.781	.808
Strategic execution	4	.687	.707
Top management involvement	5	.753	.819

*Table 5.40*  
*Cronbach's alpha scores for peer reporting relationships*

Construct	Number of items	Cronbach's alpha	
		< = 45 employees	45 employees
Work support	10	.912	.850
Team management	9	.906	.855
Trust relationship	7	.888	.840
Information sharing	5	.837	.735
Objectivity	3	.690	.618
Accountability	3	.779	.627
Autonomy	4	.785	.718
Coordinating teamwork	4	.768	.715
Operational management	4	.754	.773
Performance measuring system	5	.864	.730
Strategic execution	4	.722	.743
Top management involvement	5	.795	.820

*Table 5.41*  
*Cronbach's alpha scores for the proficiency groups*

Construct	Number of items	Cronbach's alpha	
		Little proficiency	Good to high proficiency
Work support	10	.891	.885
Team management	9	.875	.860
Trust relationship	7	.854	.839
Information sharing	5	.794	.751
Objectivity	3	.667	.592
Accountability	3	.705	.771
Autonomy	4	.756	.730
Coordinating teamwork	4	.795	.601
Operational management	4	.764	.754
Performance measuring system	5	.817	.760
Strategic execution	4	.730	.690
Top management involvement	5	.780	.809

*Table 5.42*  
*Cronbach's alpha scores for the contact frequency groups*

Construct	Number of items	Cronbach's alpha	
		Less to infrequently	Frequently
Work support	10	.894	.890
Team management	9	.884	.883
Trust relationship	7	.864	.861
Information sharing	5	.786	.795
Objectivity	3	.592	.688
Accountability	3	.711	.755
Autonomy	4	.750	.726
Coordinating teamwork	4	.741	.691
Operational management	4	.768	.745
Performance measuring system	5	.809	.779
Strategic execution	4	.677	.717
Top management involvement	5	.810	.778

## 5.6 INVARIANCE

The approach that was followed with regard to invariance testing was that different levels of invariance testing were done by comparing the models with increasingly stringent qualities (Li, Kao, & Wu, 2015; Meredith & Teresi, 2006). In the case where the model fit was less when restrictions were added, the modelling process was terminated (Miles, Shih, Tucker, Zhou, & D'Amico, 2012).

The models that were compared were the unconstrained model, measurement weights, measurement intercepts, structural covariance and the measurement residuals. These models are explained later in this section (see below).

If invariance was confirmed, a common factor structure was maintained across the groups. Failure of invariance or weak invariance would indicate that the correlation between group measures and the corresponding factor for each group would be different. In such case, different questionnaires would have to be used across groups or the items in the constructs would have to be reviewed. For the latter approach, more research would have to be conducted.

A bottom-up and progressively restricted methodology was adopted in the present study for the analysis to test for measurement invariance. That is, the invariance

requirements at each step needed to be met in order to move on to the higher-order form of equivalence. The model approaches followed were:

**The unconstrained** model, which represents the base model with no constraints imposed on any of the parameters.

In **measurement weights**, the regression weights are constrained to be the same (i.e. to test the null hypothesis that the regression weights are the same [equal] across groups). In this case, the results are subsequently compared with the unconstrained model. In the case where invariance of regression weights is established, it should be referred to as *weak factorial invariance* (Meredith & Teresi, 2006).

**Measurement intercepts** refers to the analysis when the regression weight constraints and the intercepts are constrained to be the same across groups. The results are compared for difference from the unconstrained model as well as the measurement weights model.

In the case where the invariance of the regression weights and measurement intercepts is established; strong factorial invariance is usually reported (Meredith & Teresi, 2006).

**Structural covariance** is used when the regression weight constraints, the intercept constraints, the structural covariance (between latent constructs) as well as the variances of the latent constructs are constrained to be the same across groups. The results are then compared for differences from the unconstrained model, measurement weights model as well as the measurement intercepts model (Meredith & Teresi, 2006).

**Measurement residuals** is used when the regression weight constraints, the intercept constraints, structural covariance constraints, the covariance between error terms as well as the variance of the error terms are also constrained to be the same across groups. The results are then compared with the unconstrained model, the measurement weights model, the measurement intercepts model as well as the structural covariance model. If invariance of regression weights, measurement intercepts and error variances are established, it is usually reported as strict factorial invariance (Meredith & Teresi, 2006).



### 5.6.1 Proficiency

The nested model comparisons for proficiency are discussed in conjunction with the information depicted in Tables 5.43–5.46.

In Table 5.43, the results for the unconstrained model are shown. The null hypothesis for each model was invariance-relative to the unconstrained model. The  $p < 0.05$  in the case of the measurement weights model indicated statistical rejection of the constraint that measurement weights were invariant across groups. Thus, invariance of measurement weights could not be assumed.

All the other models differed significantly from the unconstrained model, assuming that the measurement weights were the same, adding additional constrained indicates invariance across groups.

*Table 5.43*

*Assuming model unconstrained for proficiency to be correct*

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Measurement weights	29	45.148	.028	.007	.008	-.001	-.002
Measurement intercepts	63	80.743	.065	.012	.015	-.006	-.007
Structural covariances	78	94.910	.094	.014	.017	-.008	-.009
Measurement residuals	118	161.869	.005	.025	.029	-.008	-.010

In Table 5.44, the results for the measurement weights for proficiency are shown. Null hypothesis for each model was invariance-relative to the measurement weights model.

With  $p > .05$  for the first two models, the null hypothesis could not be rejected and thus, invariance was assumed.

The  $p < .05$  in the case of the measurement residuals model, indicated statistical rejection of the constraint that error variances in the measurement variables were invariant across groups, i.e. when other constraints were kept the same.

*Table 5.44**Assuming model measurement weights for proficiency to be correct*

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Measurement intercepts	34	35.595	.393	.005	.006	-.004	-.005
Structural covariances	49	49.762	.443	.008	.009	-.006	-.007
Measurement residuals	89	116.720	.026	.018	.021	-.007	-.008

In Table 5.45, the results for the measurement intercepts for proficiency are shown. Null hypothesis for each model was invariance-relative to the measurement intercepts model.

With  $p > .05$  for the first model, the null hypothesis could not be rejected and invariance could not be assumed.

*Table 5.45**Assuming model measurement intercepts for proficiency to be correct*

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Structural covariances	15	14.167	.513	.002	.003	-.002	-.002
Measurement residuals	55	81.125	.013	.012	.015	-.003	-.003

The  $p < 0.05$  in the case of the measurement residuals model indicated statistical rejection of the constraint that error variances in the measurement model were the same. Invariance across groups could therefore not be assumed.

In Table 5.46, the results for the structural covariance for proficiency are shown. The null hypothesis for the model was that it was invariance-relative to the structural covariance model.

*Table 5.46**Assuming model structural covariances for proficiency to be correct*

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Measurement residuals	40	66.958	.005	.010	.012	-.001	-.001

The  $p < 0.05$  in the case of the measurement residuals model indicated statistical rejection of the constraint that error variances in the measurement variables were invariant across groups. Thus, invariance could not be assumed.

In Table 5.47, the model fit indices for proficiency are shown.

The normal chi-square, normed chi-square reflected a good fit (below 3.0 level); except for the independent model where there was a poor fit (above the 0.5 level) (Kline, 1998; Paswan, 2009; Ullman, 2006).

The RMSEA showed proper fits except for with the independent model where there was a poor fit. Although below the desired 0.9 level, IFI, TLI, CFI fit indices indicated reasonable fit. The NFI and RFI indicated mediocre fit between the models and the data.

*Table 5.47*  
*Model fit indices for proficiency*

Model	CMIN/D F	NFI	NNFI	RFI	IFI	TLI	CFI	RMSEA
Unconstrained model	1.836	0.714	.827	0.686	0.846	0.827	0.843	0.052
Measurement weights	1.828	0.707	.829	0.687	0.842	0.829	0.840	0.051
Measurement intercepts	1.804	0.702	.834	0.691	0.841	0.834	0.840	0.000
Measurement covariance	1.792	0.699	.836	0.693	0.840	0.836	0.840	0.050
Measurement residuals	1.788	0.689	.837	0.694	0.834	0.837	0.835	0.050
Saturated model	-	1.000		-	1.000	-	1.000	-
Independence model	5.844	0.000	.000	0.000	0.000	0.000	0.000	0.124

### 5.6.2 Contact frequency

The nested model comparisons for contact frequency are discussed in conjunction with the information provided in Tables 5.48–5.51.

In Table 5.48, the results for the unconstrained model for contact frequency are shown. Null hypothesis for each model was invariance-relative to the unconstrained model.

With  $p > .05$  for the first two models, the null hypothesis could not be rejected and invariance could be assumed.

The  $p < 0.05$  in the case of the structural covariance model indicated statistical rejection. Therefore, after constraining measurement weights and intercepts were equal, invariance existed across the groups. Thus, invariance could be assumed at this level.

*Table 5.48*

*Assuming model unconstrained for contact frequency to be correct*

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Measurement weights	29	23.465	.755	.003	.004	-.005	-.005
Measurement intercepts	63	79.533	.078	.012	.014	-.005	-.006
Structural covariances	78	103.367	.029	.015	.018	-.006	-.007
Measurement residuals	118	135.987	.123	.020	.024	-.011	-.013

In Table 5.49, the results for the measurement weights for contact frequency are shown. The null hypothesis for each model was invariance-relative to the measurement weights model.

The  $p < .05$  in the case of all the models, indicated statistical rejection of the constraint that measurement intercepts, structural covariance and error variances in the measurement variables were invariant across groups assuming that measurement weights were equal across groups.

*Table 5.49*

*Assuming model measurement weights for contact frequency to be correct*

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Measurement intercepts	34	56.068	.010	.008	.010	-.001	-.001
Structural covariance	49	79.903	.003	.012	.014	-.001	-.001
Measurement residuals	89	112.522	.047	.017	.020	-.007	-.008

In Table 5.50, the results for the measurement intercepts for contact frequency are shown. The null hypothesis for each model was invariance-relative to the measurement intercepts model.

With  $p > 0.05$  for both models, the null hypotheses could not be rejected and invariance was assumed.

*Table 5.50*

*Assuming model measurement intercepts for contact frequency to be correct*

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Structural covariance	15	23.834	.068	.004	.004	.000	.000
Measurement residuals	55	56.454	.420	.008	.010	-.006	-.007

In Table 5.51, the results for the structural covariance for contact frequency are shown. The null hypothesis for the model was invariance-relative to the structural covariance model.

With  $p > 0.05$  for the model, the null hypotheses could not be rejected and invariance was assumed.

*Table 5.51*

*Assuming model structural covariances for contact frequency to be correct*

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Measurement residuals	40	32.620	.790	.005	.006	-.006	-.007

In Table 5.52, the model fit indices for contact frequency models are shown. The normal chi-square, normed chi-square reflected a good fit (below 3.0 level), except for the independent model where there was a poor fit (above the 0.5 level) (Kline, 1998; Paswan, 2009; Ullman, 2006).

The RMSEA showed proper fits except for the independent model with a poor fit. Although below the desired 0.9 level, ILI, TFI, CLI fit still indicated adequate fits. The NFI and RFI indicted poor fits of the models to the data.

*Table 5.52*  
*Model fit indices for contact frequency*

Model	CMIN/DF	NFI	NNFI	RFI	IFI	TLI	CFI	RMSEA
Unconstrained model	1.795	0.727	.841	0.701	0.857	0.841	0.855	0.51
Measurement weights	23.465	0.714	.846	0.705	0.858	0.846	0.856	0.50
Measurement intercepts	1.764	0.715	.847	0.706	0.853	0.847	0.852	0.50
Measurement covariance	1.762	0.712	.847	0.706	0.851	0.847	0.850	0.50
Measurement residuals	1.729	0.707	.854	0.712	0.851	0.854	0.852	0.49
Saturated model	–	1.00		–	1.000	–	1.000	–
Independence model	5.995	0.000	.000	0.000	0.000	0.000	0.000	0.128

## 5.7 INTEGRATION OF EMPIRICAL RESEARCH

In this chapter, it was reported how a SEM building strategy was used with the sample data to analyse and confirm the postulated viable performance and trust models and how the VPTI was validated. In the first step, a model for viable performance was tested through EFA. Cronbach's alpha coefficients for the extracted constructs were conducted and all the extracted factors of viable performance, except coordinating tasks and coordinating consistency internal consistency, had scores above 0.7. Coordinating tasks (0.652) and coordinating consistency (0.527) were subsequently dropped from the solution.

Subsequently, CFA was conducted and in terms of the fit indices, proper fit of the data on the measurement model was shown.

The seven factors were named *strategic execution*, *operational management*, the *PMS*, *top management involvement*, *autonomy*, *accountability* and *coordinating teamwork*. The relationships and validity of these constructs were tested and confirmed.

The theoretical model for the organisational trust was submitted to exploratory and CFA, and a five-factor model was confirmed. The factors were named *work support*, *team management*, *trust relationship*, *information sharing* and *objectivity*. The relationship and validity of these constructs were also tested and confirmed. Internal

consistency scores for the factors were above 0.7, except objectivity, which measured 0.652.

Model fit indices confirmed a proper fit between the postulated model and the data.

In the next step, the viable performance and trust models were combined to form the viable trust and performance model with the 13 constructs in relation to each other.

A total of 69 items were used in the development of the VPTI. Of these, 35 were part of the viable performance model and 34 of the trust model.

Low Cronbach's alpha scores (i.e. below 0.7) were obtained for objectivity (0.653) and strategic execution (0.681). The fact that the current research was of an exploratory nature, rendered some motivation to proceed with the constructs.

In terms of the model fit indices, good fit was shown between the measurement model and data.

As a measure to determine the possibility of invariance between groups, the sample was divided in terms of age profiles, gender, and qualifications, number of peers reporting to the same manager, proficiency and contact frequency with the manager. Due to a too small sample and the complexity of the model, invariance testing could not be used for all the groups. An alternative, calculated means were compared to get an indication of equivalence. For the age, gender, qualifications and number of peers reporting to the same manager, no significant differences between the calculated means for the groups were found. Invariance could therefore be assumed for these groups. However, for proficiency and contact frequency, differences were found. For proficiency, the  $p < .05$  in the case of the measurement residuals model indicated statistical rejection of the constraint that error variances in the measurement variables were invariant across groups. Thus, invariance could not be assumed.

The null hypothesis for the model was invariance-relative to the structural covariance model. With  $p > 0.05$  for the model, the null hypotheses could not be rejected and invariance was assumed.

As it was possible to do invariance testing on the trust model for these two variables, strong invariance at the level of measurement intercepts was shown in the analysis.

The comparison of the viable performance and trust models and indicator with the theoretical model and the literature, as well as conclusions and recommendations for further research will be discussed in Chapter 6.

## **5.8 CHAPTER SUMMARY**

In this chapter, the empirical analysis was discussed. The chapter commenced with a discussion of the demographic variables and then progressed to the EFA and CFA for viable performance constructs and the same for the organisational trust constructs. The constructs were subsequently combined and CFA conducted to confirm the measurement model and psychometric properties of the VPTI. Lastly, invariance testing was done on limited parts of the measurement model.

In the next chapter, the conclusions, limitations and recommendations are discussed.



## CHAPTER 6

### CONCLUSIONS, LIMITATIONS, RECOMMENDATIONS

The aim of this chapter is to discuss the conclusions, limitations and recommendations drawn from the research. The chapter starts with the conclusions for the literature aims and empirical aims.

Following the discussion, recommendations for the organisation, which participated in the study, will also be made, the limitations of the study will be discussed and suggestions for further research will be made. The chapter will conclude with recommendations for the field of Industrial and Organisational Psychology.

#### 6.1 CONCLUSIONS REGARDING THE AIMS OF THE STUDY

The following conclusions were drawn from the literature review and the empirical investigation.

##### 6.1.1 Specific aims from the literature review

The specific aims were as follows:

###### 6.1.1.1 *First literature aim*

***The first literature aim was to conceptualise viable performance management. This aim was discussed in Chapter 1. In achieving the aim, certain information came to light.***

Performance measurement was defined within Beer's (1985) view of the cybernetic system, the requisite (and specifically the managerial hierarchy of accountability) of Jaques (1996) and the performance model of Rummler and Brache (1995). Proficiency was further brought into the conceptualisation of viable performance measurement in accordance with the importance for this construct in organisational development and progression (Cheng et al., 2003; Dreyfus & Dreyfus, 1980; Harzallah & Vernadat, 2002); Tripathi & Suri, 2010). It was assumed that, for an employee to function optimally, a certain level of competency was required.

The constructs were derived from the literary review, and a model compiled regarding the postulated relationship. The following constructs were identified by the literacy review for viable performance:

*Viability* refers to the ability of a system to maintain a separate existence (Beer, 1985). Holmberg (1995) believes a viable organisation must be able to:

- make normal decisions effectively (self-regulation);
- adjust itself according to required changes in the environment; and
- learn from experience.

Beer (1972) derived the VSM from the functioning of the human nervous system. This author also argues viable system, e.g. an organisation, comprises five interacting subsystems according. Beer (1985) and Péres Rios, 2012 believe all five subsystems should be present at all levels of an organisation for the organisation to remain viable. Beer (1985) postulates that for an organisation to be viable, certain elements or subsystems have to be present and functioning as a whole. The constructs derived from Beer's (1985) model were operational management, top management involvement, autonomy, strategic management and co-ordination of teamwork. Audit function (System 3\*), as well as was the recursion were not measured nor included in the research.

Jaques (1996) avers managerial accountability hierarchy (MAH) refers to three aspects, namely trust, authority and accountability. These constructs were measured in the VPTI. Authority as a construct did not emerge from the EFA.

It was postulated in the theoretical part of this study that the principles of the MAH of Jaques (1996) were also used to operationalise performance measurement. Jaques (1996) found that an organisation can be contextualised by different layers of complexity. Koplowitz (2008) showed that an individual employee should be managed by a person a notch more capable than the subordinate to:

1. make the employee feel good about taking instructions from the manager;
2. gain valuable context and clarity and receive coaching from such manager; and
3. be employed effectively and working at the correct layer.

From the MAH of Jaques (2010, p. 99), the following constructs were operationalised pertaining further to the viable performance of an organisation:

- accountability;

- authority;
- number of peers reporting to the same manager (span of control); and
- contact frequency.

Rummler and Brache's (1995) model was used to derive some aspects of the performance measurement as measuring the outputs of the individual worker at three different levels, namely –

- the organisational level;
- the process level; and
- the individual job performer level.

In the present research, performance measurement was seen as intended to align the employee's activities with the organisation's strategic objectives, enhance performance, and improve organisational performance (Tahvanainen, 2000). The construct *performance measurement* was derived from the theoretical insight derived as discussed above.

Lastly, the importance of proficiency was highlighted by authors such as Mayer et al (1995) and Colquitt et al (2007) as the ability to create an environment of trust and performance in the workplace (Cheng et al., 2003; Dreyfus & Dreyfus, 1980; Harzallah & Vernadat, 2002; Kagire & Munene, 2007; Tripathi & Suri, 2010).

In conclusion, performance was defined in terms of the viable model of Beer (1985) comprising top management involvement, operational management, strategic execution, coordinating teams and autonomy. In addition, from the MAH of Jaques (1996), accountability was added as a construct necessary for viable performance as well as taking from the work of Rummler and Brache (1995) the PMS (or instrument) used in the organisation to assess performance levels.

#### **6.1.1.2 Second literature aim**

***The second literature aim was to conceptualise organisational trust in an organisation This aim was discussed in Chapter 1. In achieving the aim, certain information came to light.***

The Trust Questionnaire of Martins (2000) was partly used in the study. Trust was seen within the present study as a dimension of organisational climate referring to the honest and open relationship between employee and manager Paliszkievicz (2012) warns

that a lack of consensus exists regarding a common definition of organisational trust and identifying the different combinations of factors that exert an influence in a trusting relationship. Mayer et al. (1995) and Mayer and Davis (1999) however came to the conclusion that three aspects can be isolated for their influence on organisational trust: ability, benevolence and integrity.

The importance of trust in the SA context has been shown by authors such as Von der Ohe and Martins (2010). These authors further aver that research in trust has increased with renewed interest in the relationship between trust and organisational benefits, such as commitment, organisational citizenship behaviour, team performance and organisational performance. There also seems to be a decline in leadership trustworthiness as aspects such as the rise in executive compensation levels, management negligence and malfeasance result in a perceived breach of the psychological contract on the employer's side.

In conclusion, the Trust Questionnaire of Martins (2000) was used in the research to operationalise organisational trust. Martins (2000) developed a four-factor model comprising information sharing, work support, credibility and team support as the managerial practices related to trust.

#### **6.1.1.3 Third literature aim**

***The third literature aim was to identify the elements and dimensions of a comprehensive and integrated theoretical model for viable performance management and organisational trust in an organisation. This aim was discussed in Chapter 1. In achieving the aim, certain information came to light.***

It was postulated in the present research that organisational trust, viable performance, the MAH of Jaques (1996), and a proper PMS, proficiency and organisational trust are integral parts of the individual and organisational performance system.

The following factors were grouped together as indicating viable performance:

- autonomy;
- team co-ordination;
- operational management;
- strategic management;
- top management involvement;

- accountability;
- authority;
- the PMS;
- proficiency;
- number of peers reporting to the same manager (span of control); and
- contact frequency.

As far as organisational trust is concerned, the four-factor model of Bews and Martins (2002) was used in the VPTI. To this model shows how organisational trust comprises information sharing, work support, credibility and team support as the managerial practices related to trust.

In conclusion, the systems model of Kast and Rosenzweig (1985) was used as a framework for the VPTI measurement model. In this framework, the organisation was conceptualised based on differentiated sub-systems:

- the human–cultural sub-system (organisational trust);
- the technological sub-system (the PMS);
- the strategic sub-system (strategic execution and proficiency);
- the structural sub-system (top management involvement, operational management, strategic execution, co-ordination of teams and autonomy);
- and the managerial sub-system (accountability, frequency of contact, span of control and authority).

The postulated theoretical model was depicted in Chapter 3 (Figure 3.1).

### **6.1.2 Specific aims with regard to the empirical study**

The research aims were as follows:

#### **6.1.2.1 Research aim 1**

***The first research aim was to test the statistical validity and reliability of the developed viable performance indicator (VPI).***

The first hypothesis (H01) that was to be rejected under this aim was:

The eight factors of the VPI model measurement model are not valid across all persons in terms of item fit, unidimensionality and bias.

In the original EFA, nine factors were identified. The Cronbach's alpha scores of all the factors except for coordinating tasks were above 0.70. Coordinating tasks (factor 7) was subsequently omitted from the final solution. In the case of coordinating consistency (factor 8), the number of items that loaded onto this factor was insufficient for further analysis. Factor 8 was therefore also omitted from the final measurement model.

A total of 55.88% of the variance was explained by the data.

The initial analysis for viable performance started with 39 questions. During the EFA, four questions were omitted from the analysis. Subsequently, the number of factors were reduced from nine to seven and a further three items were omitted. During the CFA, a further three items were removed due to low SMC scores. The VPI (with the trust questions omitted) was left with 29 questions.

It should be mentioned that the constructs proficiency, contact frequency and number of peers reporting to the same manager (span of control) were measured on a nominal scale only and therefore did not form part of the EFA and CFA analysis.

The first hypothesis (H01) was therefore only partially rejected as only seven factors emerged from the research.

The second hypothesis (H01) that was to be rejected under this aim was H02 (Cronbach's alpha  $\geq$  .70):

The eight factors of the VPI do not have internal consistency reliability.

From the initial nine factors identified, seven remained in the solution. The seven factors with their Cronbach's alpha scores shown in brackets were:

- strategic execution (0.730);
- operational management (0.796);
- PMS (0.776);
- top management involvement (0.791);
- autonomy (0.710);
- accountability (0.761); and
- coordinating teamwork (0.708) .

As can be seen, sufficient internal consistency was obtained and the second hypothesis (H01) could be rejected.

In terms of the current research, these seven constructs together with proficiency, contact frequency and span of control (number of peers reporting to the same manager), formed the viable performance model.

#### **6.1.2.2 Research aim 2**

***The second research aim was to develop a measurement model of viable performance to verify the theoretical model and to determine whether any new construct emerged.***

The first hypothesis (H03) under this aim was:

An eight-factor structure is not expected to relate to each other as part of the viable performance measurement model as follows: authority, accountability, autonomy, operational management, strategic execution, top management involvement, co-ordination of teams, the PMS.

The factorability of the correlation matrix was investigated using Pearson's product-moment correlation coefficient. Preliminary distribution analyses indicated that the assumptions of normality, linearity and homoscedasticity were not violated.

All the correlations (as standardised covariance) were in excess of 0.4 except coordinating teamwork and autonomy (0.342) and autonomy and accountability (0.372). The KMO value measured 0.871, well above the recommended minimum value of 0.6 (Kaiser, 1970). The Bartlett's test of sphericity (Bartlett, 1954) reached statistical significance,  $p < 0.001$ . It was concluded that the correlation matrix was deemed factorable.

Costello and Osborne (2005) emphasise that correlations between factors are to be expected as human behaviour is rarely independent from each other. A possible explanation for the relative large correlations in the present research might be that there was a second factor or factors (to which all these factors related). The correlations were all significant at the  $p \leq 0.01$  level.

First-order CFA was conducted on the seven first-order LVs. The analysis resulted in a good fit as shown by the fit indices indicating the data did fit the model tested. The chi-square value was 610.301 with 356 degrees of freedom and the probability of 0.000 could be due to the sample being large. The RMSEA showed a good reasonable fit, whereas the GFI, AGFI and NFI were below the threshold, although not significantly

below the 0.9 cut-off point. The CMIN/DF, NNFI, TLI, IFI and CFI indices indicated proper fits.

Other aspects of the viable performance model that were of interest to be considered were regression weights and covariance, correlations and variance of the dimensions.

The third hypothesis (H03) was therefore partially rejected as seven constructs emerged and related to each other.

### **6.1.2.3 Research aim 3**

***The third research aim was to confirm the statistical validity and reliability of the Trust Questionnaire for a security environment. In this research aim, the fourth (H04) hypothesis had to be rejected, namely:***

The four factors of the organisational trust model are not valid across all persons in terms of item fit, unidimensionality and bias.

An existing questionnaire, the Trust Questionnaire by Martins (2000) was used in the study. The four factors as identified by Martins (2000) are information sharing, work support, credibility and team support.

The four-factor model of Martins (2000) was not confirmed in the present. The five factors and their Cronbach's alpha scores are:

- work support (0.903);
- team management (0.887);
- trust relationship (0.873);
- information sharing (0.796); and
- objectivity (0.652).

Sufficient internal consistency was therefore obtained. A total of 63.01% of the variance was explained by the solution.

Of the original questions of the Trust Questionnaire, 34 items were used in the present study. The communalities for the items were above the 0.3 threshold so that all the items were retained in the study. In the case of cross-loadings of items, the items were retained where they had the highest factor loading.

The second hypothesis that had to be rejected under this research aim was H05:

The four factors of the organisational trust model do not have internal consistency reliability (Cronbach's alpha  $\geq$  .70).



The fourth hypothesis (H04) was partially rejected as five and not four factors emerged. However, the fifth hypothesis, H05, was accepted as the five factors or constructs displayed internal consistency.

#### **6.1.2.4 Research aim 4**

***The fourth research aim was to confirm the measurement model of trust for a security environment.***

The sixth hypothesis (H06) that was applicable under this research aim to be rejected (H06) was as follows:

A four-factor structure is not expected to relate to each other as part of the organisational trust measurement model as follows: information sharing, work support, credibility, team support.

The factorability of the model was confirmed by the Pearson correlation coefficients among the 34 items (N=352, pairwise). The correlation matrix demonstrated high correlations, all were above 0.5. The KMO value was 0.947, well above the recommended minimum value of 0.6 (Kaiser, 1970) and the Bartlett's test of sphericity (Bartlett, 1954) reached statistical significance,  $p < 0.001$ . Therefore, the correlation matrix was deemed factorable.

The model resulted in reasonable fit even when allowing question 68 with a low SMC of 0.274 to remain part of the solution and by allowing correlations among the error variances of items loaded the same constructs. The reason for retaining this item was that it was one of only three items loaded on the objectivity construct.

This also made theoretical sense as the item deals with the toleration of mistakes, as part of the performance measurement process (Latham et al., 2005; Moss & Sanchez, 2004).

In work support, question 81 (0.706) appeared to have the greatest effect on predicting the factor, and question 67 (0.596), the least. In terms of team management, question 85 (0.756) appeared to have the greatest effect on predicting the factor, and question 88 (0.584), the least. In terms of trust relationship, question 97 contributed the most at 0.714 and Q94 the least at 0.634. In terms of information sharing, questions 77 and 84 contributed the most at 0.703, and question 92, the least at 0.600. In terms of

objectivity, question 91 contributed the most at 0.711, and question 68, the least at 0.523.

The covariance of the trust model was found to be highly meaningful ( $p < 0.05$ ) and the correlations between the factors were significant.

The model fit indices showed that the model did fit the data. More specifically, the RMSEA showed a reasonable fit, whereas mediocre fits were found with regard to the GFI, AGFI, NFI, RFI, NNFI and TLI, which indicated a mediocre fit at 0.9. The IFI, CMIN/DF and the CFI indices indicated proper fits. The chi-square value was 1107.220 with 511 degrees of freedom and a probability level of 0.000.

The sixth hypothesis (H06) was partially rejected as a five-factor model emerged from the study opposed to the four-factor model of Martins (2000). The factors were work support, team management, trust relationship, information sharing and objectivity.

#### **6.1.2.5 Research aim 5**

***The fifth research aim was to develop a combined model of viable performance and trust to verify the theoretical model and to determine whether any new constructs emerged in a security environment.***

The hypothesis applicable under this research aim was H07:

There is not a strong positive relationship between the identified factors of viable performance and organisational trust (authority, accountability, autonomy, operational management, strategic execution, top management involvement, co-ordination of teams, the PMS, information sharing, work support, credibility and team support).

The combination of the viable performance and trust models was necessary to develop the final measurement model as the basis of the VPTI.

The correlations between the factors in the model ranged from 0.947 to 0.511. The strongest correlations were among team management and trust relationship (0.947), work support and team management (0.947), and team management and information sharing. The weaker correlations (below 0.6) were between accountability and objectivity (0.511), top management involvement and objectivity (0.545), accountability and trust relationship (0.554), autonomy (0.573), and team management (0.599).

In terms of the variances, the CR value for all the variances of the measurement model was above 2, indicating that the variance measured for the factors were all significant.

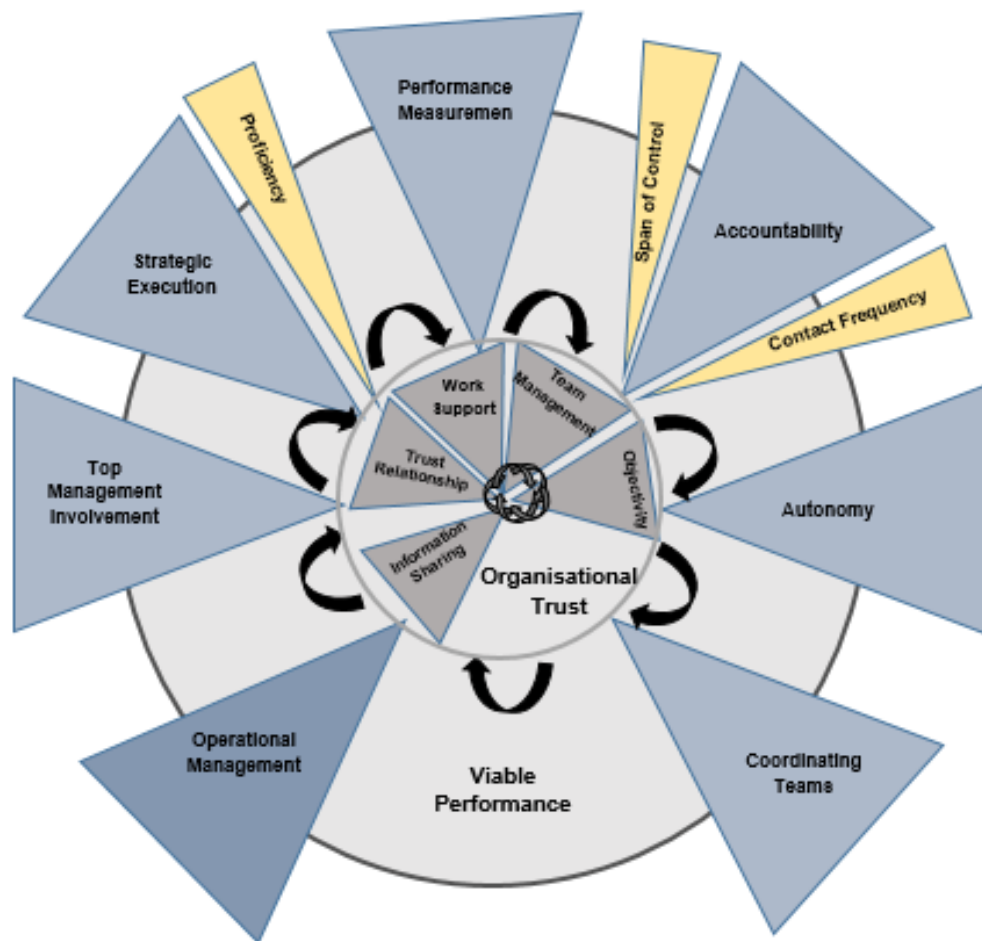
Trust relationship measured the highest variance (0.954), followed by objectivity (0.908), work support (0.894), team management (0.882), autonomy (0.854), coordinating teamwork (0.842), top management involvement (0.831), accountability (0.769), strategic execution (0.687), operational management (0.674), PMS (0.650) and information sharing (0.562).

In terms of the model fit indices, the fit for the combined model was noticeably lower than for the individual viable performance and trust component measurement models. The CMIN/DF and the RMSEA showed a good fit, whereas the NNFI, IFI, TLI and CFI were slightly below proper fits. The TCFI, AGFI, NFI and the RFI showed weak fits. The chi-square value was 3137.225 with 1818 degrees of freedom and a probability level of 0.000. It could therefore be concluded that the model did fit the data.

The Cronbach's alpha scores for the combined model were mostly above the desired 0.7 cut-off with objectivity (0.652) and strategic execution (0.681) being the exceptions. In terms of the internal consistency of objectivity and strategic execution, the items were not loading sufficiently enough on the construct and had to be revised. With the low number of items, three and four respectively, more items could be added with a possibility of higher internal consistency, as it is known that the number of items has an influence on the Cronbach's alpha score, i.e. the higher the number of items, the higher the score.

From the empirical model, it was clear that the original theoretical model had to be adjusted. In the adapted model in Figure 6.1, the seven constructs of the viable performance part are displayed. In the middle, the five constructs of organisational trust are clustered together as per Martins (2000). Together the seven constructs of viable performance and the five constructs of organisational trust form the measurement model and assessment of the VPTI. The theoretical constructs that were not subjected to the EFA and CFA are displayed next to the constructs where they theoretically fit, i.e. contact frequency and span of control next to accountability, and proficiency next to strategic execution.

In Figure 6.1, below the measurement model, based on the statistical analysis, is portrayed in a graphical format.



**Figure 6.1: The viable performance and trust model**

Hypothesis H07 was therefore rejected as significant relationships between the constructs were shown.

#### **6.1.2.6 Research aim 6**

**The sixth research aim was to determine whether invariance existed for the group variables.**

The hypothesis applicable under this research aim was H08:

The biographical groups (age, gender, qualifications, proficiency, span of control and contact frequency) differ significantly in terms of the measured construct levels.

To determine whether the factorial structure of the measurement model was relevant across the identified groups, invariance testing had to be conducted. However, it was found that the sample size and complexity of the model made invariance testing on the SEM measurement models impossible. It was subsequently decided to compare the

calculated means of the constructs. These values were created by calculating the mean of all the items that loaded onto a construct. The Kolmogorov–Smirnov and Shapiro–Wilk tests were used to test for normality of the mean distributions of the created constructs. Through this analysis, invariance for the VPTI was determined in terms of the group variables age, gender, qualification and number of peers reporting to the same manager. It could therefore be concluded that the constructs of the VPTI were group-invariant with respect to the group means. However, in terms of proficiency and contact frequency, invariance could not merely be concluded. The conclusion was that the higher proficiency group scored higher than the lower proficiency group on each of the constructs.

On average, those respondents with frequent contact with their direct managers scored higher than those with less to infrequent contact with their direct managers on each of these constructs.

Low Cronbach's alpha scores were measured in the younger age group (0.686), the female gender group on strategic execution (0.669), and the lower qualifications group on accountability (0.677) and strategic execution (0.687).

In terms of the invariance testing, a low Cronbach's alpha score was obtained for objectivity on following variables:

- age variable (0.663 for the younger group and 0.649 for the older group);
- gender (0.632 for males);
- qualifications (0.619 for the group with less schooling than Grade 12 and 0.680 for the other group); and
- number of peers reporting to the same manager (0.690 for the group of 45 years and less and 0.618 for the other group).

The fact that the current research was of an exploratory nature, rendered some motivation to have included objectivity, even with the low Cronbach's alpha score. Although Nunnally and Bernstein (1994) and Aron and Aron (1998) accept a Cronbach's alpha score as low as 0.6, it was felt that more robust analysis would be achieved with higher values (around 0.7 as mentioned by Nunnally [1978]).

It could be concluded that the same constructs were measured across the groups and that it could be assumed that the VPTI was equally reliable across these groups.

For proficiency, the null hypothesis for each model was invariance-relative to the unconstrained model. The  $p < 0.05$  in the case of the measurement weights model indicated statistical rejection of the constraint that measurement weights were invariant across groups. Thus, invariance of measurement weights could not be assumed. The indexes of fit measured showed reasonable fit.

In terms of contact frequency, the results for the measurement intercepts for contact frequency are shown. The null hypothesis for each model was invariance-relative to the measurement intercepts model. With  $p > 0.05$  for both models, the null hypotheses could not be rejected and invariance was assumed. The indexes of fit showed adequate fit.

Hypothesis H08 was therefore rejected as the biographical groups (age, gender, qualifications, proficiency, span of control and contact frequency) did not significantly differ in terms of the measured construct.

A summary of the hypotheses is provided in Table 6.1, showing which hypothesis were rejected or partially rejected.

*Table 6.1*  
*Research hypotheses rejected or accepted*

Research aim	Research hypotheses	Hypothesis supported
Research aim 1: To test the statistical validity and reliability of the developed viable performance indicator (VPI).	H01: The eight factors of the VPI model measurement model are not valid across all persons in terms of item fit, unidimensionality and bias.	Rejected
	Ha1: The eight factors of the VPI model measurement model are valid across all persons in terms of item fit, unidimensionality and bias.	Accepted
	H02: The eight factors of the VPI do not have internal consistency reliability (Cronbach's $\alpha \geq .70$ ).	Rejected
	Ha2: The eight factors of the VPI have internal consistency reliability (Cronbach's $\alpha \geq .70$ ).	Accepted

Research aim	Research hypotheses	Hypothesis supported
Research aim 2: To develop a measurement model of viable performance to verify the theoretical model and to determine whether any new construct emerged.	H03: An eight-factor structure is not expected to relate to each other as part of the viable performance measurement model as follows: authority, accountability, autonomy, operational management, strategic execution, top management involvement, co-ordination of teams, the PMS.	Partially rejected
	Ha3: An eight-factor structure is expected to relate to each other as part of the viable performance measurement model as follows: authority, accountability, autonomy, operational management, strategic execution, top management involvement, co-ordination of teams, the PMS.	Partially accepted (A seven-factor model emerged accountability, autonomy, operational management, strategic execution, top management involvement, co-ordination of teams, the PMS.)
Research aim 3: To confirm the statistical validity and reliability of the Trust Questionnaire for a security environment.	H04: The four factors of the organisational trust model are not valid across all persons in terms of item fit, unidimensionality and bias.	Rejected
	Ha4: The four factors of the organisational trust model are valid across all persons in terms of item fit, unidimensionality and bias.	Accepted
	H05: The four factors of the organisational trust model do not have internal consistency reliability (Cronbach's alpha $\geq$ .70).	Rejected
	Ha5: The four factors of the organisational trust model have internal consistency reliability (Cronbach's alpha $\geq$ .70).	Accepted
Research aim 4: To confirm the measurement model of trust for a security environment.	H06: A four-factor structure is not expected to relate to each other as part of the organisational trust measurement model as follows: information sharing, work support, credibility, team support.	Partially rejected

Research aim	Research hypotheses	Hypothesis supported
	Ha6: A four-factor structure is expected to relate to each other as part of the organisational trust measurement model as follows: information sharing, work support, credibility, team support.	Partially accepted (A four-factor model emerged – work support, team management, trust relationship, information sharing and objectivity)
Research aim 5: To develop a combined model of viable performance and trust to verify the theoretical model and to determine whether any new constructs emerged in a security environment.	H07: There is not a strong positive relationship between the identified factors of viable performance and organisational trust (authority, accountability, autonomy, operational management, strategic execution, top management involvement, co-ordination of teams, the PMS, information sharing, work support, credibility and team support)	Rejected
	Ha7: There is a strong positive relationship between the identified factors of viable performance and organisational trust (authority, accountability, autonomy, operational management, strategic execution, top management involvement, co-ordination of teams, the PMS, information sharing, work support, credibility and team support)	Accepted
Research aim 6: To determine whether invariance existed for the group variables.	H08: The biographical groups (age, gender, qualifications, proficiency, span of control (number of peers reporting to one manager) and contact frequency) differ significantly in terms of the measured construct levels.	Rejected
	H08: The biographical groups (proficiency and contact frequency) do not differ significantly in terms of the measured construct levels.	Accepted

## 6.2 LIMITATIONS

The limitations of the research are as follows:



### **6.2.1 Limitations related to the literature review**

The research model was compiled from a synthesis of models by researchers such as Beer (1985), Jaques (1996), Kast and Rosenzweig (1985), Martins (2000), Rummier and Brache (1995) and Dreyfus and Dreyfus (1980). This unique synthesis as well as a lack of similar models on organisational performance, makes comparison of the model with similar models difficult.

As mentioned in earlier chapters, some of the constructs like organisational trust, performance measurement, autonomy and strategic execution and viability are not necessarily well defined in the field of Industrial and Organisational Psychology.

### **6.2.2 Limitations related to the empirical study**

The sample was drawn in a single industry only. The nature of the research problem was of such nature that a cross-sectional, cross-industry study could be more beneficial.

The size of the sample was not conducive to studying the complexity of the statistical techniques needed to test all the facets of the measurement model (e.g. invariance).

The socio-demographic variables were limited in the study. Including other aspects such as race, tenure, and functional category could have yielded a richer set of data.

A stronger data set would have rendered the testing for second-order constructs.

In terms of the construct objectivity, some other limitations are worth mentioning. In the EFA for the Trust Model, a low (0.286) SMC was estimated for question 68 under the factor objectivity. Although the CFA model resulted in reasonable fit when allowing this question, this question needs to be revised.

It was also mentioned that lower than desired Cronbach's alpha scores were obtained in the invariance testing on the group variables for objectivity (i.e. below the desired 0.7 level measuring 0.652). The same was true for the Pearson product-moment correlations that measured lower.

## **6.3 SUGGESTIONS FOR FURTHER RESEARCH**

It is clear that the measurement model and VPTI need some refinement with regard to aspects such as the following:

- refining the items in some cases as with objectivity and possibly adding more items;
  - considering to add more constructs to explain more variance;
  - increasing the sample size as well as including other organisations and industries to generalise the findings;
  - consider looking for second-order factors as some of the constructs seemed to be loading on another latent factor; and
  - considering to include more biographical and demographic variables with regard to the invariance testing.
- The relationship between organisational trust and other constructs has been shown in this study. This highlights again the importance of organisational trust in the organisation; including the measurement of performance. More research in these areas is needed, especially within an SA context.
  - The measurement of individual and organisational performance should include other aspects and constructs in an organisation and should not be treated in isolation.
  - The study referred to aspects that should be studied in more detail, such as the need to develop proficiency as an aspect of influence in performance and trust levels. The same is true for span of control and contact frequency.
  - The study also eluded to time frames (span of discretion as defined by Jaques [1996] and recursion as defined by Beer [1985]) as further study areas in relation to organisational trust and viable performance attainment and measurement; and
  - The view of Beer (1985) that the (viable) organisation consists of certain functions has to a certain extent been confirmed through the confirmation of the viable performance model – especially through the confirmation of top management involvement (System 5), strategic execution (or strategic management in System 4), operational management (System 3), coordinating teams (System 2) and autonomy (System 1).
  - Further research should be done around the cultural fairness of the constructs. Saunders, Skinner, and Lewicki (2010), for example, questioned the cultural validity of organisational trust, i.e. whether people from various cultures understand trust and its value in the same way.

- Of the 34 items of the Trust Questionnaire, 11 items cross-loaded onto more than one factor. Of the 29 items of the Viable Performance Scale, 13 items loaded onto more than one factor. This might be an indication of the similarity in the interpretation of the items by the participants – a matter that could be investigated further.
- It was particularly disappointing that the postulated construct of authority did not configure in the research. This matter is worth following up in further research. It is postulated that the items of the VPTI intended to measure this construct can be improved.
- Lastly, it is worth mentioning that the research was of an exploratory nature and that the inclusion of further constructs may lead to a richer model explaining more variance.

#### **6.4 RECOMMENDATIONS FOR THE PARTICIPATING ORGANISATION**

The organisation, which participated in the research, could potentially benefit from the results in the following ways:

- In line with the group variables used in the study, some suggestions can be made regarding:
  - The sample indicated a workforce of age mainly 35 years and older (i.e. 57.1%). It is not clear whether this was by design or a concern that younger employees were either not recruited or retained in the organisation.
  - The sample also had only 17.9% female participants indicating fewer female participants than males in the programme and possibly the organisation itself. Again, this could be due to the nature of the security industry or something worth investigating further in order to have a more gender equitable workforce.
  - A large proportion of the sample (49.1%) had less schooling than a Grade 12 qualification. This could be indicative of the nature of the industry, pay levels, recruitment practices, historical tendencies, etc. It could be worth investigating the effect of the relatively low educational levels of participants on the sustainability of the organisation in terms of introducing new and complex technologies.

- The same is true for the relatively low level of employees rating themselves as having good or high proficiency (42.3%). It is recommended that the organisation focus on increasing proficiency levels.
- It also seemed that the number of employees reporting to the same manager was quite large as 44.2% indicated that 45 and more employees were reporting to the same manager. This is a large span of control, and the organisation could consider investigating the possibility to introduce more levels in the organisation structure.
- The frequency of contact with the direct manager was also relatively low as 52.5% of participants indicated less to infrequent contact with their direct managers.
- In terms of the trust model, objectivity (3.00), team management (3.17) also measured lower than information sharing (3.42), work support (3.35), and the trust relationship (3.35). Again, it is recommended that the organisation consider interventions that will focus on objectivity and team management in the organisation.
- Lastly, in terms of the mean factor scores of the viable performance model, although the means were all in the ranges 3.21 to 3.62, it seemed that the participants rated the PMS (at 3.54), accountability (at 3.62) and co-ordination of teamwork (3.61) more favourably than strategic execution (3.21), autonomy (at 3.22) operational management (3.30) and top management involvement (3.37). In terms of interventions, the organisation could consider focusing more on the construct with the lower score in future.

## **6.5 RECOMMENDATIONS FOR INDUSTRIAL AND ORGANISATIONAL PSYCHOLOGY**

The following recommendations, based on the conclusions from the literature and empirical study, are made for the field of Industrial and Organisational Psychology:

- Performance and the measurement thereof should not be treated as an isolated function of the organisation but should rather be contextualised within a framework where at least the measured constructs of this study are acknowledged.

- Of special importance are organisational trust and the relationship to other constructs such as operational management, strategic execution, performance measurement, top management involvement, autonomy, accountability, proficiency, contact frequency and co-ordination of teamwork. The importance of organisational trust was also shown in the literature study. The necessity of viewing organisational trust not as an isolated aspect or goal in the organisation was also shown in the present research.
- It is also important to note that some constructs are composites of sub-constructs such as organisational trust comprising objectivity, trust relationship, work support, information sharing and team management. These composite constructs should be studied, measured and treated as such as well as within a systemic holistic relationship to some other constructs.
- The construct of proficiency is also worth special mentioning. Performance measurement and organisational trust should take into account the level of proficiency of the individual worker. This construct was shown to relate to the other constructs in the measurement model.
- Lastly, concepts such as recursion, viability and the requisite organisation mentioned in the literature study should be indicative to Industrial and Organisational Psychology to be aware of the complexity and richness of this field and the need for further research.

## **6.6 CHAPTER SUMMARY**

In this chapter, the conclusions, limitations and recommendations regarding the present study were discussed. The chapter started with the conclusions reached regarding the specific literature aims, the specific empirical aims, and then progressed to the limitations of the study, recommendations for the participating organisation and ended with recommendations for the field of Industrial and Organisational Psychology regarding the development of a framework for the measurement of performance and trust.

Importantly, it was shown that this study was primarily of an exploratory nature and the need for more research in this area was motivated; especially within the SA context.

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**ANNEXURE A**  
**THE PEARSON COEFFICIENTS OF THE CONSTRUCTS OF THE VPI**

Item	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32
Q13 Conflicts between organisational units are addressed in the organisation.	1																			
Q14 We work together as a team in the organisation.	.286**	1																		
Q15 Work is well coordinated between the different organisational units.	.187**	.478**	1																	
Q16 Tasks get done as and when they are supposed to be done.	.284**	.486**	.417**	1																
Q17 The process flow in the workplace is conducive to productivity.	.174**	.346**	.417**	.420**	1															
Q18 The organisation plans sufficiently ahead to be ready for the future.	.242**	.385**	.360**	.367**	.453**	1														
Q19 I am involved in information gathering for strategic purposes.	.285**	.340**	.289**	.298**	.286**	.401**	1													
Q20 The organisation's strategy is realistic.	.224**	.400**	.293**	.328**	.303**	.363**	.492**	1												
Q21 I am involved in decision making in the wider organisation.	.339**	.349**	.233**	.241**	.274**	.282**	.466**	.457**	1											
Q22 All effort in the Company is directed at the execution of the strategy.	.212**	.340**	.310**	.372**	.336**	.435**	.342**	.506**	.435**	1										
Q23 I have the necessary authority to initiate projects in my job.	.177**	.277**	.298**	.239**	.308**	.265**	.336**	.257**	.325**	.350**	1									

Item	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32
Q24 I am allowed to enforce appropriate corrective steps when needed.	.237**	.313**	.294**	.384**	.405**	.277**	.390**	.462**	.321**	.480**	.359**	1								
Q25 I am allowed to reward fellow employees appropriately.	.155**	.254**	.225**	.173**	.200**	.271**	.259**	.350**	.365**	.247**	.346**	.395**	1							
Q26 I have a clear understanding who in the organisation makes which decisions.	.210**	.289**	.315**	.306**	.296**	.226**	.368**	.359**	.282**	.355**	.362**	.474**	.290**	1						
Q27 In my section the overruling of authority levels occurs rarely.	.223**	.225**	.257**	.321**	.289**	.277**	.224**	.249**	.146*	.214**	.248**	.307**	.208**	.297**	1					
Q28 Generally I am proud to tell people where I work.	.225**	.319**	.251**	.281**	.283**	.294**	.316**	.341**	.219**	.333**	.315**	.363**	.232**	.322**	.260**	1				
Q29 Top management is sufficiently involved in the levels below them.	.109	.253**	.266**	.262**	.291**	.342**	.244**	.275**	.182**	.250**	.200**	.376**	.186**	.324**	.276**	.461**	1			
Q30 Top management adequately communicates to lower levels.	.209**	.306**	.252**	.178**	.261**	.331**	.357**	.379**	.334**	.310**	.268**	.397**	.248**	.325**	.259**	.369**	.453**	1		
Q31 Organisation policies are appropriately enforced.	.233**	.222**	.254**	.224**	.247**	.243**	.245**	.266**	.325**	.319**	.235**	.316**	.199**	.297**	.241**	.292**	.389**	.414**	1	
Q32 Our top management acts in accordance to the values of the organisation.	.186**	.325**	.297**	.256**	.284**	.343**	.363**	.393**	.328**	.393**	.314**	.437**	.328**	.446**	.218**	.399**	.427**	.449**	.459**	1
Q33 I am held accountable for the correct aspects of my job.	.111	.263**	.308**	.247**	.333**	.235**	.323**	.240**	.252**	.339**	.242**	.360**	.181**	.277**	.238**	.331**	.312**	.376**	.328**	.355**
Q34 I understand completely what I am being held accountable for.	.101	.321**	.343**	.267**	.363**	.301**	.279**	.360**	.282**	.398**	.281**	.389**	.250**	.310**	.268**	.400**	.337**	.372**	.346**	.430**

Item	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32
Q35 Accountability is appropriately rewarded in my working environment.	.230**	.348**	.275**	.287**	.308**	.279**	.281**	.420**	.336**	.401**	.341**	.364**	.265**	.324**	.263**	.340**	.389**	.343**	.391**	.388**
Q36 Accountability levels are appropriately managed in my work.	.243**	.380**	.299**	.280**	.352**	.360**	.347**	.465**	.385**	.386**	.318**	.420**	.321**	.307**	.272**	.396**	.376**	.456**	.373**	.471**
Q37 Actions are taken when accountability expectations are not met.	.164**	.276**	.404**	.364**	.359**	.329**	.310**	.354**	.320**	.441**	.261**	.383**	.278**	.367**	.365**	.356**	.312**	.314**	.410**	.374**
Q38 I am being measured on aspects of real relevance in my job function.	.179**	.237**	.340**	.306**	.329**	.315**	.333**	.369**	.357**	.325**	.231**	.377**	.313**	.342**	.262**	.292**	.309**	.398**	.357**	.443**
Q39 I am being measured on realistic measures and targets.	.186**	.284**	.283**	.252**	.274**	.230**	.332**	.370**	.349**	.350**	.243**	.407**	.291**	.318**	.340**	.272**	.366**	.316**	.494**	.403**
Q40 I am capable of higher performance levels with the existing resources if I exert more effort.	.156**	.172**	.273**	.229**	.367**	.227**	.254**	.282**	.238**	.265**	.120*	.332**	.177**	.302**	.249**	.278**	.298**	.257**	.278**	.344**
Q41 When the constraints are removed, I can potentially achieve better performance results.	.155**	.215**	.214**	.311**	.252**	.167**	.197**	.261**	.156**	.302**	.221**	.260**	.110*	.285**	.316**	.273**	.259**	.186**	.273**	.273**
Q42 When resources are increased, I can potentially achieve better performance results.	.133*	.205**	.182**	.239**	.313**	.227**	.197**	.218**	.099	.281**	.190**	.317**	.160**	.246**	.293**	.278**	.226**	.185**	.224**	.270**
Q43 The performance measurement system is applied consistently across all employment levels or the organisation.	.234**	.285**	.212**	.257**	.325**	.300**	.279**	.374**	.317**	.327**	.283**	.329**	.262**	.345**	.266**	.255**	.257**	.275**	.320**	.376**
Q44 Adjustments can be made to performance measures when necessary.	.195**	.278**	.273**	.228**	.292**	.243**	.337**	.302**	.309**	.372**	.218**	.460**	.261**	.391**	.241**	.283**	.286**	.279**	.301**	.371**

Item	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32
Q45 My performance measures strive towards continuous improvement.	.156**	<b>.320**</b>	.286**	.271**	<b>.312**</b>	<b>.324**</b>	<b>.332**</b>	.243**	.177**	<b>.368**</b>	.226**	<b>.360**</b>	.188**	.259**	.253**	<b>.395**</b>	<b>.303**</b>	.247**	.268**	<b>.352**</b>
Q46 My performance measures cover my total job function.	.113	.294**	.277**	.263**	<b>.308**</b>	<b>.325**</b>	<b>.334**</b>	.277**	.249**	<b>.345**</b>	.238**	.273**	.267**	<b>.329**</b>	.213**	.238**	.239**	.221**	.270**	<b>.338**</b>
Q47 I am properly been recognised for my level of performance.	.084	.282**	.286**	.206**	.255**	.257**	.291**	<b>.343**</b>	.258**	.243**	.288**	<b>.363**</b>	.264**	<b>.340**</b>	.179**	<b>.330**</b>	.288**	.270**	.260**	<b>.402**</b>
Q48 I am granted autonomy in my job.	.191**	.233**	.251**	.206**	.262**	.287**	.247**	<b>.357**</b>	.285**	<b>.315**</b>	.299**	.274**	<b>.347**</b>	.268**	.242**	.274**	.210**	.212**	.229**	<b>.354**</b>
Q49 I can exercise my own discretion in my job.	.102	.127*	.269**	.108	.224**	.123*	.166**	.280**	.208**	.210**	.264**	.263**	.212**	.241**	.229**	.192**	.172**	.169**	.229**	.283**
Q50 I control the priorities in my job within the pre-decided boundaries.	.226**	<b>.345**</b>	<b>.323**</b>	.229**	.299**	<b>.323**</b>	.268**	<b>.394**</b>	<b>.328**</b>	<b>.349**</b>	.279**	<b>.375**</b>	.278**	<b>.337**</b>	.215**	.296**	.229**	.263**	<b>.316**</b>	<b>.356**</b>
Q51 I can make adjustments to my job when necessary.	.241**	<b>.347**</b>	<b>.319**</b>	.289**	<b>.305**</b>	.293**	.267**	.258**	<b>.316**</b>	<b>.316**</b>	.291**	<b>.360**</b>	.237**	<b>.307**</b>	.263**	.262**	.246**	.260**	.271**	.276**
Q52 My direct supervisor/manager allows me to choose the way I achieve my objectives where possible.	.229**	.283**	.241**	.190**	.227**	.283**	.241**	<b>.367**</b>	.249**	.257**	.194**	<b>.323**</b>	.250**	.240**	.233**	.281**	.250**	<b>.338**</b>	.258**	<b>.364**</b>

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

\* . Correlation is significant at the 0.05 level (2-tailed).

**Annexure A (continued) (The Pearson coefficients of the constricts of the VPI)**

Item	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52
Q13 Conflicts between organisational units are addressed in the organisation.	.111	.101	.230**	.243**	.164**	.179**	.186**	.156**	.155**	.133*	.234**	.195**	.156**	.113	.084	.191**	.102	.226**	.241**	.229**
Q14 We work together as a team in the organisation.	.263**	<b>.321**</b>	<b>.348**</b>	<b>.380**</b>	.276**	.237**	.284**	.172**	.215**	.205**	.285**	.278**	<b>.320**</b>	.294**	.282**	.233**	.127*	<b>.345**</b>	<b>.347**</b>	.283**
Q15 Work is well coordinated between the different organisational units.	<b>.308**</b>	<b>.343**</b>	.275**	.299**	<b>.404**</b>	<b>.340**</b>	.283**	.273**	.214**	.182**	.212**	.273**	.286**	.277**	.286**	.251**	.269**	<b>.323**</b>	<b>.319**</b>	.241**
Q16 Tasks get done as and when they are supposed to be done.	.247**	.267**	.287**	.280**	<b>.364**</b>	<b>.306**</b>	.252**	.229**	<b>.311**</b>	.239**	.257**	.228**	.271**	.263**	.206**	.206**	.108	.229**	.289**	.190**
Q17 The process flow in the workplace is conducive to productivity.	<b>.333**</b>	<b>.363**</b>	<b>.308**</b>	<b>.352**</b>	<b>.359**</b>	<b>.329**</b>	.274**	<b>.367**</b>	.252**	<b>.313**</b>	<b>.325**</b>	.292**	<b>.312**</b>	<b>.308**</b>	.255**	.262**	.224**	.299**	<b>.305**</b>	.227**
Q18 The organisation plans sufficiently ahead to be ready for the future.	.235**	<b>.301**</b>	.279**	<b>.360**</b>	<b>.329**</b>	<b>.315**</b>	.230**	.227**	.167**	.227**	<b>.300**</b>	.243**	<b>.324**</b>	<b>.325**</b>	.257**	.287**	.123*	<b>.323**</b>	.293**	.283**
Q19 I am involved in information gathering for strategic purposes.	<b>.323**</b>	.279**	.281**	<b>.347**</b>	<b>.310**</b>	<b>.333**</b>	<b>.332**</b>	.254**	.197**	.197**	.279**	<b>.337**</b>	<b>.332**</b>	<b>.334**</b>	.291**	.247**	.166**	.268**	.267**	.241**
Q20 The organisation's strategy is realistic.	.240**	<b>.360**</b>	<b>.420**</b>	<b>.465**</b>	<b>.354**</b>	<b>.369**</b>	<b>.370**</b>	.282**	.261**	.218**	<b>.374**</b>	<b>.302**</b>	.243**	.277**	<b>.343**</b>	<b>.357**</b>	.280**	<b>.394**</b>	.258**	<b>.367**</b>
Q21 I am involved in decision making in the wider organisation.	.252**	.282**	<b>.336**</b>	<b>.385**</b>	<b>.320**</b>	<b>.357**</b>	<b>.349**</b>	.238**	.156**	.099	<b>.317**</b>	<b>.309**</b>	.177**	.249**	.258**	.285**	.208**	<b>.328**</b>	<b>.316**</b>	.249**
Q22 All effort in the Company is directed at the execution of the strategy.	<b>.339**</b>	<b>.398**</b>	<b>.401**</b>	<b>.386**</b>	<b>.441**</b>	<b>.325**</b>	<b>.350**</b>	.265**	<b>.302**</b>	.281**	<b>.327**</b>	<b>.372**</b>	<b>.368**</b>	<b>.345**</b>	.243**	<b>.315**</b>	.210**	<b>.349**</b>	<b>.316**</b>	.257**
Q23 I have the necessary authority to initiate projects in my job.	.242**	.281**	<b>.341**</b>	<b>.318**</b>	.261**	.231**	.243**	.120*	.221**	.190**	.283**	.218**	.226**	.238**	.288**	.299**	.264**	.279**	.291**	.194**

Item	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52
Q24 I am allowed to enforce appropriate corrective steps when needed.	.360**	.389**	.364**	.420**	.383**	.377**	.407**	.332**	.260**	.317**	.329**	.460**	.360**	.273**	.363**	.274**	.263**	.375**	.360**	.323**
Q25 I am allowed to reward fellow employees appropriately.	.181**	.250**	.265**	.321**	.278**	.313**	.291**	.177**	.110*	.160**	.262**	.261**	.188**	.267**	.264**	.347**	.212**	.278**	.237**	.250**
Q26 I have a clear understanding who in the organisation makes which decisions.	.277**	.310**	.324**	.307**	.367**	.342**	.318**	.302**	.285**	.246**	.345**	.391**	.259**	.329**	.340**	.268**	.241**	.337**	.307**	.240**
Q27 In my section the overruling of authority levels occurs rarely.	.238**	.268**	.263**	.272**	.365**	.262**	.340**	.249**	.316**	.293**	.266**	.241**	.253**	.213**	.179**	.242**	.229**	.215**	.263**	.233**
Q28 Generally I am proud to tell people where I work.	.331**	.400**	.340**	.396**	.356**	.292**	.272**	.278**	.273**	.278**	.255**	.283**	.395**	.238**	.330**	.274**	.192**	.296**	.262**	.281**
Q29 Top management is sufficiently involved in the levels below them.	.312**	.337**	.389**	.376**	.312**	.309**	.366**	.298**	.259**	.226**	.257**	.286**	.303**	.239**	.288**	.210**	.172**	.229**	.246**	.250**
Q30 Top management adequately communicates to lower levels.	.376**	.372**	.343**	.456**	.314**	.398**	.316**	.257**	.186**	.185**	.275**	.279**	.247**	.221**	.270**	.212**	.169**	.263**	.260**	.338**
Q31 Organisation policies are appropriately enforced.	.328**	.346**	.391**	.373**	.410**	.357**	.494**	.278**	.273**	.224**	.320**	.301**	.268**	.270**	.260**	.229**	.229**	.316**	.271**	.258**
Q32 Our top management acts in accordance to the values of the organisation.	.355**	.430**	.388**	.471**	.374**	.443**	.403**	.344**	.273**	.270**	.376**	.371**	.352**	.338**	.402**	.354**	.283**	.356**	.276**	.364**
Q33 I am held accountable for the correct aspects of my job.	1.000**																			
Q34 I understand completely what I am being held accountable for.	.555**	1.000**																		

Item	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52
Q35 Accountability is appropriately rewarded in my working environment.	.256**	.403**	1.000**																	
Q36 Accountability levels are appropriately managed in my work.	.355**	.510**	.634**	1.000**																
Q37 Actions are taken when accountability expectations are not met.	.406**	.472**	.349**	.444**	1.000**															
Q38 I am being measured on aspects of real relevance in my job function.	.449**	.505**	.343**	.527**	.487**	1.000**														
Q39 I am being measured on realistic measures and targets.	.299**	.373**	.472**	.388**	.452**	.498**	1.000**													
Q40 I am capable of higher performance levels with the existing resources if I exert more effort.	.410**	.366**	.258**	.284**	.375**	.404**	.476**	1.000**												
Q41 When the constraints are removed, I can potentially achieve better performance results.	.332**	.355**	.301**	.314**	.307**	.360**	.451**	.454**	1.000**											
Q42 When resources are increased, I can potentially achieve better performance results.	.377**	.426**	.225**	.282**	.258**	.254**	.295**	.384**	.430**	1.000**										
Q43 The performance measurement system is applied consistently across all employment levels or the organisation.	.178**	.254**	.413**	.388**	.310**	.353**	.282**	.239**	.245**	.316**	1.000**									
Q44 Adjustments can be made to performance measures when necessary.	.331**	.402**	.332**	.385**	.400**	.445**	.383**	.321**	.318**	.399**	.403**	1.000**								

Item	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52
Q45 My performance measures strive towards continuous improvement.	.401**	.391**	.296**	.325**	.325**	.355**	.323**	.350**	.385**	.492**	.362**	.463**	1.000**							
Q46 My performance measures cover my total job function.	.315**	.392**	.216**	.320**	.374**	.411**	.245**	.248**	.270**	.428**	.331**	.411**	.557**	1.000**						
Q47 I am properly been recognised for my level of performance.	.258**	.307**	.401**	.344**	.374**	.321**	.340**	.308**	.275**	.299**	.326**	.364**	.452**	.454**	1.000**					
Q48 I am granted autonomy in my job.	.153**	.306**	.383**	.357**	.267**	.348**	.257**	.216**	.226**	.248**	.414**	.281**	.343**	.423**	.496**	1.000**				
Q49 I can exercise my own discretion in my job.	.209**	.237**	.287**	.315**	.170**	.276**	.252**	.237**	.327**	.264**	.254**	.218**	.263**	.279**	.358**	.463**	1.000**			
Q50 I control the priorities in my job within the pre-decided boundaries.	.223**	.355**	.337**	.376**	.269**	.334**	.347**	.311**	.262**	.357**	.370**	.355**	.399**	.389**	.466**	.452**	.438**	1.000**		
Q51 I can make adjustments to my job when necessary.	.237**	.305**	.313**	.293**	.349**	.284**	.314**	.306**	.310**	.352**	.314**	.472**	.398**	.427**	.417**	.332**	.441**	.559**	1.000**	
Q52 My direct supervisor/manager allows me to choose the way I achieve my objectives where possible.	.237**	.297**	.370**	.475**	.310**	.312**	.233**	.210**	.188**	.311**	.323**	.386**	.345**	.358**	.464**	.372**	.349**	.497**	.442**	1.000**

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

\* . Correlation is significant at the 0.05 level (2-tailed).



## ANNEXURE B

### THE PEARSON CORRELATION MATRIX FOR THE TRUST FACTORS

Item	Q64	Q65	Q66	Q67	Q68	Q69	Q70	Q71	Q72	Q73	Q74	Q75	Q76	Q77	Q78	Q79	Q80	Q81	Q82	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90	Q91	Q92	Q93	Q94	Q95	Q96	Q97
Q64	1.000																																	
Q65	.600	1.000																																
Q66	.710	.471	1.000																															
Q67	.509	.341	.522	1.000																														
Q68	.328	.267	.326	.246	1.000																													
Q69	.537	.544	.447	.372	.278	1.000																												
Q70	.547	.473	.520	.479	.329	.400	1.000																											
Q71	.521	.377	.554	.527	.306	.414	.529	1.000																										
Q72	.469	.379	.447	.511	.300	.345	.472	.595	1.000																									
Q73	.487	.488	.396	.465	.402	.376	.478	.498	.571	1.000																								
Q74	.491	.266	.452	.468	.404	.308	.444	.493	.490	.585	1.000																							
Q75	.413	.367	.361	.358	.332	.216	.412	.476	.491	.589	.540	1.000																						
Q76	.490	.331	.495	.411	.253	.297	.533	.542	.538	.407	.427	.597	1.000																					
Q77	.592	.482	.497	.464	.359	.480	.584	.553	.493	.495	.455	.496	.589	1.000																				
Q78	.536	.437	.486	.502	.345	.327	.642	.529	.542	.595	.497	.509	.555	.609	1.000																			
Q79	.556	.485	.546	.464	.354	.451	.489	.600	.432	.515	.543	.452	.477	.639	.560	1.000																		
Q80	.508	.423	.510	.485	.356	.404	.510	.514	.545	.609	.548	.573	.540	.460	.569	.541	1.000																	
Q81	.588	.408	.569	.444	.317	.446	.530	.525	.467	.587	.666	.564	.506	.533	.568	.644	.612	1.000																
Q82	.484	.366	.423	.412	.416	.326	.412	.515	.514	.575	.515	.558	.476	.382	.511	.480	.674	.506	1.000															
Q83	.456	.330	.362	.411	.397	.387	.389	.529	.477	.464	.439	.525	.546	.436	.386	.525	.518	.492	.605	1.000														
Q84	.469	.573	.414	.332	.298	.462	.388	.484	.377	.508	.347	.466	.445	.517	.435	.556	.539	.447	.566	.487	1.000													
Q85	.614	.515	.538	.499	.436	.379	.588	.565	.558	.624	.553	.561	.578	.657	.563	.599	.601	.603	.556	.526	.594	1.000												
Q86	.559	.440	.410	.387	.317	.340	.491	.435	.422	.572	.431	.513	.421	.509	.606	.507	.605	.470	.596	.456	.512	.622	1.000											
Q87	.232	.181	.084	.258	.289	.280	.183	.306	.268	.360	.354	.283	.319	.217	.260	.298	.318	.304	.332	.366	.290	.352	.345	1.000										
Q88	.447	.327	.339	.219	.318	.408	.342	.420	.384	.397	.324	.383	.507	.498	.402	.439	.458	.443	.369	.415	.466	.490	.503	.383	1.000									
Q89	.400	.379	.398	.461	.218	.255	.453	.493	.403	.478	.506	.485	.413	.437	.538	.579	.496	.609	.527	.418	.462	.508	.507	.280	.430	1.000								
Q90	.543	.442	.513	.425	.303	.334	.538	.545	.480	.589	.500	.564	.513	.576	.654	.605	.512	.609	.594	.489	.546	.641	.589	.215	.413	.597	1.000							
Q91	.269	.234	.353	.407	.355	.283	.299	.402	.433	.486	.427	.476	.466	.379	.352	.455	.484	.477	.434	.505	.426	.464	.294	.355	.336	.453	.488	1.000						
Q92	.414	.445	.349	.246	.292	.367	.332	.351	.388	.458	.375	.395	.404	.513	.441	.451	.444	.405	.398	.341	.507	.531	.376	.303	.347	.320	.539	.494	1.000					
Q93	.469	.466	.416	.416	.350	.391	.470	.422	.416	.552	.536	.455	.414	.486	.609	.604	.535	.591	.530	.353	.471	.526	.553	.264	.397	.550	.603	.381	.428	1.000				
Q94	.447	.440	.358	.377	.214	.389	.391	.342	.389	.447	.397	.456	.354	.418	.517	.452	.397	.419	.424	.312	.436	.409	.475	.218	.367	.433	.566	.428	.411	.574	1.000			
Q95	.424	.437	.364	.411	.275	.361	.445	.367	.483	.529	.434	.463	.466	.439	.539	.508	.506	.485	.420	.360	.457	.520	.477	.381	.371	.456	.502	.467	.409	.683	.543	1.000		
Q96	.499	.405	.455	.489	.304	.348	.468	.517	.529	.573	.507	.498	.454	.417	.547	.613	.602	.528	.511	.456	.425	.550	.534	.426	.411	.498	.513	.511	.445	.607	.540	.751	1.000	
Q97	.464	.467	.357	.395	.252	.300	.443	.443	.499	.584	.405	.615	.471	.533	.486	.519	.488	.455	.535	.493	.490	.556	.537	.342	.421	.485	.567	.494	.442	.505	.626	.620	1.000	

### ANNEXURE C NORMALITY OF THESE VALUES

Calculations of normality			Work support	Team management	Trust Relationship	Information Sharing	Objectivity	Accountability	Autonomy	Coordinating Teamwork	Operational Management	Performance Measuring System	Strategic Execution	Top Management Involvement
Mean	Statistic		3.3390	3.1817	3.2680	3.4228	2.9973	3.6267	3.2396	3.6448	3.2453	3.5555	3.3573	3.4061
	Std. Error		.05017	.05045	.05199	.04981	.05273	.05385	.05420	.05197	.05271	.05077	.05044	.05162
95% confidence interval for mean	Lower Bound	Statistic	3.2404	3.0825	3.1657	3.3249	2.8936	3.5208	3.1330	3.5426	3.1417	3.4557	3.2581	3.3046
	Upper Bound	Statistic	3.4377	3.2810	3.3702	3.5208	3.1010	3.7326	3.3462	3.7470	3.3490	3.6554	3.4565	3.5077
5% Trimmed Mean	Statistic		3.3696	3.2031	3.2981	3.4637	3.0020	3.6853	3.2619	3.6906	3.2673	3.5984	3.3779	3.4424
Median	Statistic		3.4608	3.2222	3.4286	3.5634	3.0000	3.6667	3.2500	3.8224	3.2500	3.8000	3.5000	3.5090
Variance	Statistic		.896	.906	.962	.883	.990	1.032	1.046	.962	.989	.918	.906	.949
Std. Deviation	Statistic		.94666	.95184	.98098	.93990	.99482	1.01602	1.02269	.98056	.99461	.95798	.95165	.97404
Minimum	Statistic		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum	Statistic		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Range	Statistic		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Interquartile Range	Statistic		1.39	1.22	1.29	1.26	1.33	1.33	1.50	1.35	1.50	1.37	1.25	1.40
Skewness	Statistic		-.469	-.303	-.493	-.665	-.096	-.680	-.265	-.570	-.330	-.590	-.252	-.466
	Std. Error		.129	.129	.129	.129	.129	.129	.129	.129	.129	.129	.129	.129
Kurtosis	Statistic		-.321	-.294	-.355	.068	-.547	-.055	-.557	-.426	-.375	-.142	-.460	-.206
	Std. Error		.258	.258	.258	.258	.258	.258	.258	.258	.258	.258	.258	.258

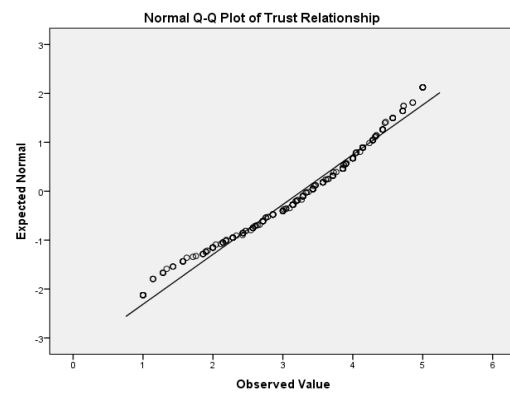
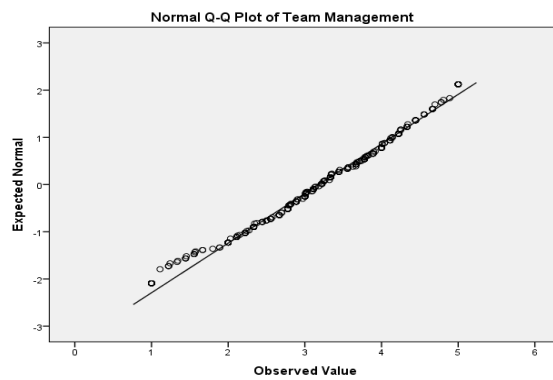
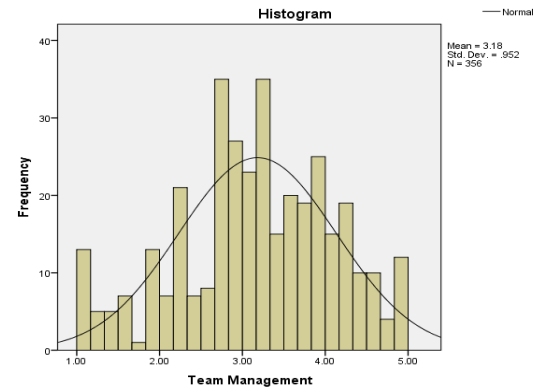
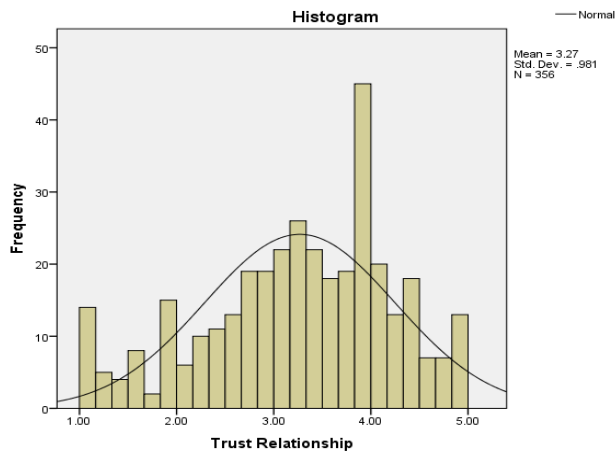
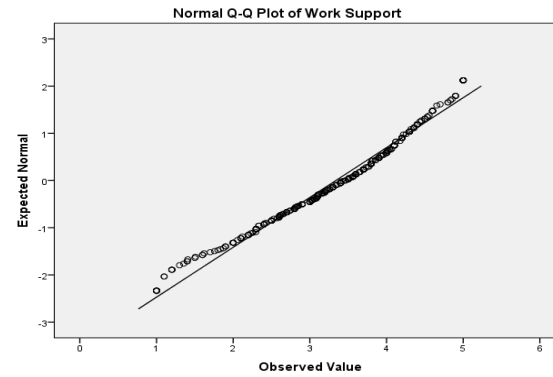
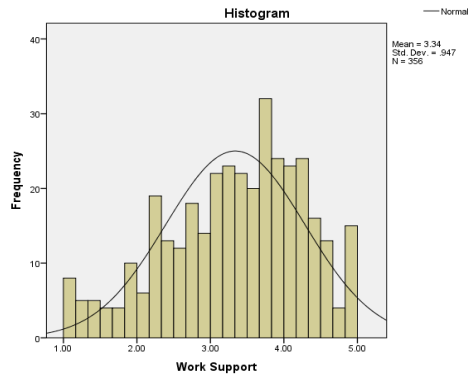
**ANNEXURE D**  
**TESTS OF NORMALITY**

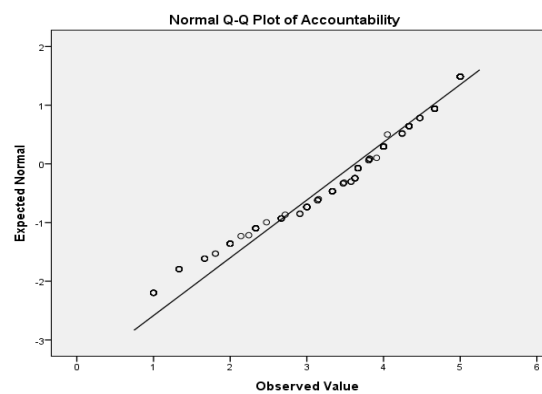
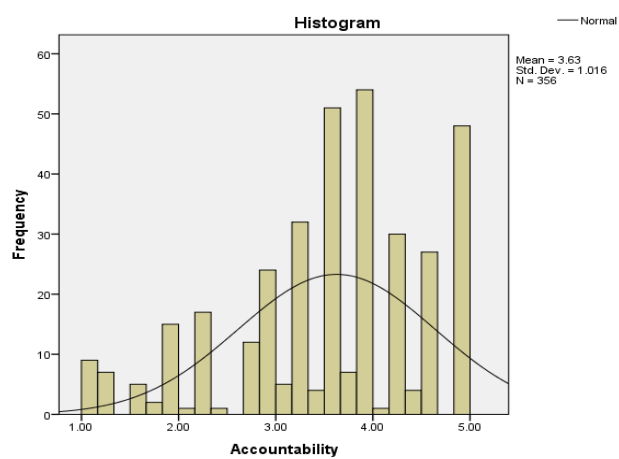
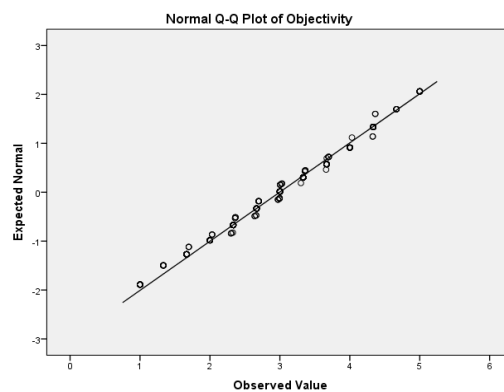
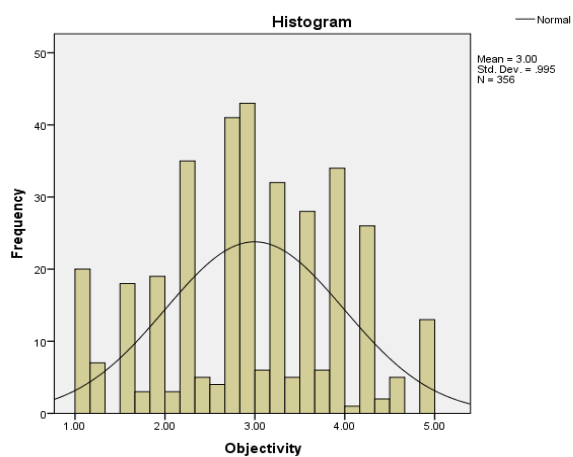
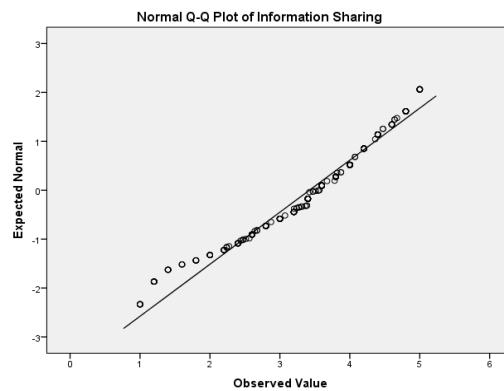
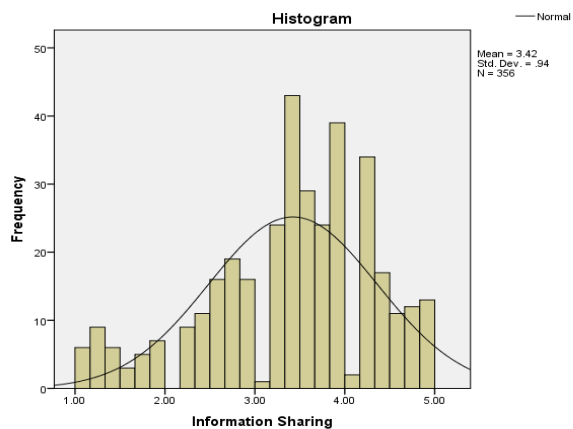
<b>Construct</b>	<b>Kolmogorov–Smirnov<sup>a</sup></b>			<b>Shapiro–Wilk</b>		
	<b>Statistic</b>	<b>df</b>	<b>Sig.</b>	<b>Statistic</b>	<b>df</b>	<b>Sig.</b>
Work support	.073	356	.000	.973	356	.000
Team management	.058	356	.007	.981	356	.000
Trust Relationship	.084	356	.000	.967	356	.000
Information Sharing	.111	356	.000	.955	356	.000
Objectivity	.071	356	.000	.976	356	.000
Accountability	.115	356	.000	.938	356	.000
Autonomy	.090	356	.000	.973	356	.000
Coordinating Teamwork	.127	356	.000	.948	356	.000
Operational Management	.081	356	.000	.974	356	.000
Performance Measuring System	.104	356	.000	.958	356	.000
Strategic Execution	.078	356	.000	.978	356	.000
Top Management Involvement	.079	356	.000	.969	356	.000

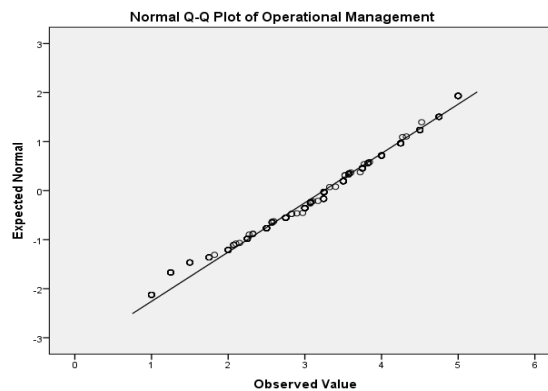
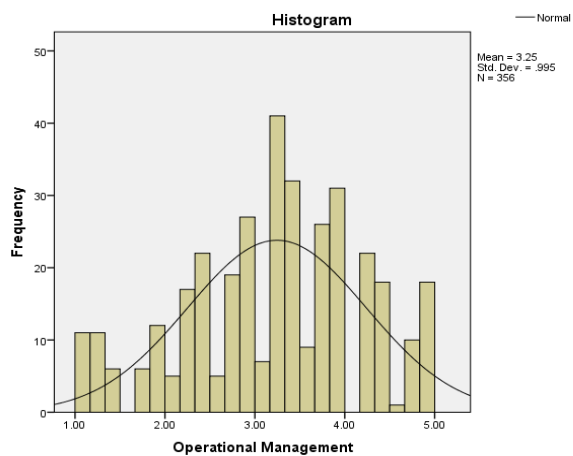
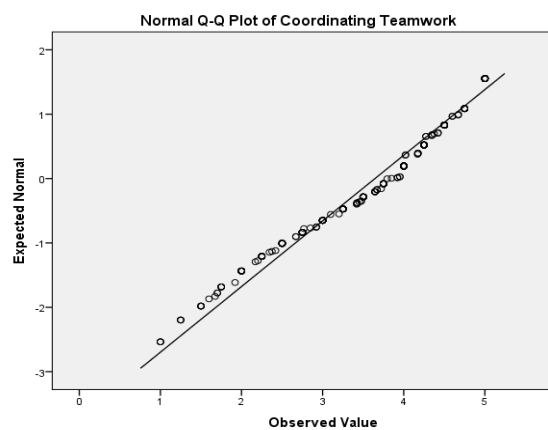
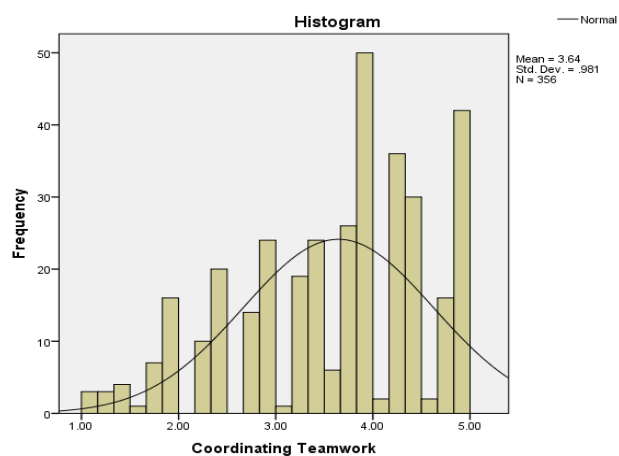
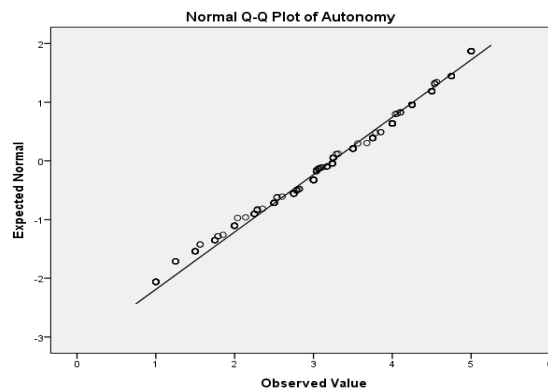
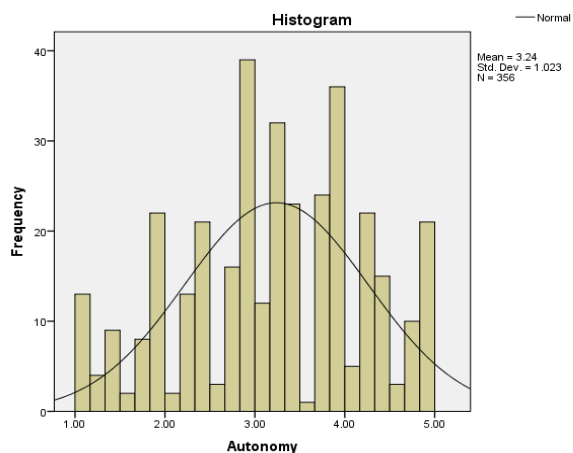
a. Lilliefors significance correction

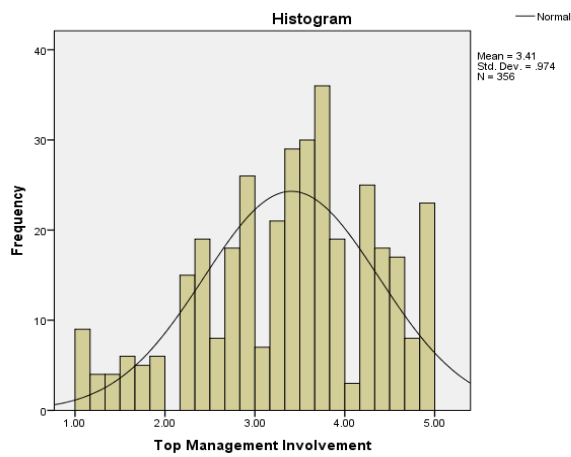
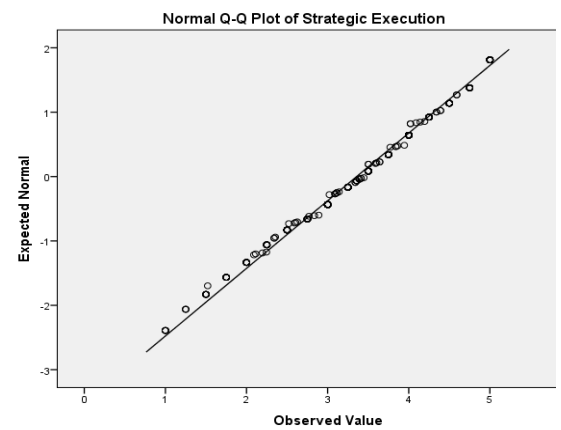
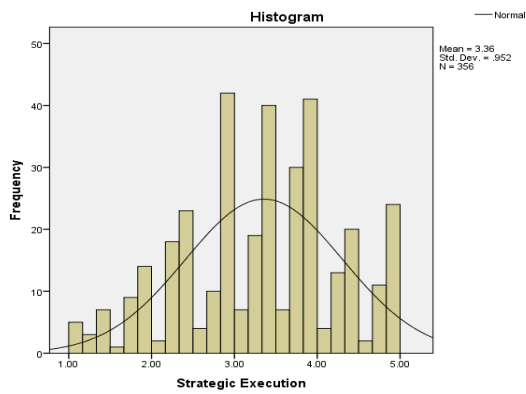
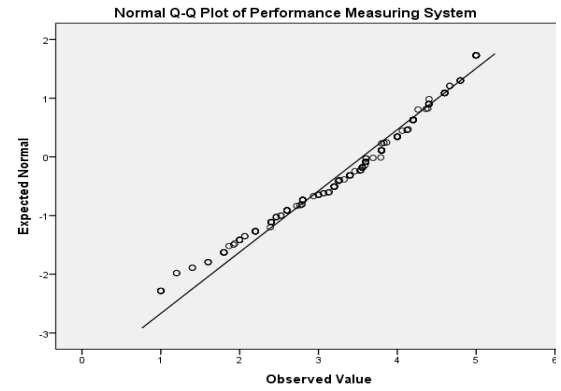
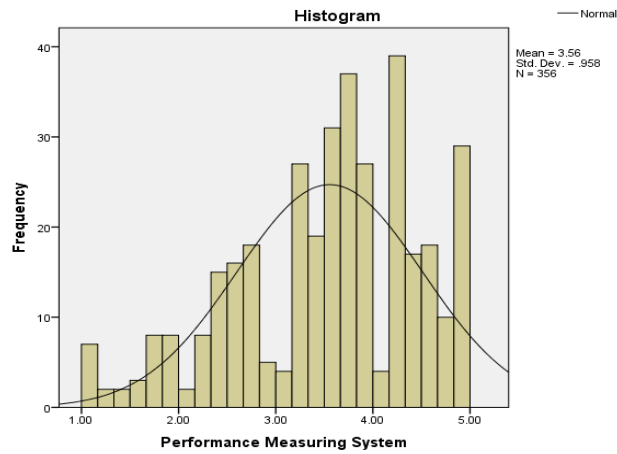
## ANNEXURE E

### THE VISUAL DISTRIBUTION IN THE FORM OF HISTOGRAMS AND THE Q-Q PLOTS FOR THE CALCULATED MEANS OF THE CONSTRUCTS









# **ANNEXURE F** **INDEPENDENT SAMPLES TEST FOR AGE**

Constructs and tests			Equal variances assumed	Equal variances not assumed
Work support	Levene's test for equality of variances	F	.000	
		Sig.	.997	
	t-test for equality of means	t	-.738	-.738
		df	346	318.185
		Sig. (2-tailed)	.461	.461
		Mean Difference	-.07563	-.07563
		Std. Error Difference	.10246	.10253
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.27716 .12590	-.27736 .12609
Team management	Levene's test for equality of variances	F	.483	
		Sig.	.487	
	t-test for Equality of Means	t	-1.967	-1.956
		df	346	311.914
		Sig. (2-tailed)	.050	.051
		Mean Difference	-.20260	-.20260
		Std. Error Difference	.10298	.10358
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.40515 -.00005	-.40640 -.00120
Trust relationship	Levene's test for equality of variances	F	.298	
		Sig.	.585	
	t-test for Equality of Means	t	-.906	-.904
		df	346	315.137
		Sig. (2-tailed)	.365	.367
		Mean Difference	-.09665	-.09665
		Std. Error Difference	.10663	.10697
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.30637 .11307	-.30711 .11381
Information sharing	Levene's test for equality of variances	F	.079	
		Sig.	.779	
	t-test for Equality of Means	t	-1.544	-1.542
		df	346	317.120
		Sig. (2-tailed)	.124	.124
		Mean Difference	-.15650	-.15650
		Std. Error Difference	.10136	.10152
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.35586 .04286	-.35623 .04323
Objectivity	Levene's test for equality of variances	F	1.773	
		Sig.	.184	
	t-test for Equality of Means	t	.712	.706
		df	346	308.436
		Sig. (2-tailed)	.477	.481
		Mean Difference	.07686	.07686
		Std. Error Difference	.10798	.10890
		Lower	-.13551	-.13741



Constructs and tests			Equal variances assumed	Equal variances not assumed
		95% Confidence Interval of the DifferenceUpper	.28924	-.29114
Accountability	Levene's test for equality of variances	F	5.571	
		Sig.	.019	
	t-test for Equality of Means	t	-.363	-.355
		df	346	292.088
		Sig. (2-tailed)	.717	.723
		Mean Difference	-.04015	-.04015
		Std. Error Difference	.11070	.11300
		95% Confidence Interval of the DifferenceLowerUpper	-.25788-.17759	-.26255.18226
Autonomy	Levene's test for equality of variances	F	3.204	
		Sig.	.074	
	t-test for Equality of Means	t	-.332	-.327
		df	346	299.510
		Sig. (2-tailed)	.740	.744
		Mean Difference	-.03666	-.03666
		Std. Error Difference	.11055	.11224
		95% Confidence Interval of the DifferenceLowerUpper	-.25409.18077	-.25753.18421
Coordinating teamwork	Levene's test for equality of variances	F	.771	
		Sig.	.380	
	t-test for Equality of Means	t	1.356	1.363
		df	346	324.682
		Sig. (2-tailed)	.176	.174
		Mean Difference	.14392	.14392
		Std. Error Difference	.10611	.10558
		95% Confidence Interval of the DifferenceLowerUpper	-.06478.35263	-.06378.35162
Operational management	Levene's test for equality of variances	F	1.500	
		Sig.	.222	
	t-test for Equality of Means	t	.549	.541
		df	346	301.264
		Sig. (2-tailed)	.583	.589
		Mean Difference	.05947	.05947
		Std. Error Difference	.10833	.10985
		95% Confidence Interval of the DifferenceLowerUpper	-.15360.27254	-.15669.27563
Performance measuring system	Levene's test for equality of variances	F	3.537	
		Sig.	.061	
	t-test for Equality of Means	t	-.516	-.507
		df	346	297.595
		Sig. (2-tailed)	.606	.612
		Mean Difference	-.05365	-.05365
		Std. Error Difference	.10399	.10573
		95% Confidence Interval of the DifferenceLowerUpper	-.25818.15089	-.26172.15443

Constructs and tests			Equal variances assumed	Equal variances not assumed
Strategic execution	Levene's test for equality of variances	F	1.422	
		Sig.	.234	
	t-test for Equality of Means	t	.598	<del>.591</del>
		df	346	<del>305.041</del>
		Sig. (2-tailed)	.550	<del>.555</del>
		Mean Difference	.06172	<del>.06172</del>
		Std. Error Difference	.10327	<del>.10442</del>
		95% Confidence Interval of the Difference		
		Lower Upper	-.14140 .26484	<del>-.14375 .26720</del>
Top management involvement	Levene's test for equality of variances	F	.132	
		Sig.	.716	
	t-test for Equality of Means	t	-.515	<del>-.511</del>
		df	346	<del>309.531</del>
		Sig. (2-tailed)	.607	<del>.610</del>
		Mean Difference	-.05467	<del>-.05467</del>
		Std. Error Difference	.10618	<del>.10699</del>
		95% Confidence Interval of the Difference		
		Lower Upper	-.26351 .15416	<del>-.26520 .15585</del>

**Note:** In the table above, the irrelevant results have been struck through as a result of the outcome of the Levene test of homogeneity of variance. The H0 hypothesis tested by the Levene test was that the variance in the two groups was the same.

**ANNEXURE G**  
**THE GROUP STATISTICS FOR AGE**

<b>Construct</b>	<b>Age</b>	<b>N</b>	<b>Mean</b>	<b>Std. deviation</b>	<b>Std. error mean</b>
Work support	Younger than 35 years	149	3.3085	.94822	.07768
	35 years and older	199	3.3842	.94399	.06692
Team management	Younger than 35 years	149	3.0754	.97221	.07965
	35 years and older	199	3.2780	.93410	.06622
Trust relationship	Younger than 35 years	149	3.2177	.99660	.08164
	35 years and older	199	3.3144	.97491	.06911
Information sharing	Younger than 35 years	149	3.3419	.94132	.07712
	35 years and older	199	3.4984	.93134	.06602
Objectivity	Younger than 35 years	149	3.0487	1.02997	.08438
	35 years and older	199	2.9718	.97106	.06884
Accountability	Younger than 35 years	149	3.6029	1.10376	.09042
	35 years and older	199	3.6431	.95606	.06777
Autonomy	Younger than 35 years	149	3.2341	1.08108	.08857
	35 years and older	199	3.2708	.97258	.06894
Coordinating teamwork	Younger than 35 years	149	3.7261	.95965	.07862
	35 years and older	199	3.5821	.99404	.07047
Operational management	Younger than 35 years	149	3.2804	1.05442	.08638
	35 years and older	199	3.2209	.95723	.06786
Performance measuring system	Younger than 35 years	149	3.5388	1.02218	.08374
	35 years and older	199	3.5924	.91058	.06455
Strategic execution	Younger than 35 years	149	3.4024	.99473	.08149
	35 years and older	199	3.3407	.92105	.06529
Top management involvement	Younger than 35 years	149	3.3879	1.00957	.08271
	35 years and older	199	3.4426	.95746	.06787

Constructs and tests			Equal variances assumed	Equal variances not assumed
Work support	Levene's test for equality of variances	F	.830	
		Sig.	.363	
	t-test for equality of means	t	-.728	-.688
		df	345	84.743
		Sig. (2-tailed)	.467	.493
		Mean Difference	-.09622	-.09622
		Std. Error Difference	.13220	.13980
		95% Confidence Interval of the Difference	Lower Upper -.35625 .16381	-.37419 .18175
Team management	Levene's test for equality of variances	F	.791	
		Sig.	.374	
	t-test for equality of means	t	.211	-.205
		df	345	86.805
		Sig. (2-tailed)	.833	.838
		Mean Difference	.02820	-.02820
		Std. Error Difference	.13334	.13747
		95% Confidence Interval of the Difference	Lower Upper -.23407 .29047	-.24504 .30144
Trust relationship	Levene's test for equality of variances	F	.928	
		Sig.	.336	
	t-test for equality of means	t	-1.257	-1.185
		df	345	84.471
		Sig. (2-tailed)	.209	.239
		Mean Difference	-.17271	-.17271
		Std. Error Difference	.13735	.14575
		95% Confidence Interval of the Difference	Lower Upper -.44286 .09744	-.46254 .11711
Information sharing	Levene's test for equality of variances	F	.090	
		Sig.	.765	
	t-test for equality of means	t	.016	.016
		df	345	90.058
		Sig. (2-tailed)	.987	.987
		Mean Difference	.00207	-.00207
		Std. Error Difference	.13137	.13062
		95% Confidence Interval of the Difference	Lower Upper -.25632 .26046	-.25743 .26158
Objectivity	Levene's test for equality of variances	F	.123	
		Sig.	.726	
	t-test for equality of means	t	-.563	-.538
		df	345	85.573
		Sig. (2-tailed)	.574	.592
		Mean Difference	-.07902	-.07902
		Std. Error Difference	.14035	.14686
		95% Confidence Interval of the Difference	Lower Upper -.35506 .19702	-.37100 .21295
Accountability		F	.298	

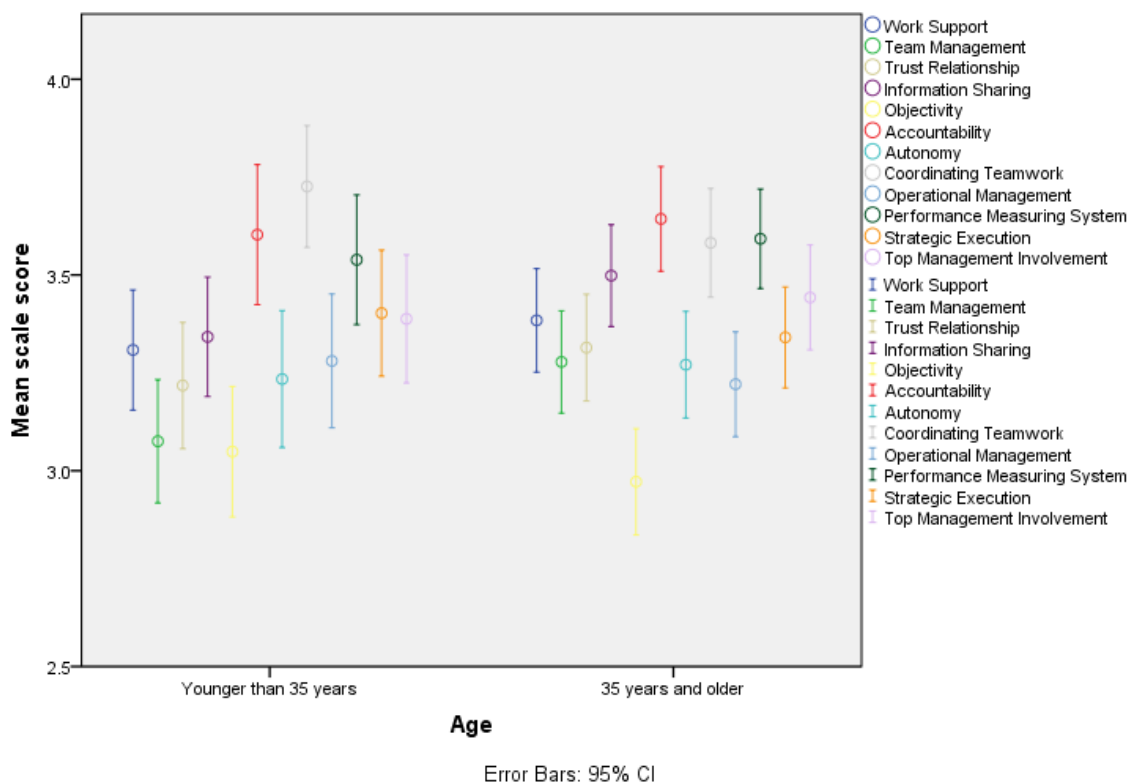
Constructs and tests			Equal variances assumed	Equal variances not assumed
	Levene's test for equality of variances	Sig.	.586	
	t-test for equality of means	t	-.104	-.100
		df	345	86.681
		Sig. (2-tailed)	.917	.920
		Mean Difference	-.01481	-.01481
		Std. Error Difference	.14275	.14738
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.29558 .26597	-.30776 .27815
Autonomy	Levene's test for equality of variances	F	1.632	
		Sig.	.202	
	t-test for equality of means	t	-1.357	-1.290
		df	345	85.174
		Sig. (2-tailed)	.176	.200
		Mean Difference	-.19404	-.19404
		Std. Error Difference	.14299	.15038
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.47528 .08720	-.49302 .10494
Coordinating teamwork	Levene's test for equality of variances	F	.021	
		Sig.	.884	
	t-test for equality of means	t	-1.832	-1.763
		df	345	86.104
		Sig. (2-tailed)	.068	.082
		Mean Difference	-.25263	-.25263
		Std. Error Difference	.13787	.14333
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.52379 .01854	-.53755 .03230
Operational management	Levene's test for equality of variances	F	3.837	
		Sig.	.051	
	t-test for equality of means	t	-1.364	-1.475
		df	345	97.948
		Sig. (2-tailed)	.174	.143
		Mean Difference	-.18902	-.18902
		Std. Error Difference	.13860	.12815
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.46162 .08357	-.44334 .06530
Performance measuring system	Levene's test for equality of variances	F	.150	
		Sig.	.699	
	t-test for equality of means	t	-1.883	-1.813
		df	345	86.175
		Sig. (2-tailed)	.060	.073
		Mean Difference	-.25070	-.25070
		Std. Error Difference	.13311	.13827
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.51251 .01111	-.52555 .02416
Strategic execution	Levene's test for equality of variances	F	.001	
		Sig.	.973	

Constructs and tests			Equal variances assumed	Equal variances not assumed
	t-test for equality of means	t	-.268	<del>-.264</del>
		df	345	<del>87.862</del>
		Sig. (2-tailed)	.789	<del>.793</del>
		Mean Difference	-.03618	<del>-.03618</del>
		Std. Error Difference	.13482	<del>.13730</del>
		95% Confidence Interval of the Difference	Lower Upper	<del>Lower Upper</del>
			-.30137 .22900	<del>-.30905 .23668</del>
Top management involvement	Levene's test for equality of variances	F	1.632	
		Sig.	.202	
	t-test for equality of means	t	-.762	<del>-.793</del>
		df	345	<del>93.478</del>
		Sig. (2-tailed)	.447	<del>.430</del>
		Mean Difference	-.10395	<del>-.10395</del>
		Std. Error Difference	.13641	<del>.13113</del>
		95% Confidence Interval of the Difference	Lower Upper	<del>Lower Upper</del>
			-.37226 .16436	<del>-.36434 .15643</del>

**Note:** In the table above, the irrelevant results have been struck through as a result of the outcome of the Levene test of homogeneity of variance. The H0 hypothesis tested by the Levene test was that the variance in the two groups was the same.

## ANNEXURE H

### THE ERROR BARS: 95% CI FOR AGE



# **ANNEXURE I** **INDEPENDENT SAMPLE TEST FOR GENDER**

Constructs and tests			Equal variances assumed	Equal variances not assumed
Work support	Levene's test for equality of variances	F	.830	
		Sig.	.363	
	t-test for equality of means	t	-.728	-.688
		df	345	84.743
		Sig. (2-tailed)	.467	.493
		Mean Difference	-.09622	-.09622
		Std. Error Difference	.13220	.13980
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.35625 .16381	-.37419 -.18175
Team management	Levene's test for equality of variances	F	.791	
		Sig.	.374	
	t-test for equality of means	t	.211	.205
		df	345	86.805
		Sig. (2-tailed)	.833	.838
		Mean Difference	.02820	.02820
		Std. Error Difference	.13334	.13747
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.23407 .29047	-.24504 -.30144
Trust relationship	Levene's test for equality of variances	F	.928	
		Sig.	.336	
	t-test for equality of means	t	-1.257	-1.185
		df	345	84.474
		Sig. (2-tailed)	.209	.239
		Mean Difference	-.17271	-.17271
		Std. Error Difference	.13735	.14575
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.44286 .09744	-.46254 -.11711
Information sharing	Levene's test for equality of variances	F	.090	
		Sig.	.765	
	t-test for equality of means	t	.016	.016
		df	345	90.058
		Sig. (2-tailed)	.987	.987
		Mean Difference	.00207	.00207
		Std. Error Difference	.13137	.13062
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.25632 .26046	-.25743 -.26158
Objectivity	Levene's test for equality of variances	F	.123	
		Sig.	.726	
	t-test for equality of means	t	-.563	-.538
		df	345	85.573
		Sig. (2-tailed)	.574	.592
		Mean Difference	-.07902	-.07902
		Std. Error Difference	.14035	.14686
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.35506 .19702	-.37100 -.21295
Accountability	Levene's test for equality of variances	F	.298	
		Sig.	.586	
	t-test for equality of means	t	-.104	-.100
		df	345	86.684
		Sig. (2-tailed)	.917	.920



Constructs and tests				Equal variances assumed	Equal variances not assumed
Autonomy		Mean Difference		-.01481	-.01481
		Std. Error Difference		.14275	.14738
		95% Confidence Interval of the Difference	Lower	-.29558	-.30776
			Upper	.26597	.27815
	Levene's test for equality of variances	F		1.632	
		Sig.		.202	
	t-test for equality of means	t		-1.357	-1.290
		df		345	85.174
		Sig. (2-tailed)		.176	.200
		Mean Difference		-.19404	-.19404
		Std. Error Difference		.14299	.15038
		95% Confidence Interval of the Difference	Lower	-.47528	-.49302
			Upper	.08720	.10494
Coordinating teamwork	Levene's test for equality of variances	F		.021	
		Sig.		.884	
	t-test for equality of means	t		-1.832	-1.763
		df		345	86.104
		Sig. (2-tailed)		.068	.082
		Mean Difference		-.25263	-.25263
		Std. Error Difference		.13787	.14333
		95% Confidence Interval of the Difference	Lower	-.52379	-.53755
			Upper	.01854	.03230
Operational management	Levene's test for equality of variances	F		3.837	
		Sig.		.051	
	t-test for equality of means	t		-1.364	-1.475
		df		345	97.948
		Sig. (2-tailed)		.174	.143
		Mean Difference		-.18902	-.18902
		Std. Error Difference		.13860	.12815
		95% Confidence Interval of the Difference	Lower	-.46162	-.44334
			Upper	.08357	.06530
Performance measuring system	Levene's test for equality of variances	F		.150	
		Sig.		.699	
	t-test for equality of means	t		-1.883	-1.813
		df		345	86.175
		Sig. (2-tailed)		.060	.073
		Mean Difference		-.25070	-.25070
		Std. Error Difference		.13311	.13827
		95% Confidence Interval of the Difference	Lower	-.51251	-.52555
			Upper	.01111	.02416
Strategic execution	Levene's test for equality of variances	F		.001	
		Sig.		.973	
	t-test for equality of means	t		-.268	-.264
		df		345	87.862
		Sig. (2-tailed)		.789	.793
		Mean Difference		-.03618	-.03618
		Std. Error Difference		.13482	.13730
		95% Confidence Interval of the Difference	Lower	-.30137	-.30905
			Upper	.22900	.23668
Top management involvement	Levene's test for equality of variances	F		1.632	
		Sig.		.202	
	t-test for equality of means	t		-.762	-.793
		df		345	93.478
		Sig. (2-tailed)		.447	.430

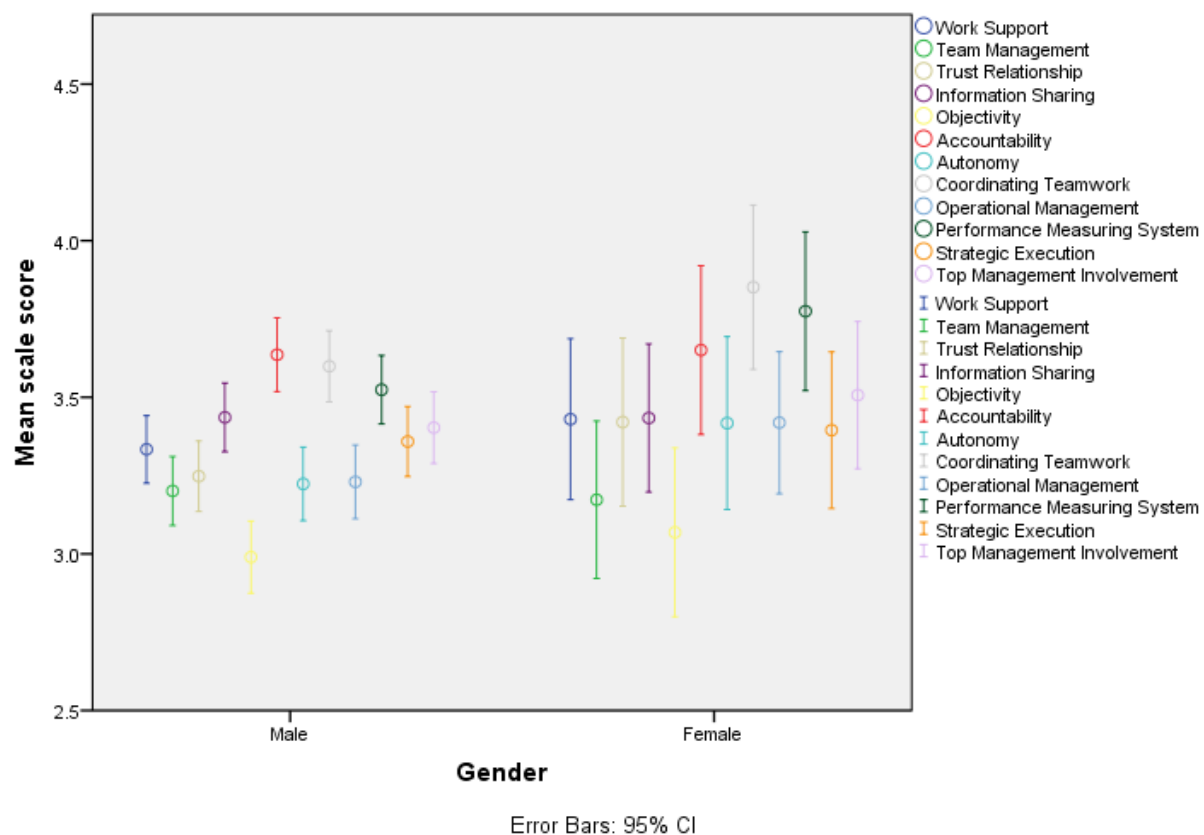
Constructs and tests		Equal variances assumed	Equal variances not assumed
	Mean Difference	-.10395	<del>-.10395</del>
	Std. Error Difference	.13641	<del>.13113</del>
	95% Confidence Interval of the Difference		
	Lower Upper	-.37226 .16436	<del>-.36434 .15643</del>

**Note:** In the table above, the irrelevant results have been struck through as a result of the outcome of the Levene test of homogeneity of variance. The H0 hypothesis tested by the Levene test was that the variance in the two groups was the same.

**ANNEXURE J**  
**THE GROUP STATISTICS FOR GENDER**

<b>Q3 Please provide your gender:</b>		<b>N</b>	<b>Mean</b>	<b>Standard deviation</b>	<b>Standard error mean</b>
Work Support	Male	285	3.3337	.92799	.05497
	Female	62	3.4299	1.01211	.12854
Team Management	Male	285	3.2009	.94331	.05588
	Female	62	3.1727	.98897	.12560
Trust Relationship	Male	285	3.2480	.96304	.05705
	Female	62	3.4207	1.05612	.13413
Information Sharing	Male	285	3.4358	.93894	.05562
	Female	62	3.4338	.93064	.11819
Objectivity	Male	285	2.9897	.98837	.05855
	Female	62	3.0687	1.06054	.13469
Accountability	Male	285	3.6359	1.00942	.05979
	Female	62	3.6507	1.06069	.13471
Autonomy	Male	285	3.2234	1.00543	.05956
	Female	62	3.4175	1.08726	.13808
Coordinating Teamwork	Male	285	3.5989	.97285	.05763
	Female	62	3.8515	1.03334	.13123
Operational Management	Male	285	3.2300	1.00849	.05974
	Female	62	3.4190	.89275	.11338
Performance Measuring System	Male	285	3.5242	.93953	.05565
	Female	62	3.7749	.99661	.12657
Strategic Execution	Male	285	3.3588	.95719	.05670
	Female	62	3.3950	.98464	.12505
Top Management Involvement	Male	285	3.4030	.98354	.05826
	Female	62	3.5070	.92504	.11748

# **ANNEXURE K** **THE ERROR BARS: 95% FOR CI FOR GENDER**



**ANNEXURE L**  
**INDEPENDENT SAMPLES TEST FOR THE NUMBER OF PEERS**  
**REPORTING TO THE SAME MANAGER**

Constructs and tests			Equal variances assumed	Equal variances not assumed
Work support	Levene's test for equality of variances	F	3.014	
		Sig.	.084	
	t-test for equality of means	t	-1.140	-1.163
		df	263	261.717
		Sig. (2-tailed)	.255	.246
		Mean difference	-.13279	-.13279
		Std. error difference	.11645	.11423
		95% confidence interval of the difference	Lower Upper	-.36209 -.09213
Team management	Levene's test for equality of variances	F	2.900	
		Sig.	.090	
	t-test for equality of means	t	-.815	-.832
		df	263	262.105
		Sig. (2-tailed)	.416	.406
		Mean difference	-.09716	-.09716
		Std. error difference	.11922	.11679
		95% confidence Interval of the difference	Lower Upper	-.33190 -.13280
Trust relationship	Levene's test for equality of variances	F	1.950	
		Sig.	.164	
	t-test for equality of means	t	-.197	-.204
		df	263	260.756
		Sig. (2-tailed)	.844	.844
		Mean Difference	-.02411	-.02411
		Std. Error Difference	.12226	.12023
		95% Confidence Interval of the Difference	Lower Upper	-.26484 -.21264
Information sharing	Levene's test for equality of variances	F	6.102	
		Sig.	.014	
	t-test for equality of means	t	-.467	-.477
		df	263	262.525
		Sig. (2-tailed)	.644	.634
		Mean Difference	-.05494	-.05494
		Std. Error Difference	.11778	.11517
		95% Confidence Interval of the Difference	Lower Upper	-.28685 -.17183
Objectivity	Levene's test for equality of variances	F	.050	
		Sig.	.823	
	t-test for equality of means	t	-1.032	-1.037
		df	263	253.286
		Sig. (2-tailed)	.303	.304
		Mean Difference	-.12933	-.12933
		Std. Error Difference	.12526	.12466
		95% Confidence Interval of the Difference	Lower Upper	-.37596 -.11617
Accountability	Levene's test for equality of variances	F	6.508	
		Sig.	.011	
		t	-.534	-.548

Constructs and tests			Equal variances assumed	Equal variances not assumed
	t-test for equality of means	df	263	262.957
		Sig. (2-tailed)	.594	.584
		Mean Difference	-.06457	-.06457
		Std. Error Difference	.12100	.11792
		95% Confidence Interval of the Difference	Lower Upper -.30284 -.17368	-.29675 .16761
Autonomy	Levene's test for equality of variances	F	.265	
		Sig.	.607	
	t-test for equality of means	t	.427	.430
		df	263	254.686
		Sig. (2-tailed)	.670	.668
		Mean Difference	.05530	.05530
		Std. Error Difference	.12959	.12875
		95% Confidence Interval of the Difference	Lower Upper -.19987 .31048	-.19824 .30885
	Levene's test for equality of variances	F	.199	
		Sig.	.656	
Coordinating teamwork	t-test for equality of means	t	.199	.200
		df	263	254.663
		Sig. (2-tailed)	.843	.842
		Mean Difference	.02484	.02484
		Std. Error Difference	.12509	.12427
		95% Confidence Interval of the Difference	Lower Upper -.22146 .27114	-.21990 .26958
	Levene's test for equality of variances	F	.003	
		Sig.	.956	
Operational management	t-test for equality of means	t	1.773	1.776
		df	263	250.432
		Sig. (2-tailed)	.077	.077
		Mean Difference	.21572	.21572
		Std. Error Difference	.12166	.12148
		95% Confidence Interval of the Difference	Lower Upper -.02383 .45526	-.02353 .45497
	Levene's test for equality of variances	F	.527	
		Sig.	.469	
Performance measuring system	t-test for equality of means	t	.519	.526
		df	263	250.428
		Sig. (2-tailed)	.604	.599
		Mean Difference	.06244	.06244
		Std. Error Difference	.12037	.11874
		95% Confidence Interval of the Difference	Lower Upper -.17458 .29945	-.17133 .29620
	Levene's test for equality of variances	F	.362	
		Sig.	.548	
Strategic execution	t-test for equality of means	t	.402	.404
		df	263	245.778
		Sig. (2-tailed)	.688	.689
		Mean Difference	.04879	.04879
		Std. Error Difference	.12140	.12184
		95% Confidence Interval of the Difference	Lower Upper -.19025 .28783	-.19113 .28874
	Levene's test for equality of variances	F	.003	
		Sig.	.955	

Constructs and tests			Equal variances assumed	Equal variances not assumed
Top management involvement	t-test for equality of means	t	.483	<del>.482</del>
		df	263	<del>245.645</del>
		Sig. (2-tailed)	.629	<del>.634</del>
		Mean difference	.05996	<del>.05996</del>
		Std. error difference	.12407	<del>.12450</del>
		95% confidence Interval of the difference	Lower	<del>-.18434</del>
			Upper	<del>.30519</del>

**Note:** In the table above, the irrelevant results have been struck through as a result of the outcome of the Levene test of homogeneity of variance. The H0 hypothesis tested by the Levene test was that the variance in the two groups was the same.

**ANNEXURE M**  
**INDEPENDENT SAMPLES TEST FOR QUALIFICATIONS**

Constructs and tests			Equal variances assumed	Equal variances not assumed
Work Support	Levene's test for equality of variances	F	3.191	
		Sig.	.075	
	t-test for equality of means	t	.490	-.491
		df	342	339.776
		Sig. (2-tailed)	.625	.624
		Mean Difference	.05017	.05017
		Std. Error Difference	.10243	.10222
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.15129 .25164	-.15089 .25124
Team management	Levene's test for equality of variances	F	2.703	
		Sig.	.101	
	t-test for equality of means	t	-.216	-.217
		df	342	339.564
		Sig. (2-tailed)	.829	.829
		Mean Difference	-.02235	-.02235
		Std. Error Difference	.10335	.10313
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.22563 .18093	-.22521 .18051
Trust relationship	Levene's test for equality of variances	F	1.645	
		Sig.	.200	
	t-test for equality of means	t	-.597	-.597
		df	342	341.576
		Sig. (2-tailed)	.551	.551
		Mean Difference	-.06339	-.06339
		Std. Error Difference	.10625	.10612
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.27237 .14559	-.27211 .14533
Information sharing	Levene's test for equality of variances	F	.002	
		Sig.	.967	
	t-test for equality of means	t	-1.004	-1.004
		df	342	341.392
		Sig. (2-tailed)	.316	.316
		Mean Difference	-.10273	-.10273
		Std. Error Difference	.10230	.10231
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.30395 .09849	-.30398 .09851
Objectivity	Levene's test for equality of variances	F	.820	
		Sig.	.366	
	t-test for equality of means	t	-.734	-.734
		df	342	341.851
		Sig. (2-tailed)	.464	.463
		Mean Difference	-.07914	-.07914
		Std. Error Difference	.10788	.10777
			Lower	Lower
			-.29133	-.29112



Constructs and tests			Equal variances assumed	Equal variances not assumed
		95% Confidence Interval of the DifferenceUpper	.13304	.13283
Accountability	Levene's test for equality of variances	F	.369	
		Sig.	.544	
	t-test for equality of means	t	-1.204	-1.205
		df	342	341.872
		Sig. (2-tailed)	.229	.229
		Mean Difference	-.13083	-.13083
		Std. Error Difference	.10866	.10856
		95% Confidence Interval of the DifferenceLowerUpper	-.34456.08290	-.34436.08270
Autonomy	Levene's test for equality of variances	F	.000	
		Sig.	.989	
	t-test for equality of means	t	-.695	-.694
		df	342	341.406
		Sig. (2-tailed)	.488	.488
		Mean Difference	-.07658	-.07658
		Std. Error Difference	.11027	.11028
		95% Confidence Interval of the DifferenceLowerUpper	-.29348.14031	-.29350.14033
Coordinating teamwork	Levene's test for equality of variances	F	.395	
		Sig.	.530	
	t-test for equality of means	t	-.090	-.090
		df	342	341.634
		Sig. (2-tailed)	.928	.928
		Mean Difference	-.00955	-.00955
		Std. Error Difference	.10558	.10558
		95% Confidence Interval of the DifferenceLowerUpper	-.21723.19812	-.21722.19811
Operational management	Levene's test for equality of variances	F	.803	
		Sig.	.371	
	t-test for equality of means	t	-.170	-.170
		df	342	341.836
		Sig. (2-tailed)	.865	.865
		Mean Difference	-.01817	-.01817
		Std. Error Difference	.10706	.10703
		95% Confidence Interval of the DifferenceLowerUpper	-.22874.19240	-.22869.19236
Performance measuring system	Levene's test for equality of variances	F	.031	
		Sig.	.860	
	t-test for equality of means	t	-1.593	-1.594
		df	342	342.000
		Sig. (2-tailed)	.112	.112
		Mean Difference	-.16330	-.16330
		Std. Error Difference	.10251	.10245
		95% Confidence Interval of the DifferenceLowerUpper	-.36493.03833	-.36480.03824

Constructs and tests			Equal variances assumed	Equal variances not assumed
Strategic execution	Levene's test for equality of variances	F	.103	
		Sig.	.749	
	t-test for equality of means	t	-1.272	<del>-1.272</del>
		df	342	<del>341.668</del>
		Sig. (2-tailed)	.204	<del>.204</del>
		Mean Difference	-.12957	<del>-.12957</del>
		Std. Error Difference	.10183	<del>.10182</del>
		95% Confidence Interval of the Difference	Lower Upper -.32985 .07072	<del>Lower Upper -.32984 .07071</del>
Top management involvement	Levene's test for equality of variances	F	2.879	
		Sig.	.091	
	t-test for equality of means	t	-.153	<del>-.154</del>
		df	342	<del>340.187</del>
		Sig. (2-tailed)	.878	<del>.878</del>
		Mean Difference	-.01616	<del>-.01616</del>
		Std. Error Difference	.10542	<del>.10522</del>
		95% Confidence Interval of the Difference	Lower Upper -.22350 .19119	<del>Lower Upper -.22311 .19080</del>

**Note:** In the table above, the irrelevant results have been struck through as a result of the outcome of the Levene test of homogeneity of variance. The H0 hypothesis tested by the Levene test was that the variance in the two groups was the same.

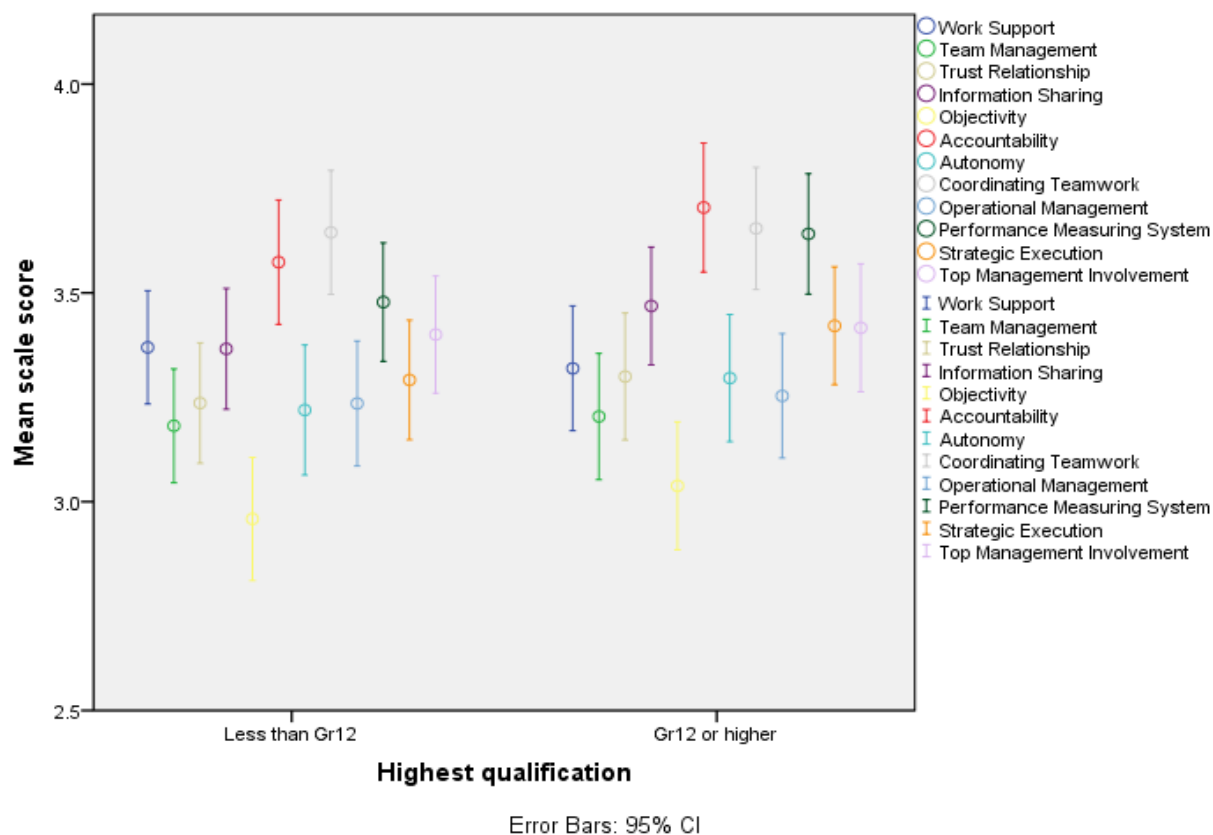
**ANNEXURE N**  
**THE GROUP STATISTICS FOR THE NUMBER OF PEERS REPORTING TO THE**  
**SAME MANAGER**

Construct	Q11 How many employees are reporting to the same manager as you do?	N	Mean	Standard Deviation	Standard Error Mean
Work support	< = 45 employees	148	3.3329	1.00610	.08270
	> 45 employees	117	3.4657	.85229	.07879
Team management	< = 45 employees	148	3.1895	1.03424	.08501
	> 45 employees	117	3.2867	.86610	.08007
Trust relationship	< = 45 employees	148	3.3290	1.04752	.08611
	> 45 employees	117	3.3531	.90769	.08392
Information sharing	< = 45 employees	148	3.4562	1.02748	.08446
	> 45 employees	117	3.5112	.84691	.07830
Objectivity	< = 45 employees	148	2.9742	1.03046	.08470
	> 45 employees	117	3.1036	.98929	.09146
Accountability	< = 45 employees	148	3.6486	1.06640	.08766
	> 45 employees	117	3.7131	.85311	.07887
Autonomy	< = 45 employees	148	3.2597	1.07290	.08819
	> 45 employees	117	3.2044	1.01457	.09380
Coordinating teamwork	< = 45 employees	148	3.6102	1.03549	.08512
	> 45 employees	117	3.5853	.97945	.09055
Operational management	< = 45 employees	148	3.3989	.98884	.08128
	> 45 employees	117	3.1832	.97651	.09028
Performance measuring System	< = 45 employees	148	3.6325	1.02190	.08400
	> 45 employees	117	3.5701	.90737	.08389
Strategic execution	< = 45 employees	148	3.4085	.96888	.07964
	> 45 employees	117	3.3597	.99690	.09216
Top Management involvement	< = 45 employees	148	3.4453	.98971	.08135
	> 45 employees	117	3.3854	1.01945	.09425

**Note:** In the table above, the irrelevant results have been struck through as a result of the outcome of the Levene test of homogeneity of variance. The H0 hypothesis tested by the Levene test was that the variance in the two groups was the same.

## ANNEXURE O

### THE ERROR BARS: 95% FOR CI FOR QUALIFICATION



**ANNEXURE P**  
**INDEPENDENT SAMPLES TEST FOR THE NUMBER OF PEERS REPORTING TO**  
**THE SAME MANAGER**

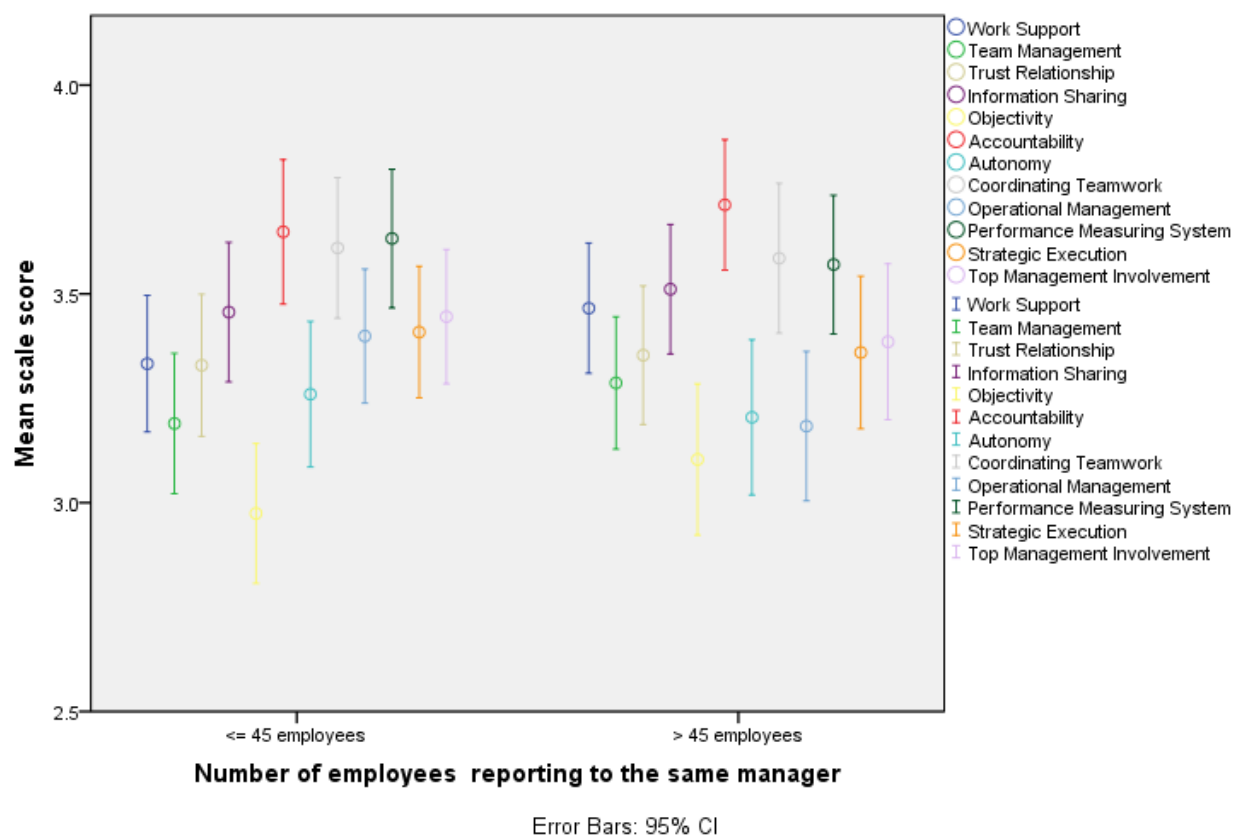
Constructs and tests			Equal variances assumed	Equal variances not assumed
Work support	Levene's test for equality of variances	F	3.014	
		Sig.	.084	
	t-test for equality of means	t	-1.140	-1.163
		df	263	261.717
		Sig. (2-tailed)	.255	.246
		Mean Difference	-.13279	-.13279
		Std. Error Difference	.11645	.11423
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.36209 .09651	-.35774 .09213
Team management	Levene's test for equality of variances	F	2.900	
		Sig.	.090	
	t-test for equality of means	t	-.815	-.832
		df	263	262.105
		Sig. (2-tailed)	.416	.406
		Mean Difference	-.09716	-.09716
		Std. Error Difference	.11922	.11679
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.33190 .13759	-.32711 .13280
Trust relationship	Levene's test for equality of variances	F	1.950	
		Sig.	.164	
	t-test for equality of means	t	-.197	-.201
		df	263	260.756
		Sig. (2-tailed)	.844	.841
		Mean Difference	-.02411	-.02411
		Std. Error Difference	.12226	.12023
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.26484 .21662	-.26086 .21264
Information sharing	Levene's test for equality of variances	F	6.102	
		Sig.	.014	
	t-test for equality of means	t	-.467	-.477
		df	263	262.525
		Sig. (2-tailed)	.641	.634
		Mean Difference	-.05494	-.05494
		Std. Error Difference	.11778	.11517
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.28685 .17697	-.28171 .17183
Objectivity	Levene's test for equality of variances	F	.050	
		Sig.	.823	
	t-test for equality of means	t	-1.032	-1.037
		df	263	253.286
		Sig. (2-tailed)	.303	.301
		Mean Difference	-.12933	-.12933
		Std. Error Difference	.12526	.12466

Constructs and tests			Equal variances assumed	Equal variances not assumed	
		95% Confidence Interval of the Difference	Lower Upper	-.37596 .11731	-.37482 .11617
Accountability	Levene's test for equality of variances	F		6.508	
		Sig.		.011	
	t-test for equality of means	t		-.534	-.548
		df		263	262.957
		Sig. (2-tailed)		.594	.584
		Mean Difference		-.06457	-.06457
		Std. Error Difference		.12100	.11792
		95% Confidence Interval of the Difference	Lower Upper	-.30281 .17368	-.29675 .16761
Autonomy	Levene's test for equality of variances	F		.265	
		Sig.		.607	
	t-test for equality of means	t		.427	-.430
		df		263	254.686
		Sig. (2-tailed)		.670	.668
		Mean Difference		.05530	.05530
		Std. Error Difference		.12959	.12875
		95% Confidence Interval of the Difference	Lower Upper	-.19987 .31048	-.19824 .30885
Coordinating teamwork	Levene's test for equality of variances	F		.199	
		Sig.		.656	
	t-test for equality of means	t		.199	-.200
		df		263	254.663
		Sig. (2-tailed)		.843	.842
		Mean Difference		.02484	.02484
		Std. Error Difference		.12509	.12427
		95% Confidence Interval of the Difference	Lower Upper	-.22146 .27114	-.21990 .26958
Operational management	Levene's test for equality of variances	F		.003	
		Sig.		.956	
	t-test for equality of means	t		1.773	1.776
		df		263	250.432
		Sig. (2-tailed)		.077	.077
		Mean Difference		.21572	.21572
		Std. Error Difference		.12166	.12148
		95% Confidence Interval of the Difference	Lower Upper	-.02383 .45526	-.02353 .45497
Performance measuring system	Levene's test for equality of variances	F		.527	
		Sig.		.469	
	t-test for equality of means	t		.519	-.526
		df		263	259.428
		Sig. (2-tailed)		.604	.599
		Mean Difference		.06244	.06244
		Std. Error Difference		.12037	.11871
		95% Confidence Interval of the Difference	Lower Upper	-.17458 .29945	-.17133 .29620

Constructs and tests			Equal variances assumed	Equal variances not assumed
Strategic execution	Levene's test for equality of variances	F	.362	
		Sig.	.548	
	t-test for equality of means	t	.402	<del>.401</del>
		df	263	<del>245.778</del>
		Sig. (2-tailed)	.688	<del>.689</del>
		Mean Difference	.04879	<del>.04879</del>
		Std. Error Difference	.12140	<del>.12181</del>
		95% Confidence Interval of the Difference	Lower Upper -.19025 .28783	<del>Lower Upper -.19113 .28871</del>
Top management involvement	Levene's test for equality of variances	F	.003	
		Sig.	.955	
	t-test for equality of means	t	.483	<del>.482</del>
		df	263	<del>245.645</del>
		Sig. (2-tailed)	.629	<del>.631</del>
		Mean Difference	.05996	<del>.05996</del>
		Std. Error Difference	.12407	<del>.12450</del>
		95% Confidence Interval of the Difference	Lower Upper -.18434 .30426	<del>Lower Upper -.18527 .30519</del>

**Note:** In the table above, the irrelevant results have been struck through as a result of the outcome of the Levene test of homogeneity of variance. The H0 hypothesis tested by the Levene test was that the variance in the two groups was the same.

# **ANNEXURE Q** **THE ERROR BARS: 95% FOR CI FOR THE NUMBER OF PEERS REPORTING TO THE SAME MANAGER**





# **ANNEXURE R** **INDEPENDENT SAMPLES TEST OF PROFICIENCY LEVELS**

Constructs and tests			Equal variances assumed	Equal variances not assumed
Work support	Levene's test for equality of variances	F	1.642	
		Sig.	.201	
	t-test for equality of means	t	-3.202	-3.245
		df	315	299.525
		Sig. (2-tailed)	.002	.004
		Mean Difference	-.34100	-.34100
		Std. Error Difference	.10651	.10509
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.55055 -.13144	-.54780 -.13419
Team management	Levene's test for equality of variances	F	.591	
		Sig.	.443	
	t-test for equality of means	t	-3.758	-3.816
		df	315	300.962
		Sig. (2-tailed)	.000	.000
		Mean Difference	-.39605	-.39605
		Std. Error Difference	.10538	.10380
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.60340 -.18871	-.60032 -.19179
Trust relationship	Levene's test for equality of variances	F	1.403	
		Sig.	.237	
	t-test for equality of means	t	-3.708	-3.764
		df	315	300.802
		Sig. (2-tailed)	.000	.000
		Mean Difference	-.40084	-.40084
		Std. Error Difference	.10809	.10648
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.61351 -.18818	-.61039 -.19129
Information sharing	Levene's test for equality of variances	F	3.592	
		Sig.	.059	
	t-test for equality of means	t	-3.235	-3.310
		df	315	306.637
		Sig. (2-tailed)	.001	.004
		Mean Difference	-.33863	-.33863
		Std. Error Difference	.10466	.10230
		95% Confidence Interval of the Difference	Lower Upper	Lower Upper
			-.54456 -.13270	-.53993 -.13732
Objectivity	Levene's test for equality of variances	F	.003	
		Sig.	.955	
	t-test for equality of means	t	-2.686	-2.704
		df	315	292.166
		Sig. (2-tailed)	.008	.007
		Mean Difference	-.29877	-.29877
		Std. Error Difference	.11121	.11062
		Lower	-.51758	-.51648

Constructs and tests			Equal variances assumed	Equal variances not assumed
		95% Confidence Interval of the DifferenceUpper	-.07996	-.08106
Accountability	Levene's test for equality of variances	F	.095	
		Sig.	.758	
	t-test for equality of means	t	-1.933	-1.932
		df	315	286.184
		Sig. (2-tailed)	.054	.054
		Mean Difference	-.22036	-.22036
		Std. Error Difference	.11401	.11407
		95% Confidence Interval of the DifferenceLowerUpper	-.44469.00396	-.44490.00417
Autonomy	Levene's test for equality of variances	F	1.353	
		Sig.	.246	
	t-test for equality of means	t	-2.453	-2.487
		df	315	299.999
		Sig. (2-tailed)	.015	.013
		Mean Difference	-.28315	-.28315
		Std. Error Difference	.11544	.11384
		95% Confidence Interval of the DifferenceLowerUpper	-.51028-.05602	-.50717-.05913
Coordinating teamwork	Levene's Test for Equality of Variances	F	11.632	
		Sig.	.001	
	t-test for equality of means	t	-4.607	-1.671
		df	315	313.914
		Sig. (2-tailed)	.009	.096
		Mean Difference	-.18021	-.18021
		Std. Error Difference	.11210	.10787
		95% Confidence Interval of the DifferenceLowerUpper	-.40077-.04036	-.39244.03203
Operational management	Levene's test for equality of variances	F	.192	
		Sig.	.662	
	t-test for equality of means	t	-1.272	-1.268
		df	315	283.805
		Sig. (2-tailed)	.204	.206
		Mean Difference	-.14335	-.14335
		Std. Error Difference	.11271	.11302
		95% Confidence Interval of the DifferenceLowerUpper	-.36511.07841	-.36582.07912
Performance measuring system	Levene's test for equality of variances	F	7.682	
		Sig.	.006	
	t-test for equality of means	t	-4.990	-2.055
		df	315	311.722
		Sig. (2-tailed)	.047	.041
		Mean Difference	-.21545	-.21545
		Std. Error Difference	.10829	.10486
		95% Confidence Interval of the DifferenceLowerUpper	-.42851-.00240	-.42178-.00912

Constructs and tests			Equal variances assumed	Equal variances not assumed
Strategic execution	Levene's test for equality of variances	F	.022	
		Sig.	.883	
	t-test for equality of means	t	-1.777	<del>-1.786</del>
		df	315	<del>291.578</del>
		Sig. (2-tailed)	.076	<del>.075</del>
		Mean Difference	-.19477	<del>-.19477</del>
		Std. Error Difference	.10958	<del>.10906</del>
		95% Confidence Interval of the Difference	Lower Upper -.41037 .02084	<del>Lower Upper -.40941 .01988</del>
Top management involvement	Levene's test for equality of variances	F	1.315	
		Sig.	.252	
	t-test for equality of means	t	-.711	<del>-.706</del>
		df	315	<del>278.910</del>
		Sig. (2-tailed)	.478	<del>.481</del>
		Mean Difference	-.07922	<del>-.07922</del>
		Std. Error Difference	.11144	<del>.11225</del>
		95% Confidence Interval of the Difference	Lower Upper -.29848 .14005	<del>Lower Upper -.30019 .14176</del>

**Note:** In the table above, the irrelevant results have been struck through as a result of the outcome of the Levene test of homogeneity of variance. The H0 hypothesis tested by the Levene test was that the variance in the two groups was the same.

# **ANNEXURE S** **INDEPENDENT SAMPLES TEST CONTACT FREQUENCY**

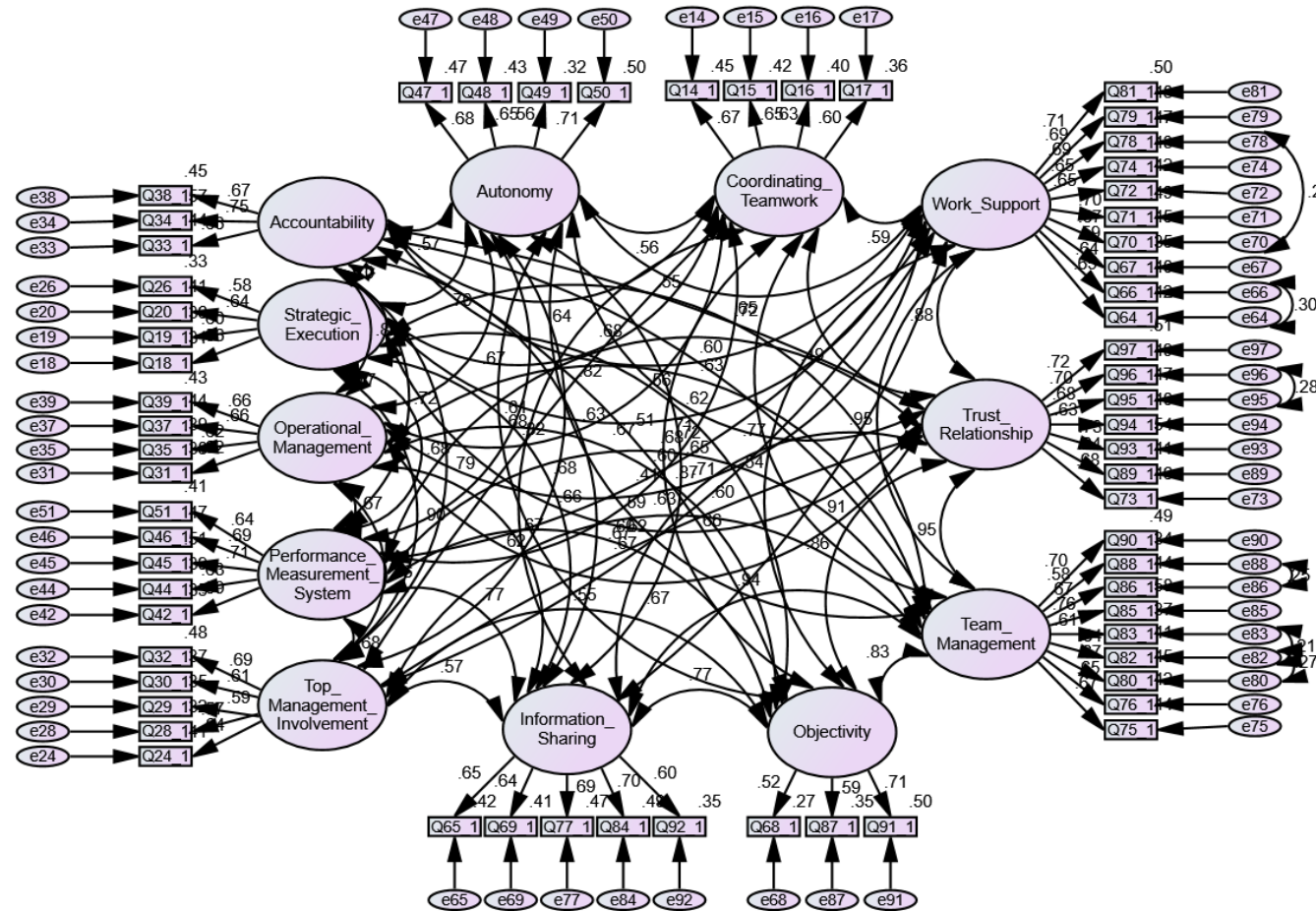
Constructs and tests			Equal variances assumed	Equal variances not assumed
Work support	Levene's test for equality of variances	F	.047	
		Sig.	.829	
	t-test for equality of means	t	-2.054	<del>-2.056</del>
		df	307	<del>305.179</del>
		Sig. (2-tailed)	.041	<del>.041</del>
		Mean Difference	-.22277	<del>-.22277</del>
		Std. Error Difference	.10847	<del>.10836</del>
		95% Confidence Interval of the Difference	Lower Upper	<del>Lower Upper</del>
			-.43622 -.00933	<del>-.43601 -.00954</del>
Team management	Levene's test for equality of variances	F	.042	
		Sig.	.838	
	t-test for equality of means	t	-1.245	<del>-1.244</del>
		df	307	<del>303.247</del>
		Sig. (2-tailed)	.214	<del>.214</del>
		Mean Difference	-.13724	<del>-.13724</del>
		Std. Error Difference	.11024	<del>.11031</del>
		95% Confidence Interval of the Difference	Lower Upper	<del>Lower Upper</del>
			-.35416 .07969	<del>-.35432 .07984</del>
Trust relationship	Levene's test for equality of variances	F	.045	
		Sig.	.832	
	t-test for equality of means	t	-1.805	<del>-1.802</del>
		df	307	<del>301.992</del>
		Sig. (2-tailed)	.072	<del>.073</del>
		Mean Difference	-.20327	<del>-.20327</del>
		Std. Error Difference	.11262	<del>.11279</del>
		95% Confidence Interval of the Difference	Lower Upper	<del>Lower Upper</del>
			-.42487 .01833	<del>-.42523 .01868</del>
Information sharing	Levene's test for equality of variances	F	1.765	
		Sig.	.185	
	t-test for equality of means	t	-.593	<del>-.591</del>
		df	307	<del>299.587</del>
		Sig. (2-tailed)	.554	<del>.555</del>
		Mean Difference	-.06399	<del>-.06399</del>
		Std. Error Difference	.10789	<del>.10821</del>
		95% Confidence Interval of the Difference	Lower Upper	<del>Lower Upper</del>
			-.27629 .14831	<del>-.27694 .14895</del>
Objectivity	Levene's test for equality of variances	F	3.454	
		Sig.	.064	
	t-test for equality of means	t	-2.434	<del>-2.422</del>
		df	307	<del>295.723</del>
		Sig. (2-tailed)	.016	<del>.016</del>
		Mean Difference	-.27592	<del>-.27592</del>
		Std. Error Difference	.11336	<del>.11391</del>
		Lower	-.49898	<del>-.50009</del>

Constructs and tests			Equal variances assumed	Equal variances not assumed
		95% Confidence Interval of the DifferenceUpper	-.05285	-.05175
Accountability	Levene's test for equality of variances	F	.044	
		Sig.	.834	
	t-test for equality of means	t	-1.234	-1.233
		df	307	303.208
		Sig. (2-tailed)	.218	.219
		Mean Difference	-.14140	-.14140
		Std. Error Difference	.11463	.11471
		95% Confidence Interval of the DifferenceLowerUpper	-.36696.08415	-.36713.08432
Autonomy	Levene's test for equality of variances	F	.003	
		Sig.	.953	
	t-test for equality of means	t	-1.803	-1.802
		df	307	303.957
		Sig. (2-tailed)	.072	.072
		Mean Difference	-.20760	-.20760
		Std. Error Difference	.11517	.11518
		95% Confidence Interval of the DifferenceLowerUpper	-.43422.01903	-.43426.01906
Coordinating teamwork	Levene's test for equality of variances	F	.080	
		Sig.	.778	
	t-test for equality of means	t	.157	.157
		df	307	304.727
		Sig. (2-tailed)	.875	.875
		Mean Difference	.01739	.01739
		Std. Error Difference	.11050	.11044
		95% Confidence Interval of the DifferenceLowerUpper	-.20004.23483	-.19993.23472
Operational management	Levene's test for equality of variances	F	.980	
		Sig.	.323	
	t-test for equality of means	t	-1.396	-1.396
		df	307	304.494
		Sig. (2-tailed)	.164	.164
		Mean Difference	-.15936	-.15936
		Std. Error Difference	.11416	.11412
		95% Confidence Interval of the DifferenceLowerUpper	-.38398.06527	-.38392.06520
Performance measuring system	Levene's test for equality of variances	F	.174	
		Sig.	.677	
	t-test for equality of means	t	-1.190	-1.192
		df	307	305.820
		Sig. (2-tailed)	.235	.234
		Mean Difference	-.12834	-.12834
		Std. Error Difference	.10787	.10768
		95% Confidence Interval of the DifferenceLowerUpper	-.34059.08391	-.34023.08355

Constructs and tests			Equal variances assumed	Equal variances not assumed
Strategic execution	Levene's test for equality of variances	F	.710	
		Sig.	.400	
	t-test for equality of means	t	-2.521	<del>-2.516</del>
		df	307	<del>301.102</del>
		Sig. (2-tailed)	.012	<del>.012</del>
		Mean Difference	-.27017	<del>-.27017</del>
		Std. Error Difference	.10718	<del>.10740</del>
		95% Confidence Interval of the Difference	Lower Upper -.48107 -.05927	<del>Lower Upper -.48153 -.05882</del>
Top management involvement	Levene's test for equality of variances	F	.323	
		Sig.	.570	
	t-test for equality of means	t	-1.941	<del>-1.944</del>
		df	307	<del>305.414</del>
		Sig. (2-tailed)	.053	<del>.053</del>
		Mean Difference	-.21919	<del>-.21919</del>
		Std. Error Difference	.11291	<del>.11277</del>
		95% Confidence Interval of the Difference	Lower Upper -.44137 .00299	<del>Lower Upper -.44110 .00272</del>

**Note:** In the table above, the irrelevant results have been struck through as a result of the outcome of the Levene test of homogeneity of variance. The H0 hypothesis tested by the Levene test was that the variance in the two groups was the same.

**ANNEXURE T**  
**THE STANDARDISED COMBINED MEASUREMENT MODEL OF THE VPTI WITH EMBEDDED CORRELATIONS SHOWN**



## ANNEXURE U

### THE VPTI: INTRODUCTION AND BACKGROUND INFORMATION

#### The VPTI: Introduction and background information:

Participation in this survey is for research purposes and part of a study under the supervision of UNISA. Your participation is much appreciated and will assist in making the work place a better place for all.

You are herewith invited to participate in an exciting study of the perceptions around the performance measurement system, performance culture and levels of trust in the company. The aim of the survey is to gather data around the perceptions of these aspects to get a general understanding of how these aspects influence each other and affect the employee.

**Please note:**

- This is not a formal organisational assessment. It is meant purely for research purposes.
- Participation is voluntary;
- All questions must please be completed and as honest as possible;
- The results will be used for research purposes only;
- The results are confidential and no prejudice exists or will result from this questionnaire;
- There is no time limit to fill in the questionnaire;
- Please use ink (preferably black ink) to complete the questionnaire;
- Please feel free to ask the researcher, Lenard Durand (Lenard.durand@gmail.com), to clarify any aspects of the questionnaire or research;
- The questionnaire and research is done according to all relevant ethical codes governing this type of research;
- Feedback of the results will be given to management who can then take appropriate action as needed; and
- Feedback can also be obtained from the researcher once the research has been finalised).

#### **POSSIBLE QUESTIONS AND ANSWERS**

**Anticipated questions and answers:** For what purpose will the research be used? The research findings form part of an academic study of how perceptions around performance measurement systems, performance culture and trust relations get affected by aspects in an organisation. The results will be used to inform organisational changes to be more efficient around performance measures, cultures and trust levels.

**Can I really be honest?** Yes. Please answer each question as honestly as possible because your views are valued. Participants are not identified in the questionnaires and the electronic version is managed by an external organisation adhering to the prescribed ethical code of the research body.

**How long will the questionnaire take?** The questionnaire will take approximately 15 dedicated minutes to complete.

**Will I get feedback?** The research findings will be published in an academic format. The results could be made available upon request or the researcher could be contacted directly to share the results.