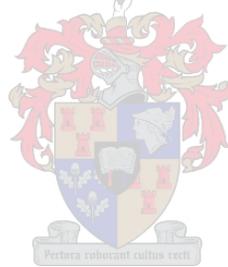


**The relationship between servant leadership, team
commitment, team citizenship behaviour and team
effectiveness: An exploratory study**

By

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**Thesis presented in partial fulfilment of the requirements for the degree of
Master of Commerce in Psychology at the University of Stellenbosch**

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March 2010

DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

March 2010

ABSTRACT

The work force has evolved immensely over the last decade. In a quest to remain competitive in the provision of consumer goods and services at the lowest possible economic cost, organisations have been compelled to adopt and adapt to the winds of change that have literally taken centre stage in the global market. The increased use of teams as production vehicles in today's workplace is one of the notable developments that deserve and justify further investigation. A study of the literature on teams revealed that leadership plays a crucial role in a team's dynamics, its survival and ultimate success. Therefore the overarching aim of the present study was to determine the manner in which leadership, specifically servant leadership, affects team effectiveness. In an attempt to answer this question, an explanatory structural model that purports to explicate the manner in which leadership affects team effectiveness was subsequently developed and tested. The study was conducted using primary and secondary school teachers from schools in and around Stellenbosch, in the Western Cape (South Africa). Each school was regarded as a team. Out of the 400 questionnaires distributed to the members of the teams, 201 ($n=201$) completed questionnaires were received comprising 29 teams. The respondents who participated in the study completed four questionnaires – joined together in one composite questionnaire. The four questionnaires constituting the composite questionnaire were: the rater version of the Servant Leadership Questionnaire (SLQ) of Barbuto and Wheeler (2006) - an SLQ self-report version also exists; the Team Commitment Survey of Bennett (1997); the slightly modified version of the Organisational Citizenship Behaviour Scale (OCBS) developed by Podsakoff and Mackenzie (1994) and the Team Effectiveness Questionnaire (TEQ) developed by Larson and LaFasto (1989).

Item analyses were performed on each of the subscales using SPSS version 17. Thereafter, confirmatory factor analysis was performed on the measurement model. However, some of the subscales, specifically for team citizenship behaviour and team commitment appeared to be problematic.

The proposed model was tested using structural equation modelling (SEM) via LISREL version 8.54. Overall, it was found that both the measurement and structural model fitted the data reasonably well. From the results obtained in this study it can be concluded that there is a very weak negative relationship between servant leadership and team effectiveness, while there is a significant

positive relationships between servant leadership and team commitment, team commitment and team citizenship behaviour, and team commitment and team effectiveness. Team citizenship behaviour has a slightly strong inverse effect on team effectiveness. Furthermore, team commitment has been found to be a strong moderator in the relationship between servant leadership and team effectiveness.

With the unique combined variables included in this study, the study can be seen as making a contribution to the existing theory and literature by explicating the findings with regard to the interrelationships between servant leadership, team commitment, team citizenship behaviour, and team effectiveness. However, referring back to the literature, this study was an attempt to help further some of these “emerging” organisational behaviour constructs. It should therefore be seen as investigative in nature and much more follow-up research in this domain is deemed necessary. This study stated its limitations but also made recommendations for possible future research avenues to be explored.

OPSOMMING

Die wêreld-van-werk het heelwat verander oor die afgelope dekade. Om dus in die vraag na verbruikersgoedere en -dienste te voorsien en steeds mededingend te bly voortbestaan, teen die laagste ekonomiese koste, word organisasies genoodsaak om aan te pas en te verander soos wat internasionale markte voortdurend verander en voor uitgaan. Die toenemende aanwending van spanne as produksie-medium in vandag se werksplek is een van die ooglopende ontwikkelinge wat verdere ondersoek verdien en regverdig. Bestudering van die literatuur oor spanne het aan die lig gebring dat leierskap 'n sleutelrol speel in spandinamika, 'n span se oorlewing en uiteindelijke suksesbereiking. Dus was die oorkoepelende doelwit van hierdie studie om die wyse te bepaal waarop leierskap – spesifiek dan, diensbare-leierskap – spaneffektiwiteit beïnvloed. In 'n poging om hierdie vraagstuk aan te spreek, is daar gevolglik 'n verklarende strukturele (vergelijkings) model ontwikkel en getoets met die doel om meer lig te werp op die wyse waarop leierskap spaneffektiwiteit beïnvloed. 'n Studie is uitgevoer deur van laerskool- en hoërskool-onderwysers van skole in en om Stellenbosch in die Wes-Kaap (Suid-Afrika) gebruik te maak. Elke skool is as 'n spanbeskou. Uit die totaal van 400 vraelyste wat uitgestuur is, is 201 ($n=201$) voltooide vraelyste terug ontvang – wat 29 volledige spanne omvat het. Respondente wat aan hierdie studie deelgeneem het, moes vier vraelyste – wat deel uitgemaak het van een saamgestelde vraelys – voltooi. Die vier vraelyste wat deel uitgemaak het van die saamgestelde vraelys en gedien het om die 201 onderwysers se menings te verkry, het bestaan uit die beoordelaarsvorm van die *Servant Leadership Questionnaire* (SLQ) van Barbuto en Wheeler (2006) – daar is ook 'n SLQ self beoordelingsvorm wat deur Barbuto en Wheeler ontwikkel is; die *Team Commitment Survey* van Bennett (1997); die effens aangepaste weergawe van die *Organisational Citizenship Behaviour Scale* (OCBS) wat ontwikkel is deur Podsakoff en Mackenzie (1994); en die *Team Effectiveness Questionnaire* (TEQ) van Larson en LaFasto (1989).

Itemontledings is op elk van die subskale uitgevoer deur gebruik te maak van LISREL weergawe 17. Daarna is bevestigende faktorontleding op die metingsmodel uitgevoer. Sekere van die subskale het egter problematies voorgekom – spesifiek die subskale vir spangemeenskapsgedrag en spanbetrokkenheid.

Die voorgestelde model is getoets deur middel van struktuurvergelijkingsmodellering (SVM) aan die hand van LISREL weergawe 8.54. Oor die algeheel is bevredigende passings van beide die

metingsmodel en die strukturele (vergelykings) model op die data verkry. Die resultate van die verskillende ontledings het getoon dat daar 'n baie swak negatiewe verwantskap tussen diensbare leierskap en spaneffektiwiteit bestaan, terwyl beduidende positiewe verwantskappe gevind is tussen diensbare leierskap en spanbetrokkenheid, spanbetrokkenheid en spangemeenskapsgedrag, en spanbetrokkenheid en spaneffektiwiteit. Spangemeenskapsgedrag het 'n redelike sterk negatiewe verwantskap met spaneffektiwiteit getoon. Verder is daar bevind dat spanbetrokkenheid 'n sterk modererende rol speel in die verwantskap tussen diensbare leierskap en spaneffektiwiteit.

Gegewe die unieke kombinasie van konstrunkte wat in hierdie studie ingesluit is, kan daar gesê word dat hierdie studie 'n bydrae lewer ten opsigte van die bestaande teorie deur lig te werp op die verwantskappe tussen diensbare leierskap, spanbetrokkenheid, spangemeenskapsgedrag en spaneffektiwiteit. Tog, deur weer na die literatuur te verwys is dit belangrik om te benadruk dat hierdie studie beskou moet word as 'n poging om hierdie “nuwe” ontluikende organisasiegedrag konstrunkte verder te help uitbou. Juis om hierdie rede behoort hierdie studie as ondersoekend van aard geïnterpreteer te word en is opvolgnavorsing oor hierdie gebied nodig. Die studie stel sy beperkinge, maar maak ook aanbevelings vir verdere navorsingsgebiede wat potensieel ondersoek kan word.

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The ability to use the Structural Equation Modelling methodology to evaluate models to explain the performance of employees through the utilisation of statistical packages, such as SPSS and LISREL, is an achievement that I had never dreamt of. Mastery of SEM did not only require some commitment on my part but it called for some extra-role dedication from the instructor. Prof. Theron has been greatly instrumental in imparting the skills to enable me to develop and test the proposed model. He is a great man with a rare combination of social and intellectual talents. Callie has always been patient and tolerant despite the almost perennial calls for statistical assistance. Thank you very much Prof.

The departmental administrative function also contributed immensely to the study. The data collection phase involved moving from one school to another which was cumbersome. Prof. Malan organised transport to make this process easier. He also successfully negotiated with the Department of Education for permission to have the data collected from the schools. Thank you very much, Prof, for your assistance, exceptional leadership skills and 'open-door-policy.'

To the members of the Department, thank you very much for your meaningful contributions during the presentation of the proposal.

The permission to conduct the study in schools in the Western Cape district granted by the Department of Education deserves some special mention and appreciation. Some especial gratitude is also conveyed to the participants for agreeing to take part in the study. Your contribution was the cornerstone of the study.

To my wife, Mercy, your encouragement, support, patience, love and perseverance will forever be treasured in my heart. Some special appreciation goes to my son Bright (Jnr.) and daughter Bryleen for having to spend the most part of their time without the attention of their father.

Lastly but surely not least, I would like to extend my heartfelt gratitude for the NRF funding and general support from the Industrial Psychology Department and the Stellenbosch Postgraduate & International Office.

Dedication

Dedicated to all those who believe in the power of the mind
and the sovereignty of God

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CHAPTER ONE

THE PROBLEM AND ITS SETTING

1.1 Introduction

Organisations are man-made entities that exist to satisfy various societal needs. To achieve success in the delivery of societal needs, organisations combine and transform scarce factors of production into products and services that meet market needs at the lowest possible economic cost. The success of any organisation is judged in terms of goal accomplishment, survival, effectiveness and organisational growth. Organisational success is an all encompassing phenomenon that incorporates a number of important variables. Gibson, Ivancevich and Donnelly (1991) describe a time-dimension model that defines organisational effectiveness criteria over the short term, medium term and long term. Short-term measures comprise three overall criteria of effectiveness, namely production, efficiency and satisfaction. In the medium term, effectiveness comprises adaptiveness and development, while survival is the ultimate long-term criterion of effectiveness. Traditionally, organisational success is viewed in two primary ways, namely the goal and systems approaches. The goal approach regards performance measures as being of a financial nature such as profitability, return on investment, market share and return on assets (Theron & Spangenberg, 2002). The systems model of organisational effectiveness focuses on the means to achieve the objectives of organisations, rather than only on the ends themselves (Miles, 1980). The main goals of the systems model are survival, growth, and stability or decline (Denison, 1990).

The attainment of organisational success depends to a large extent on the four factors of production, namely; entrepreneurship, capital, natural resources and labour. Human capital is a vital resource, and an integral ingredient for organisational effectiveness is sound interpersonal relations. The quality of the human resources (HR) the organisation has at its disposal and how they are utilised and managed, affects the efficiency with which they produce specific products or services. Therefore, the objectives of the human resource function are to [a] formulate credible and valid psychological explanations of the behaviour of employees and [b] (flowing from that) demonstratively affect efficient and equitable improvement in the behaviour/performance of employees through [c] a coherent/integrated set of HR functions aligned with HR strategy which in turn is [d] derived from and aligned with an appropriate business strategy (Miller, 2006, p. 3). The management and utilisation of human resources should thus, at the very least, have an indirect

impact on all performance dimensions, while the role of the human resource factor is a pivotal one in the case of a number of the dimensions.

As today's organisations struggle to remain competitive in the face of globalisation, teams have assumed centre stage in the production of goods and services. Effective teamwork has been identified by researchers as one of the core components in high-performance organisations (De Vries, 1999). Organisations that continue to perform successfully have cultures in which the concept of teamwork occupies a central position. Schuler (1998) affirms that team-based approaches to work can increase innovation, improve quality, better serve customers and shorten the time it takes for an organisation to transform an idea into a product that is viable and profitable within the marketplace. The organisation's survival depends on its ability to satisfy customer needs, while achieving quality, flexibility, innovation and organisational responsibility, through the engagement and commitment of employees (Fay & Luhrmann 2004; Newell, 2002).

Most large South African organisations have started building effective work and management teams over the last decade (Kruger, 1999). A team has well-defined standards resulting in all members clearly understanding the joint goal and purpose, and the approach necessary to achieve these aims. Effective teams are characterised by the following aspects:

- a clear goal purpose (DeMarco & Lister, 1999),
- open communication (Blanchard & Carew, 1996),
- clear norms and rules that define its identity and work approach (Verma, 1997),
- an external relationship management that amalgamates all possible interactions between the team and the outside world (Verma, 1997),
- constructive conflict management style that enables employees to learn to create constructive conflict and manage the resulting tension effectively (De Vries, 1999),
- different roles (Francis & Young, 1992),
- skill diversity/heterogeneity (Katzenbach & Smith, 1993).

Given the pivotal role of teams in organisational success, team effectiveness needs to be proactively managed. Team effectiveness is not a random event; it is characterised by a nomological network of latent variables. HR's ability to purposefully affect or improve team effectiveness depends on the

extent to which (a) the identity of these determinants is known and (b) the manner in which they are combined to determine team effectiveness is understood. One of the variables that have a profound effect on team effectiveness is leadership.

Today, as organisations struggle to remain competitive in the face of increasing foreign and domestic competition, increased interest centres on the leader's role of influencing the performance of his/her subordinates in individual and work unit contexts. An effective work unit leader is critical for successful unit performance (Bass, Jung, Avolio, & Berson, 2003; Hirokawa & Keyton, 1995; Larson & LaFasto, 1989). Teamwork, facilitated by effective leadership, is one of the means used by organisations to increase productivity (Barrett, 1987; Bettenhausen, 1991; Galagan, 1988; Hoerr, 1989). Thus, a leader is expected to be accountable for the effectiveness of his or her work unit. House (1988) reported that changes in managerial effectiveness were directly related to changes in organisational work unit effectiveness. For this reason leadership has been a focal point of the study of Industrial Psychology for many years.

Leadership plays a crucial role in organisational success. In general, leadership can be described as “the ability of an individual to influence, motivate and enable others to contribute toward the effectiveness and success of the organisation” (House, Javidan, Hanges & Dorfman, 2002, p. 5) Organisations are nowadays faced with a dynamic and ever-changing environment that imposes many challenges (Lewis, Goodman & Fandt, 1998). One of the challenges relates to the changing nature of leadership. Emerging theories are challenging the structure and design of organisations. Mechanistic models are being replaced by more organic and self-organised systems and the inherent value of individuals is now also coming to the fore. Thus, hierarchical and bureaucratic styles of leadership are becoming obsolete and something of the past (Blanchard, 1998; Covey, 1998; Spears, 1995, 1998, 2002; Stone & Patterson, 2005; Wheatley, 1999). Ryback (1998) describes a 21st century leader as having the ability to show a greater concern and empathy for people issues than his or her earlier counterparts. This is understandable given the rising prominence of teams in the workplace. Organisations now emphasize the need for leaders to take on new roles of facilitating, co-ordinating, coaching and orchestrating the work of others. For decades scholars have sought to identify the personal qualities and characteristics that contribute to effective leadership. The realisation and subsequent acknowledgement, of the knowledge, skills and experience of people as fundamental to the success of an organisation, have resulted in the expectation that leaders of the future will need to

pay more attention to developing the ‘people’ aspect of the organisation (Steers, Porter & Bigely, 1996). One way of developing the people issues is through the type of guidance provided to the followers by the leader. In this regard the leader acts as a servant of the followers through increased levels of service provided to the followers and co-workers. A leadership approach that fits well into the realm of service-oriented leadership is that of servant leadership.

The past fifty years have shown a radical move towards a form of leadership that is virtuous (Patterson, 2003), highly ethical (Wong & Page, 2003; Whetstone, 2002), and based on the premise that service to followers is at the heart of leadership (Sendjaya & Sarros, 2002; Spears, 1995, 1998, 2002). A servant leader has true commitment to his/her followers and serves the needs of followers, and hence providing vision, empowerment, and service becomes the main activity of the servant leader. A service-oriented approach to leadership appears to be one of the important determinants of team effectiveness. Many influential business and leadership theorists regard the attribute of service as one of the most critical and important leadership requirements for the 21st century leader (Dennis & Winston, 2003; Marquardt, 2000). According to Stone, Russell and Patterson (2004), servant leadership is all about focus. The focus of the leader is on followers, and his/her behaviours and attitudes are congruent with this follower focus. The servant leader is compelled to help others, by means of service.

Servant leadership (SL) is an understanding and practice of leadership that places the good of those led over the self-interest of the leader (Laub, 2004). Therefore the servant leader strives to serve first and aspires to ensure that other people’s needs are being served. The servant leader’s service is not limited to followers only, but extends to the organisation’s customers and other stakeholders (Greenleaf, 1977). This is summarised by Greenleaf’s (1977) realisation that, “The servant leader is servant first” (p.27), and the followers will respond accordingly by “freely responding only to individuals who are chosen as leaders because they are proven and trusted as servants” (p.24). According to Greenleaf (as cited in Yukl, 2002, p. 420):

Service to followers is the primary responsibility of leaders and the essence of ethical leadership. Service includes nurturing, defending and empowering followers. A servant must attend to the needs of the followers and help them become healthier, wiser and more willing to accept their responsibilities. It is only by understanding followers that the leader can determine how best to serve their needs. Servant leaders must listen to followers, learn about

their needs and aspirations, and be willing to share in their pain and frustration. The servant leader must stand for what is good and right, even when it is not in the financial interest of the organisation.

SL is by no means a new concept, but can be traced back to ancient times and was practised by many religious leaders of old (Sendjaya & Sarros, 2002), including Jesus Christ, who most explicitly practised and promoted it as being the way to approach leadership (Blanchard, 1998; Ndoria, 2004; Russell, 2003; Sendjaya & Sarros, 2002). However, the concept has only recently burgeoned in the academic literature with the catalytic work of Greenleaf, who coined the term SL more than thirty years ago. Being a highly respected businessman and writer, his thoughts on leadership have provoked a new way of thinking for many prominent leadership writers and thinkers (Senge, 1995; Spears, 1995, 1998, 2002). Despite initial hesitation and lack of support for the concept, largely resulting from perceived paradoxes in, and misunderstandings of, the terminology (Nwogu, 2004; Sendjaya & Sarros, 2002), SL has gained support and momentum, with many prominent leadership authorities now voting it as one of the crowning leadership approaches for the twenty-first century (Blanchard, 1998; Covey, 1998; Laub, 2004; Senge, 1995; Wong & Page, 2003).

As a result of this focus on followers, many authors view SL not as a further step along the path of another leadership style, but as being a characteristically unique paradigmatic approach to leadership, standing alone in terms of its focus (Greenleaf, 1977; Laub, 2004; Nwogu, 2004; Patterson, 2003; Sendjaya & Sarros, 2002; Stone & Patterson, 2005; Stone, Russell & Patterson, 2003; Whetstone, 2002). As Laub (2004, p. 9) notes: "servant leadership is not a style of leadership though it is often portrayed that way in leadership theory texts. It is a paradigm that reshapes our understanding and practice of leadership." To this end, it has been contrasted to transformational leadership (Barbuto & Wheeler, 2006; Stone, Russel & Patterson, 2003), transactional leadership theory (Patterson & Stone, 2004), self-sacrificial leadership (Matteson & Irving, 2005, 2006) and discussed in terms of leader member exchange theory (Barbuto & Wheeler, 2006; Ndoria, 2004), which all share several similar attributes, but which lack the primary focus on followers that SL presents.

1.2 Purpose of the study

The purpose of the present study is to answer the question, how does servant leadership affect team effectiveness? The answer to this question would require the development and testing of an

explanatory structural model that would explicate the manner in which leadership affects team effectiveness.

1.3 Objectives of this study

The specific objectives of this study consequently are:

- To develop an explanatory structural model that explicates the manner in which servant leadership affects team effectiveness
- To test the model's absolute fit; and
- To evaluate the significance of the hypothesised paths in the model;

1.4 Structure of the thesis

The thesis is made up of five chapters. **Chapter One** comprises the introduction, research problem, purpose and objectives of the study and the structure of the thesis.

Chapter Two provides an overview of the theoretical underpinnings behind the theorising relating to the model under study. The conceptualisation of how servant leadership, team commitment, and team citizenship behaviour relate to team effectiveness is discussed.

Chapter Three outlines the strategy used to address the main problem under investigation. The methodology incorporates the research design, sampling strategy, data collection procedures, measuring instruments, research hypotheses, statistical analysis, issues of item and dimension analysis and how to deal with missing values.

Chapter Four presents the results of the study.

Chapter Five discusses the results and addresses, the theoretical and practical implications and the limitations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Teamwork has ceased to be just a sports gimmick, as it has assumed a central role in the production equation in the workplace. Larson and LaFasto (1989) define a team as a partnership of two or more people who share a common objective or goal in which coordinated activity among the members of the team is a pre-requisite for the attainment of the objective or goal. Therefore, effective team performance is defined as the attainment of common objectives or goals by means of the coordinated activity of the members of a team.

Teams have virtually become a common human resource practice due to the functional benefits derived from their use. Organisations are increasingly utilising teams in order to increase their competitive advantage, improve productivity, enhance creativity, increase response times and improve decision-making. The accumulating literature on teams supports the idea that teamwork and team behaviours are vital for individual and team success (e.g., Banker, Field, Schroeder, Sinha, 1996; Cohen & Ledford, 1994). Hence work teams have become an integral tool aiding continuous improvement in work operations (Cutcher-Gershenfeld & Associates, 1994). One way in which teams can be improved is through human resources policies that focus on team-based incentives, training, selection and evaluation as well as team empowerment (Kirkman & Rosen, 1999).

2.2 Conceptualising team effectiveness

An in-depth understanding of team effectiveness is vital for organisational success. Several models have been developed to conceptualise team effectiveness and how it relates to success (Kirkman, Tesluk, & Rosen, 2001). Despite the existence of numerous studies on team effectiveness (TE), researchers face problems as far as delineating the boundaries of team effectiveness and operationalising the construct are concerned. The problems encountered relate to failure to distinguish between determinant factors and criteria of effectiveness. Team effectiveness has been defined in industrial psychology circles as the evaluation of the results of performance (Campbell, 1990a). However, this definition has been described as being too simplistic (Cohen, 1994). Generally, two models of team effectiveness exist. The first one is unidimensional and utilises

objective measures of team performance (Kolodny & Kiggundu, 1980; Shea & Guzzo, 1987) or of the degree of real productivity (Steiner, 1972). The second view of team effectiveness is multidimensional in nature as it posits that team effectiveness depends on several other variables apart from performance or productivity (Hackman, 1987; Hackman & Morris, 1975; Hackman & Walton, 1986; Nieva, Fleishman, & Reick (1978).

Cohen (1994) posits that team effectiveness is multidimensional in nature. Cohen adopted a tripartite perspective which argues that the variables contributing to team effectiveness can be categorised into three groups namely (1) team performance, (2) team members' attitudes about quality of work life, and (3) withdrawal behaviours. Each of these three categories encompasses a number of effectiveness-related variables. For instance the performance factor includes (a) controlling costs, (b) increasing productivity, and (c) increasing quality. The factor relating to team members' attitudes incorporates (a) job satisfaction, (b) team satisfaction, (c) satisfaction with social relationships, (d) satisfaction with growth opportunities, and (e) organisational commitment. The withdrawal behaviours encompass (a) absenteeism and (b) turnover.

Hackman (1987) subscribes to the multi-dimensional nature perspective and asserts that group effectiveness can be conceptualised in terms of three components. The first component relates to the judgement made by the superiors or stakeholders who review the work of teams in terms of whether it meets their standards of quality and quantity. The second pertains to whether the needs of group members are satisfied by their team participation. The third is whether group interaction has served to maintain or strengthen the group's ability to work together at some future date.

Sundstrom, DeMeuse, and Futrell (1990) advanced the theory that team effectiveness is composed of (1) managers' and customers' judgements about the acceptability of performance and (2) team viability, where team viability is defined as commitment on the part of team members to continue to work together.

2.3 Models of team effectiveness

Nieva, Fleishman, and Reick (1978) developed one of the earliest models of team effectiveness. They proposed that team performance is composed of both individual task performance and team-level performance functions. Nieva et al., (1978) also highlighted four categories of team-

performance antecedent variables namely: (1) team environment (e.g., social context, standard operating procedures), (2) member resources (e.g., individual skills, abilities, personality characteristics), (3) team characteristics (e.g., communication, training), and (4) task characteristics (e.g., structure, complexity).

Gladstein (1984) postulated a model that depicts the relations between group inputs, processes, and outputs. The model encompasses individual-level input factors, such as group composition variables (e.g., skills, heterogeneity) and group structure (e.g., formal leadership, work norms). It also incorporates organisational-level input factors, such as resources available (e.g., training, consulting) and organisational-structure variables (e.g., rewards, supervisory control). The relations between individual- and organisational-level input factors and team effectiveness are mediated by group processes. The model also shows that group task complexity, uncertainty and interdependence moderate the relations between group processes and outcomes, such as satisfaction.

Hackman (1987) developed a model of team effectiveness that highlights the importance of fostering an organisational context that supports and reinforces teamwork via rewards, education, and availability of information. Group design is proposed to relate to team processes. It consists of such things as (a) task structure, (b) group composition, and (c) appropriate group norms regarding teamwork. Hackman's (1987) model also specifies process criteria for effectiveness that can serve to guide the diagnosis of team weaknesses. The process criteria include (a) level of effort, (b) amount of knowledge and skill, and (c) appropriateness of task-performance strategies. It is important to note that, in this model, the relations between team inputs and team processes are moderated by the ability of the group to minimise process losses (i.e., gain group synergy). Furthermore, the relations between team processes and team effectiveness are moderated by the material resources available to the team. Hence, according to the model, no matter how well team members interact with one another in terms of effort, skill and performance strategies, if there are inadequate material resources, the task may not be completed.

Gersick (1988) proposed the punctuated-equilibrium model (PEM) which suggests that teams determine an initial method of performance during their first meeting and stick to this method until the midpoint of the target objective is reached. At the midpoint, team members become aware of the time left to completion and switch their strategy accordingly (Gersick, 1988).

Tannenbaum, Beard and Salas (1992) improved on the Gladstein (1984) model by using four distinct types of input variables, including (1) task characteristics, (2) work characteristics, (3) individual characteristics, and (4) team characteristics. Their model suggests that these input factors affect each other and also serve to affect both team members and team processes (e.g., backup behaviour, coordination, adaptability) that occur over time. Both the individual team member and team processes are proposed to affect team-performance outcomes (e.g., quality, quantity, time, errors). The model also depicts system feedback, resulting from team performance and performance outcomes, cycling back as subsequent system input. It also postulates that training or teambuilding interventions may moderate the relations between inputs and processes as well as those between processes and performance outcomes. The difference between this model and the other models described above is that it recognises the effect of organisational and situational characteristics on team effectiveness, not just at the input stage, but throughout the entire input-process-output (IPO) process.

Campion, Medsker and Higgs (1993) synthesised all the five team effectiveness models discussed above. The model encompasses only those constructs proposed to directly affect team effectiveness, leaving out key mediators and moderators of the relations between team inputs and outputs. Campion et al., (1993) describe five categories of variables that are proposed to affect team effectiveness: (1) job design, (2) interdependence, (3) composition, (4) context, and (5) process. Job design subsumes self-management, participation, task variety, task significance, and task identity. Interdependence encompasses task interdependence, goal interdependence, and interdependent feedback/rewards. Composition incorporates heterogeneity, flexibility, relative size, and preference for group work. Context covers training, managerial support, and communication/cooperation between groups. The process involves potency, social support, workload sharing, and communication/cooperation within groups.

Morgan, Salas and Glickman (1994) expanded on the work of Gersick (1988) and Tuckman (1964) by illustrating the stages that teams progress through before, during and after task performance. The model assumes that task-oriented teams progress through a series of developmental stages at varying rates. The specific stage at which a given team begins and how quickly the team progresses through the proposed stages depend on such characteristics as: (a) members' experience as a team, (b) individual expertise, (c) task characteristics, and (d) environmental context. The model also proposes

that, as a team progresses through these stages, there are two types of skills that must be mastered before the team can perform effectively namely taskwork and teamwork. Taskwork represents the “task-orientated skills that the members must understand and acquire for task performance” (Salas, Dickinson, Converse & Tannenbaum, 1992, p. 10). Conversely, teamwork skills reflect the behavioural interactions, cognitions, and attitudinal responses that must be mastered before a team can work together effectively.

Dickinson and McIntyre’s (1997) model describes the interrelations between essential teamwork processes such as communication, team orientation, team leadership, monitoring, feedback, backup behaviour, and coordination. The team processes are linked together by communication. Team leadership and team orientation are integrated to facilitate a team member’s capability to monitor his or her teammates’ performance. The model further proposes that performance monitoring drives both the content of feedback and timely backup behaviours. When the teamwork competencies mentioned above occur in unison, they synergistically serve as a platform for team coordination. The feedback resulting from team coordination serves as input back into team processes. The model, however, fails to model many of the critical antecedents and outcomes of team process.

Marks, Mathieu and Zaccaro (2001) advanced a temporally based framework of team effectiveness that extends recent notions of team processes by categorising throughputs into recurring phases. The model consists of team processes consisting of a series of recursive input-process-output (IPO) loops proposed to occur sequentially and simultaneously during both a transition stage and an action stage of performance. Distinct competencies characterise the action (e.g., mission analysis, goal specification) and the transition (e.g., systems monitoring, coordination) stages, suggesting that certain knowledge, skills, abilities and other characteristics (KSAOs) take precedence depending on the timing of performance. Interpersonal processes are proposed to occur during both stages.

A recently advanced theoretical initiative is the “Big Five” model, proposed by Salas, Sims and Burke (2005). This model was developed in an effort to highlight the “essence of teamwork” by illustrating the relations between the processes that are regarded as constituting the core of interdependent interaction. Specifically, this model attempts to highlight the centrality of five core teamwork processes, namely (1) team leadership, (2) team orientation, (3) mutual performance monitoring, (4) backup behaviour, and (5) adaptability. Furthermore, the Big Five model also

illustrates the importance of three ancillary team products and processes, specifically (1) shared mental models, (2) closed loop communication, and (3) mutual trust. Taken together, these eight constructs are dynamically related to one another and collectively form teamwork.

Burke, Stagl, Salas, Pierce, and Kendall (2006) proposed a model of team adaptation within an IPO framework. It emphasises the centrality of an adaptive process that unfolds over time to emerge as team adaptation. Specifically, this applied research initiative defines team adaptation as an emergent phenomenon that coalesces over time from the unfolding of an adaptive process whereby one or more team members utilise their resources to functionally change current behaviours, cognitions, or attitudes to meet expected or unexpected demands. Essentially, team members draw from their individual and shared resources to detect, frame, and act on a set of cues that signal the need for functional change. As this adaptive process is carried out, feedback is generated that subsequently serves to revise shared cognition and adaptive input factors. Thus, the adaptive process is recursive by nature.

2.4 Servant leadership

Greenleaf's (1977) seminal work entitled the "Servant as Leader," is the most cited document in the study of servant leadership as a construct. The term 'servant' refers to 'one who is under obligation to work for the benefit of a superior and to obey his or her commands' (Oxford English Dictionary, 1933, p. 1643). "Servant leadership is an understanding and practice of leadership that places the good of those led over the self-interest of the leader" (Laub 2004, p.160). Therefore, the servant leader strives to serve first and aspires to ensure that other people's needs are being served. The servant leader's service is not only limited to followers but extends to the organisation's customers and other stakeholders (Greenleaf, 1977). This is summarised by Greenleaf's realisation that, "the servant leader is servant first" (p.27), and the followers will respond accordingly by "freely responding only to individuals who are chosen as leaders because they are proven and trusted as servants" (p.24).

The period between 1990 and 2007 has been punctuated by a proliferation of scholarly contributions on servant leadership (Graham, 1991; Spears, 1998a; Buchen, 1998; Farling, Stone & Winston, 1999; Laub, 1999; Russell, 2001; Patterson, 2003; Herbert, 2003; Irving, 2004; Dannhauser,

2007). These studies focused mainly on identifying themes to operationalise the concept, as summarised below.

Table 2.1: The Dominant Themes of Servant Leadership

Graham (1991)	Inspirational, moral
Buchen (1998)	Self-Identity, capacity for reciprocity, relationship builders, preoccupation with the future
Spears (1998a)	Listening, empathy, healing, awareness, persuasion, conceptualisation, foresight, stewardship, commitment, community building
Farling, Stone & Winston (1999)	Vision, Influence, Credibility, Trust, Service
Laub (1999)	Valuing people, developing people, building community, displaying authenticity, provides leadership, shares
Russell (2001a)	Appreciation of others, empowerment, vision, credibility, trust, service, modelling, pioneering,
Patterson (2003)	Agapáo love, humility, altruism, vision, trust, empowerment, service
Herbert (2003)	Job satisfaction
Irving (2004)	Team effectiveness
Dannhauser (2007)	Trust in co-workers, team commitment (rational), team commitment (emotional)

Adapted from (Sendjaya, 2003)

Graham (1991) emphasises the inspirational and moral component in his comparison of the servant leadership style and charismatic leadership. Graham acknowledged the similarity between the two leadership styles, but lamented the “absence of moral safeguards” (p. 105) in the charismatic leadership style, which the author described as an inherent danger to its success. To overcome the inherent danger, Graham provided three case studies drawn from the workplace to prove that

servant leadership is the panacea. Graham (1991) also argued that the servant leadership style surpasses Bass's transformational leadership style in basically two ways. Firstly, the servant leadership style recognises the leader's social responsibilities to serve those people who are marginalised by a system and, secondly, it is dedicated to the followers' needs and interests as opposed to their own or the organisation's needs. The advancement of the inspirational and moral component of servant leadership is important for the development of teams. If team members have inspirational and moral confidence in their leader, they are likely to be motivated to work together in the achievement of organisational goals hence fostering the team members' commitment, performance and engagement in team citizenship behaviour.

Buchen (1998) conceptualised servant leadership as characterised by self-identity, a capacity for reciprocity, relationship building and a preoccupation with the future. These themes help provide a new model for future faculty and institutions by showing its intended purpose, that is, addressing the transformational needs of higher education. Buchen associated self-identity with the redirection of ego and image, reciprocity with the circular relationship between leaders and followers or teachers and students, commitment with the absolute devotion to the academic discipline, and preoccupation with a future focus that aligns both the institution and institutional members.

Spears (1998a) proposed ten dimensions of servant leadership after a careful analysis of Greenleaf's (1977) writings on servant leadership. These dimensions are: listening, empathy, healing, awareness, persuasion, conceptualisation, foresight, stewardship, commitment and community building. These dimensions "serve to communicate the power and promise that servant leadership offers to those who are open to its invitation and challenge" (Spears, 1998, p. 6).

- "Listening – servant leaders clarify the will of a group by listening receptively to what is being said;
- Empathy – servant leaders strive to understand and empathise with others;
- Healing – servant leaders have the potential for healing self and others;
- Awareness – servant leadership is strengthened by general awareness, of situations, of others, and especially self-awareness;
- Persuasion – servant leadership relies upon persuasion, rather than positional authority, in

making decisions within an organisation;

- Conceptualisation – servant leaders seek to nurture their abilities to dream great dreams;
- Foresight – servant leaders have the ability to foresee the likely outcome of a situation in the future;
- Stewardship – servant leaders’ first and foremost commitment is to serve the needs of others;
- Commitment to the growth of people – servant leaders are deeply committed to the personal, professional, and spiritual growth of each and every individual within the institution; and
- Building community – servant leaders seek to identify means of building community among those who work within a given institution.”

Barbuto and Wheeler (2006) improved on the ten dimensions identified by Spears (1995) by adding a dimension termed ‘calling.’ Calling alludes to the natural desire to serve others, a prominent characteristic of servant leadership in Greenleaf’s (1997) writings. Barbuto and Wheeler’s (2006) research on servant leadership culminated in the refinement of the servant leadership notion as a five-dimensional construct comprising (1) altruistic calling, (2) emotional healing, (3) persuasive mapping, (4) wisdom, and (5) organisational stewardship. These dimensions were defined as follows:

- Altruistic calling – refers to a leader’s innate desire to make a positive difference in others’ lives. It is a generosity of the spirit consistent with a benevolent purpose in life. Since the ultimate goal is to serve, leaders high in altruistic calling will put others’ interests ahead of their own and will diligently work to meet their followers’ needs.
- Emotional healing – describes a leader’s commitment to and skill in fostering spiritual recovery from hardship or trauma. Leaders using emotional healing are highly empathetic and excellent listeners, making them adept at facilitating the healing process. Leaders create environments that are safe for employees to voice personal and professional problems and concerns. It is argued that followers that experience personal traumas will turn to leaders high in emotional healing.

- Wisdom can be understood as a combination of awareness of surroundings and anticipation of consequences, similar to that described by classic philosophers (Kant, 1978; Plato, 1945). When these two characteristics are combined leaders are adept at picking up cues from the environment and understanding their implications (Barbuto & Wheeler, 2006). Leaders high in wisdom are characteristically observant and anticipatory across most functions and settings (Bierly, Kessler & Christensen, 2000).
- Persuasive mapping describes the extent to which leaders use sound reasoning and mental frameworks. Leaders high in persuasive mapping are skilled at mapping issues and conceptualising greater possibilities, and are compelling when articulating these opportunities. They encourage others to visualise the organisation's future and are persuasive, offering compelling reasons to act and complete tasks.
- Organisational stewardship describes the extent to which leaders prepare an organisation to make a positive contribution to society through community development, development programmes, outreach and corporate social responsibility. Organisational stewardship involves an ethic or value for taking responsibility for the well-being of the community and making sure that the strategies and decisions undertaken reflect the commitment to give back and improve on the status quo. They also work to develop a community spirit in the workplace, one that is preparing to leave a positive legacy.

For the purpose of this study, Barbuto and Wheeler's (2006) definition of servant leadership was deemed as the most convincing and therefore used as the operational definition. Servant leadership is defined as a leader's deep-rooted desire to make a positive difference in others' lives, their commitment to and skill in fostering spiritual recovery from hardship or trauma for others, a combination of awareness of surroundings and anticipation of consequences, the extent to which the leader uses sound reasoning and mental frameworks and the extent to which leaders prepare an organisation to make a positive contribution to society through community development programmes.

Wong and Page (2003) promote the Revised Servant Leadership Profile which includes their Opponent Process Model. Initially Page and Wong (2000) introduced a multi-dimensional

conceptual framework that highlighted twelve factors, but they stopped short of doing factor analysis and scale reliability testing. Dennis and Winston (2003) set out to conduct a factor analysis on the initial 99-item scale, reducing it to just twenty items and yielding three factors: vision (0.97 - Cronbach's alpha), empowerment (0.89 Cronbach's alpha), and service (0.94 Cronbach's alpha). These three factors match three of the virtues presented in Patterson's (2003) theoretical model. Wong and Page (2003) then conducted their own factor analysis on a large sample of 1157 subjects. Eight attributes emerged including (a) leading, (b) servanthood, (c) visioning, (d) developing others, (e) team-building, (f) empowering others, (g) shared decision making and (h) integrity. With these eight attributes, they presented the Revised Servant Leadership Profile which includes their Opponent Process model, highlighting the necessity for an absence of authoritarian hierarchy and egoistical pride in confirming the presence of SL (Wong & Page, 2003). Farling, Stone & Winston (1999) identified vision, influence, credibility, trust and service as crucial elements in the conceptualisation of servant leadership. Three of the dimensions were adopted in Patterson's (2003) model.

Laub's (1999) understanding of servant leadership included valuing people, developing people, building community, displaying authenticity, providing leadership, and sharing leadership. This is summarised below:

Servant leadership promotes the valuing and development of people, the building of community, the practice of authenticity, the providing of leadership for the good of those led and the sharing of power and status for the common good of each individual, the total organisation and those served by the organisation (Laub, 1999, p. 83).

Laub's (1999) work led to the Organisational Leadership Assessment (OLA) which has become a standard instrument for the measurement of servant leadership at the organisational level.

Russell (1999, p. 14) provided the following definition of servant leadership:

Servant leaders seek not to be served, but rather to serve. They view leadership positions as opportunities to help, support, and aid other people. Servant leaders create trusting work environments in which people are highly appreciated. They listen to, and encourage followers. Servant leaders visibly model appropriate behaviour and function as effective teachers. They have a high degree of credibility because of their honesty, integrity, and competence. These persons have a clear leadership vision and implement pioneering

approaches to work. Servant leaders are also conscientious stewards of resources. They have good communications with followers and exercise ethical persuasion as a means of influence. Servant leaders invite others to participate in carrying out their leadership vision. They empower people by enabling them to perform at their best and by delegating decision-making responsibilities. Generally, servant leaders provide direction and guidance by assuming the role of attendant to humanity.

Russell (2001), in his contribution to the theoretical conceptualisation of servant leadership, argued for vision, credibility, trust, service, modelling, pioneering, appreciating others, and empowerment as important attributes of servant leaders. “The personal values of leadership, such as honesty and integrity, play a primary role in establishing interpersonal and organisational trust” (p.81), which are vital for the effective functioning of teams. If “servant leadership succeeds or fails on the personal values of the people who employ it” (p.81), “the effectiveness of the teams these leaders guide will be similarly affected, for leader values significantly affect followers and ultimately influence organisational performance” (p.81).

Patterson (2003) put forward seven defining dimensions of servant leadership. These included (1) agapao love – (unconditional love), (2) humility, (3) altruism, (4) vision, (5) trust, (6) service and (7) empowerment. Patterson’s (2003) theory suggests that agapao love is the cornerstone of servant leadership and hence presents servant leadership theory as an extension of transformational leadership theory. This was due to Patterson’s observation that transformational leadership theory was not addressing the phenomena of love, humility, altruism and vision to followers.

2.5 The relationship(s) between servant leadership and other organisational behaviour (OB) constructs

In a more recent study, Dannhauser (2007) investigated the respective relationships between servant leadership, follower trust and team commitment. The study revealed significant positive relationships between some of the variables, confirming the value of SL for follower trust, and team commitment. Irving (2004) examined the relationship between servant leadership and team effectiveness, showing a highly significant and substantially positive relationship between the two constructs.

Herbert (2004) studied the relationship between perceived servant leadership, as measured by the Organisational Leadership Assessment (OLA), and job satisfaction from the follower's perspective as measured by the Mohrman-Cooke-Mohrman Job Satisfaction Scale. The sample was drawn from 12 organisations in both the public and private sectors. Herbert (2004) reported a significant relationship between perceptions of servant leadership, and overall as well as intrinsic job satisfaction.

Rude (2003) examined the rationale for a quantitative correlational investigation of servant leadership and burnout. Rude noted both the internal and external antecedents of burnout but gravitated towards the impact of external factors such as supervision. Based on Rude's engagement with these dimensions associated with burnout, it was argued that servant leadership is able to play a substantial and pivotal role in reducing burnout in individuals. If this is true, it provides another example of potential relationships between servant leadership and other constructs.

Drury (2004) conducted a research study in which servant leadership was related to other organisational constructs. Job satisfaction has long been shown to be positively connected to commitment (Bateman & Strasser, 1984; Brooke, Russell & Price, 1988; Mathieu & Zajac, 1990) and even causally related (Brown & Gaylor, 2002; Curry, Wakefield, Price & Mueller, 1986; Farkas & Tetrick, 1989; Vandenberg & Lance, 1992; Williams & Hazer, 1986). Drury's study sought to compare servant leadership with each of these two constructs, in a university setting. Contrary to what the literature indicated, organisational commitment and servant leadership had a statistically significant inverse relationship. ANOVA tests and *post hoc* analysis of categorical data found hourly workers differed significantly from faculty members in their perceptions of servant leadership and organisational commitment. Servant leadership was positively correlated with job satisfaction. Drury (2004) recommended future studies to include team commitment instead of organisational commitment and to use several types of organisations to ascertain the inverse relationship reported between servant leadership and organisational commitment. To this end, Dannhauser (2007) investigated the relationship between SL and TC, where TC was significantly related to SL. Mayer, Davis, and Schoorman, (1998) and McAlister (1995) reported that employees with high levels of normative and affective commitment demonstrate higher levels of performance and are more diligent in their work. Hence this study purports to address commitment at the team level and how it affects extra role behaviours and ultimately, team performance.

Ehrhart (2004) investigated leadership and procedural justice climate as antecedents of unit-level organisational citizenship behaviour (OCB). To investigate the antecedents of unit-level OCB, data were collected from employees of 249 grocery store departments. Structural equation modelling techniques were used to test a model in which procedural justice climate was hypothesised to partially mediate the relationship between leadership behaviour (servant-leadership) and unit-level OCB. Models were tested using both employee ratings and manager ratings of unit-level OCB. The results gave general support for the hypotheses, although there were some differences depending on the source of the OCB ratings (supervisor or subordinate), whether the type of department was controlled for, and whether a common method variance factor was included. Overall, the evidence generally supported the association of both servant-leadership and procedural justice climate with unit-level OCB.

Finally, Winston and Hartsfield (2004) conceptually examined the four-factor concept of emotional intelligence as defined by Mayer and Salovey (1997): (a) the ability to appraise and express emotion; (b) the use of emotion to enhance cognitive processes and decision making; (c) the ability to understand and analyse emotions; and (d) the reflective regulation of emotion with five servant leadership models as presented by Page and Wong (2000), Patterson (2003), Russell and Stone (2002), Sendjaya and Sarros (2002), and Winston (2003). Winston and Hartsfield found strong ties between servant leadership and all of the above-noted emotional intelligence factors except for the ability to understand and analyse emotions. Related to the present study, Winston and Hartsfield's use of Patterson's conceptualisation of servant leadership is consistent with the leader-level dimensions of servant leadership that were utilised in the present study: (a) agapao love, (b) empowerment, (c) humility, (d) vision, and (e) trust.

Cerff (2004) and Hale (2004), in their concept papers, both addressed the connection of servant leadership in the African context. Specifically, Cerff engaged the concepts of Ubuntu and the African Renaissance, arguing that these concepts may provide insight regarding how servant leadership may function on a continent that continues to value its heritage. Furthermore, Hale (2004) proposed a design and an explanation of a theoretical model of cross-cultural leadership in West Africa. Hale constructed this model by deriving principles from transformational leadership, servant leadership and the New Testament book of Acts. Hale (2004) argued that this model results in a plan for how non-African cross-cultural leaders may interface appropriately with the West

African context. Both Cerff and Hale's work assert the value of servant leadership models within the African context and have provided a basis for pursuing servant leadership's effect on team effectiveness within cross-cultural contexts.

Parolini (2005) investigated the impact of leaders' emotional intelligence on followers' perceptions of SL behaviours and SL culture. The study found the followers' perceptions of SL behaviours in supervisors to be a significant predictor of the followers' perceptions of SL culture. Furthermore, the supervisors' abilities to appraise the emotions of others was significant in predicting the followers' perceptions of SL culture, with the supervisors' use of emotion being moderately significant. This positive contribution of servant leadership to our understanding of human behaviour was also reinforced in a study by (Van Staden, 2007).

Van Staden's (2007) work on SL and emotional intelligence showed significant relationships between servant leadership, emotional intelligence and trust. However, the relationship of these constructs to meaning did not show significant relationships.

2.6 Team Citizenship Behaviour (TCB)

The importance of organisational citizenship behaviours or extra-role behaviours in the organisational productivity equation cannot be underestimated. Questions do arise as to whether OCB can be regarded as an internal attribute of teams. However, the interactiveness and social nature of OCB makes it an ideal variable for the functioning of teams. Teamwork is basically about mutual understanding of co-operation and dependability in achieving a common purpose.

Derived from Katz's (1964) notion of extra-role behaviours, OCBs have been defined as "individual behaviours that are discretionary, not directly or explicitly recognised by the formal reward system, and that in the aggregate promote the effective functioning of an organisation" (Organ, 1988, p.4). Despite the proliferation of research in this area, debate continues over the precise definition or operationalisation of OCB. This is partly because most OCB research has focused on understanding the relationships between OCB and other constructs, rather than carefully defining the nature of the construct itself. Despite this, a distinguishing feature is that supervisors cannot require or force their subordinates to perform OCBs. Similarly, employees do not or cannot expect any kind of systematic rewards for these behaviours. However, as Organ (1997) has noted, supervisors regularly take into

account and reward OCBs both directly and indirectly (e.g. preferential treatment, performance ratings, promotions, etc). Another important assertion, especially in Organ's (1988) founding work on OCB, is that these behaviours are often internally motivated, arising from and sustained by an individual's intrinsic need for a sense of achievement, competence, belonging or affiliation which has implications at the team level.

There is no consensus within the literature on the number of dimensions of OCB. Researchers have proposed anything between two (Williams & Anderson, 1991) and seven Podsakoff, MacKenzie, Paine and Bacharach (2000). Podsakoff et al., (2000) noted that OCBs have been categorised on the basis of common themes or dimensions, which include altruism or helping behaviour, conscientiousness, organisational compliance, individual initiative and civic virtue. Williams and Anderson (1991) categorised OCB into two types: behaviour that is directed at individuals in the organisation (OCBI) and behaviour that is concerned with helping the organisation as a whole (OCBO). Organ (1988) identified the following five dimensions:

- Altruism, which refers to helping behaviours aimed at specific individuals;
- Conscientiousness, which refers to helping behaviours aimed at the organisation as a whole;
- Sportsmanship, which refers to the willingness on the part of the employee to tolerate less than ideal circumstances without complaining;
- Courtesy, which refers to actions aimed at the prevention of future problems; and
- Civic virtue, which refers to behaviour of concern for the life of the organisation.

Pearce and Herbig (2004) conducted a study to determine the association of team citizenship, team commitment, perceived support and team size by examining 71 change management teams that are responsible for implementing organisational change in an automotive industry firm in the United States. They reported that team leader behaviour, team commitment and perceived support have large effects on team citizenship behaviour whereas team size had a small-to-negligible effect. The findings of Pearce and Herbig (2004), generally build on the previous findings by different authors at the individual level. One would expect that the aggregate level of these findings extend to the team level.

Although much of the documented studies on OCB relate to individuals, one assumes that individual behaviours add up to the team level. Both individual and group organisational citizenship behaviours (GOCBs) are thought to be strongly related to leadership. Many studies have demonstrated, for example, the positive impact of supportive leadership on the deployment of (individual) OCB by subordinates (LePine, Erez, & Johnson, 2002; Podsakoff, MacKenzie, Paine, & Bacharach, 2000). Ehrhart and Naumann (2004) also emphasise the importance of leadership behaviours for the development of OCB norms and practices in groups. However, only a few studies so far have thus far investigated this relation empirically (Pearce & Herbik, 2004). Investigating the influence of leadership on OCB at the group level (referred to here as GOCB), therefore seems a natural investigative step to take (Naumann & Ehrhart, 2005). Undoubtedly, this has important implications for the functioning of teams.

Euwema, Wendt and Van Emmerik (2007) investigated (a) the effects of societal culture on group organisational citizenship behaviour (GOCB), and (b) the moderating role of culture on the relationship between directive and supportive leadership and GOCB. Data were collected from 20 336 managers and 95 893 corresponding team members in 33 countries. Multi-level analysis was used to test the hypotheses, and culture was operationalised using two dimensions of Hofstede (2001) Individualism (IDV) and power distance (PD). There was no direct relationship between these cultural dimensions and GOCB. Directive leadership had a negative relationship, and supportive leadership a positive relationship with GOCB. Culture moderated this relationship: directive leadership was more negatively, and supportive behaviour less positively, related to GOCB in individualistic compared to collectivistic societies. The moderating effects of societal PD were explained by societal IDV. In this study, supportive leadership in the form of servant leadership is hypothesised to be related to TCB.

Schlechter and Engelbrecht (2006) reported significant positive links between transformational leadership, organisational citizenship and meaning. The construct validity and the reliability of the three measurement scales were investigated by subjecting each of them to exploratory and confirmatory factor analysis. Partial support was found for the structure of the original Meaning and OCB scales, but could not be confirmed for the Transformational Leadership scale. Language and cultural differences were cited as factors behind the differences between the South African sample and the original samples. In their recommendations for future studies, the authors encourage future

studies to further explore the relationships between leadership, meaning and organisational citizenship behaviour using other measurement models. They also suggested that organisational citizenship should also be linked to other positive organisational behaviours and attitudes that will lead to desirable organisational outcomes and performances which, in turn, may feed back to experiencing meaning in work. The present study addresses some of the limitations by studying servant leadership, team citizenship behaviour, team commitment and team performance.

Mester, Visser, Roodt and Kellerman (2003) carried out a study to determine the relationships between leadership style and organisational commitment, job satisfaction, job involvement and organisational citizenship behaviour and whether these relationships were stronger for transformational than for transactional leaders. A sample of 52 leaders and 276 raters from a world class engineering company participated. The results of a canonical correlation analysis using the rater data indicated that the most prominent relationship was that between transactional leadership and affective commitment. Furthermore, transformational and transactional leadership did not correlate significantly with the constructs of job involvement and job satisfaction.

In a study investigating relationships between leadership, OCB, and the moral development of organisational members, Graham (1995, p.43) found that "transforming leadership that both models and nurtures servant leadership abilities" is associated with the highest levels of moral development and OCB. In other words, organisational members sought ethical solutions to moral dilemmas, remained informed about issues of organisational importance, and gave decision makers information about organisational practices. Graham (1995) concluded that servant leaders serve followers best when they not only model independent moral reasoning but also encourage others to engage in it and to participate in organisational governance. In a study related to the issue of participation, Costigan, Robert, Berman and Jason (1998, p.303) stated that the "essential ingredient of collaborative effort is trust." The results of their study indicated that "affect-based" trust (involving deep emotional investment) might be linked to employee assertiveness, the ability to speak candidly, which is a definition very close to that of advocacy participation in the OCB model. In addition, Howell and Avolio (1992, p.50), discussing charismatic leaders, maintained ethical leaders are those who promote a value system that encourages followers to challenge the status quo (also similar to "advocacy participation" in OCB), thus keeping both followers and leaders "from straying down the wrong path". In contrast, unethical charismatic leaders have dependent and compliant followers,

who learn to rationalize their immoral behaviour. These leaders manage to convince their followers that immoral behaviour is justified.

Yun, Cox, Sims and Salam (2007) examined how leadership related to citizenship behaviour within teams. Leadership was hypothesised to influence team organisational citizenship behaviour (TOCB) either directly or indirectly through job satisfaction. Longitudinal data were collected in three waves. Leader behaviours were measured at time 1, follower job satisfaction at time 2, and TOCB at time 3. The results indicated that both empowering and transformational leadership related positively to TOCB through job satisfaction. Aversive leadership was related negatively to TOCB. Also, leadership was mediated by job satisfaction in negatively relating to team anti-citizenship behaviour. The implications and directions for future research are discussed.

Barbuto and Scholl (1998) offer a variable for predicting organisational citizenship behaviour. They identified intrinsic and instrumental processes as sources of motivation. Intrinsic motivation means that the person is motivated to perform a task for the sheer fun of it; the act itself is the reward, not the outcome (Barbuto & Scholl, 1998). Instrumental processes are when rewards motivate individuals; an employee is motivated when the perception exists that a specific behaviour will lead to certain outcomes. An instrumental source of motivation can also exist when rewards are not tangible. For example an individual may behave in a way that satisfies reference group members in order to gain acceptance (Barbuto & Scholl, 1998).

Ryan (2002) studied the question: Why would an employee engage in work that enhances organisational performance but is not necessarily recognised or rewarded by his or her employer? This study suggests that this question can be answered in part by the degree to which an employee endorses the Protestant work ethic (PWE). The relationship between the PWE and organisational citizenship behaviours (OCB) is analysed using two separate survey data samples. The findings support a positive and significant relationship between OCB and two dimensions of the PWE, namely hard work and independence.

Graham (1995) suggests that different styles of leadership result in different sorts of normative motivation among followers, and these diverse motivational sources are associated in turn with different forms of participant contribution to organisational success. Three interrelated clusters of

leadership styles, normative motivation of followers, and organisational citizenship behaviour are described. Leadership that appeals exclusively to followers' self-interests is associated with pre-conventional moral development and dependable task performance. Leadership styles focusing on interpersonal relationships and social networks are associated with followers' conventional moral development and work group collaboration. Transforming leadership that models and nurtures servant leadership ability is associated with post-conventional moral development and responsible participation in organisational governance.

Moorman (1991) examined the relationship between justice perceptions and extra role behaviours in a sample drawn from two firms in the Midwestern United States. A theoretical basis for a relationship between fairness and citizenship was drawn from equity theory and other theories of social exchange. Structural equation analysis with LISREL 7 found support for four hypotheses, including support for a relationship between perceptions of procedural justice and four of five citizenship dimensions. Conversely, perceptions of distributive justice failed to influence any dimension of citizenship.

Meyer, Stanley, Herscovitch and Topolnytsky (2002) conducted meta-analyses to assess (a) relations among affective, continuance, and normative commitment to the organisation and (b) relations between the three forms of commitment and variables identified as their antecedents, correlates, and consequences in Meyer and Allen's (1991) Three-Component Model. They found that the three forms of commitment are related yet distinguishable from one another as well as from job satisfaction, job involvement, and occupational commitment. Affective and continuance commitment generally correlated as expected with their hypothesised antecedent variables; no unique antecedents of normative commitment were identified. Also, as expected, all three forms of commitment related negatively to withdrawal cognition and turnover, and affective commitment had the strongest and most favourable correlations with organisation-relevant (attendance, performance, and organisational citizenship behaviour) and employee-relevant (stress and work-family conflict) outcomes. Normative commitment was also associated with desirable outcomes, albeit not as strongly. Continuance commitment was unrelated or related negatively, to these outcomes. Comparisons of studies conducted within and outside North America revealed considerable similarity yet suggested that more systematic primary research concerning cultural differences is warranted.

2.7 Team Commitment

The use of teams in today's organisations is increasing and hence numerous authors have responded to the call and written extensively on the importance of teams and team-functioning (e.g. Witt, Hilton & Hochwarter, 2001; Ellemers, De Gilder & Ven den Heuel, 1998; Cohen & Bailey, 1997). Pearce and Herbig (2004, p.295) define team commitment as "the psychological attachment that binds team members together." It is similar to organisational commitment except that the target of the attachment is the team rather than the larger organisation, of which the team is a part. Employees' commitment to their work teams and to the organisation can influence turnover, willingness to help co-workers and team performance (Bishop & Scott, 1997). Therefore creating employee commitment in the workplace is one important goal of human resource policies and practices that is likely to positively affect team performance and productivity. Focus has shifted from the study of smaller interpersonal groups in social psychology to the study of teams in organisational psychology (Kozlowski & Ilgen, 2006). This has led to the massive formation and employment of teams as a strategy for increasing productivity and employee flexibility in the United States (Bishop, Scott & Burroughs, 2000). They reported that 78 percent of U.S. organisations have acknowledged using teams. However, the sole use of teams does not guarantee success, the interaction of team members and employee commitment are important variables (Bishop & Scott, 1997).

Bishop, Scott and Burroughs (2000) documented the benefits of work teams. They reported that work teams increase individual performance, improve quality, reduce absenteeism, and employee turnover, and offers leaner plant structures and considerable improvements in production cycle time. The proliferation of the use of teams is also due to "old" organisational structures being too slow, unresponsive, and expensive to be competitive within the hyper-competitive business environment (Campion, Medsker & Higgs, 1993). However, the development of employee commitment in organisations has been seriously affected by a lack of consensus on the conceptualisation of commitment, in the form of the definition and measurement (Rylander, 2003; Mowday, Porter & Steers, 1982).

Oliver (1990) reports on the findings of a study on organisational commitment in a large producer cooperative. The proposition that commitment could be explained as an additive function of rewards, investments and alternatives was explored using a range of attitudinal and behavioural indices of commitment. Multiple regression analysis did not provide support for the full model.

Factor analysis of the multiple commitment indices produced little evidence of a general organisational commitment construct. These findings support the view that there are conceptual problems with the organisational commitment construct. It is argued that concentrating on actions rather than entities as commitment targets may be a useful way for research to proceed in this field. This shows the problems inherent in the conceptualisation of organisational commitment as a construct

Allen and Meyer (1990) proposed a three-component model of commitment that integrates these various conceptualisations. The *affective* component of organisational commitment, proposed by the model, refers to employees' emotional attachment to, identification with, and involvement in, the organisation. The *continuance* component refers to commitment based on the costs that employees associate with leaving the organisation. Finally, the *normative* component refers to employees' feelings of obligation to remain with the organisation. Two studies were carried out to test the three-component model. In the first study, scales were developed to measure these components. Relationships among the components of commitment with variables considered as their antecedents were examined in the second study. The results of a canonical correlation analysis suggested that, as predicted by the model, the affective and continuance components of organisational commitment were empirically distinguishable constructs with different correlates. The affective and normative components, although distinguishable, appeared to be somewhat related.

Iles, Mabey and Robertson (1990) further argued that there is no sufficient evidence to support the three-component model of Allen and Meyer (1990) and the three dimensional framework of O'Reilly and Chatman (1986) on compliance, identification and internalisation. Consequently, the conceptualisation of commitment has been presented in disorganised ways resulting in it being viewed as a multi-dimensional construct as opposed to a uni-dimensional construct. Organisational commitment is, nowadays, viewed as multi-dimensional in nature with these dimensions having different antecedents and outcomes associated with them (Mowday, 1999; Meyer & Allen, 1997).

Meyer and Allen (1997) argued that the meaning of commitment has two different connotations namely (1) efforts to explain that the nature of commitment that defines the relationship between an individual and some object can vary and (2) attempts to distinguish among the objects to which an individual becomes committed. Concepts such as loyalty, allegiance, engagement and attachment are

often used as synonyms for the term (Mowday et al., 1982). Salancik (1977) defines commitment as a binding of an individual to behavioural acts. Meyer and Allen (1997) suggest that commitment is a psychological state that characterises the individual's relationship with an organisation, and has implications for the decision to continue membership in the company.

Blau and Holladay (2006), building on prior work by Blau (2001a, 2001b, 2003), provide some support for a four-dimensional measure of occupational commitment – that is, affective, normative and two dimensions of continuance commitment namely accumulated costs and limited alternatives. Generally, affective commitment showed a stronger relationship with professional withdrawal intentions and to a lesser extent, with professional development activities. Accumulated costs interacted with normative commitment such that there was a significant negative relationship of normative commitment with subsequent withdrawal intentions for low accumulated costs. Limited alternatives interacted with normative commitment in a similar way, such that there was a significant negative relationship of normative commitment with subsequent withdrawal intentions for low limited alternatives. However, the similarity of such interactive results, combined with the generally equivalent correlational results of accumulated costs and limited alternatives to other study variables, leads to the alternative speculation that a one-factor measure for continuance occupational commitment may be sufficient.

Previous studies have documented a strong association between organisational commitment and organisational citizenship type behaviour at the individual level of analysis (Mayer & Schoorman, 1992; Meyer & Allen, 1984; O'Reilly & Chatman, 1986). For example, in a study of Nigerian governmental organisations, Munene (1995) reported that organisational commitment was positively associated with organisational citizenship behaviour. Similarly, in studies of university students and employees, O'Reilly and Chatman (1986) reported a positive relationship between commitment and prosocial behaviours. Mayer and Schoorman (1992) also reported a strong relationship between commitment and citizenship behaviour, in their study of employees in a major national financial institution. Therefore, organisational commitment appears to be a strong predictor of citizenship-type behaviour at the individual level of analysis. Thus, if team members are committed to the goals and values of their team and have emotional attachments to the team and its members, it seems likely that they would engage in behaviours that would be beneficial to the team.

Chen, Tsui and Farh (2002) investigated the relationship between loyalty to the supervisor and employees' in-role and extra-role performance in comparison with that of organisational commitment in the People's Republic of China. Two studies were conducted. In the first study, a five-dimension loyalty to supervisor scale was developed and validated. In the second study, the relationships between loyalty to supervisor, organisational commitment and employee performance were examined. The results indicated that loyalty to supervisor was more strongly associated with both in-role and extra-role performance than organisational commitment. The differences in findings can be explained in terms of the different cross-cultural settings.

Wasti (2003) studied the moderating influence of idiocentrism and allocentrism on the relationship between organisational commitment and turnover intentions. The investigation evolved over two phases. In the first study, emic (culture-specific) items were generated through in-depth interviews with Turkish employees, and the commitment scales of Meyer, Allen and Smith (1993) were revised to make them more appropriate for the Turkish context. In the second study, turnover intentions were predicted as a function of an individual's affective, continuance, normative commitment, and social factors, operationalised as the approval of the family. The results indicated that affective commitment was an important predictor of turnover intentions irrespective of idiocentric or allocentric values. However, normative commitment and social factors were weaker predictors for individuals who endorsed idiocentric values and social factors were a stronger predictor for allocentrics. These findings underline the importance of a normative perspective on organisational commitment, especially for collectivistic contexts.

Restubog, Bordia, and Tang (2006) investigated the relationships between psychological contract breach, affective commitment, and two types of employee performance (i.e. civic virtue behaviour and in-role performance). It was predicted that an experience of contract breach could severely hurt the affective commitment of the employees and this, in turn, resulted in poor in-role performance and less civic virtue behaviours. The results revealed that affective commitment had differential mediating effects on the two types of employee performance. That is, affective commitment mediated the relationship between breach and self-reported and supervisor-rated civic virtue, but not the relationship between breach and in-role performance.

For the purpose of this study, Allen and Meyer's (1990) three-component model of commitment is utilised. Affective organisational commitment refers to employees' emotional attachment to, identification with, and involvement in, the organisation. The *continuance* component refers to commitment based on the costs that employees associate with leaving the organisation and the *normative* component refers to employees' feelings of obligation to remain with the organisation.

In the light of the literature review, and the objectives of the study, it therefore seems appropriate to postulate the existence of the following relationships:

- TE (Team Effectiveness) and SL (Servant leadership) (being mediated through TCB and TC (That is Team Citizenship Behaviour and Team Commitment)).
- SL and TC
- SL and TCB
- TCB and TC (a reciprocal relationship)
- TC and TE
- TCB and TE

The propositions mentioned above will be tested using a correlational research design. The correlational design enables researchers to determine causal relationships in the identified variables. It, therefore, becomes possible to understand the dynamic interaction between the variables. The proposed relationships to be investigated in the present study are depicted in the path diagram in Figure 2.1.

2.8 Substantive research hypotheses

In order to answer the research question under investigation, several propositions have been developed that must be tested. In accordance with the aim of the study, the findings of previous research and the proposed model, the following research hypotheses were formulated.

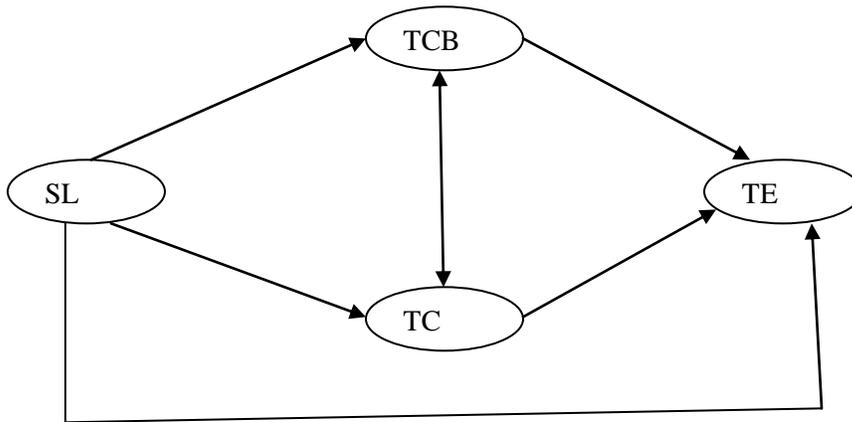


Figure 2.1: The proposed model integrating the relationships between servant leadership, team citizenship behaviour, team commitment and team effectiveness

Hypothesis One

The proposed conceptual model describing the relationships between SL, TCB, TC and TE produces a good fit with the data. There is no significant discrepancy between the reproduced covariance matrix implied by the model ($\Sigma(\Theta)$) and the observed population covariance matrix (Σ).

$$H_0: \Sigma = (\Sigma(\Theta))$$

$$H_1: \Sigma \neq (\Sigma(\Theta))$$

The exact fit hypothesis could alternatively be stated as:

$$H_0: \text{RMSEA} = 0$$

$$H_1: \text{RMSEA} > 0$$

Hypothesis Two

A significant positive relationship exists between SL and TC.

Hypothesis Three

A significant positive relationship exists between SL and TCB.

Hypothesis Four

A significant positive moderating relationship exists between SL, TCB and TE.

Hypothesis Five

A significant positive relationship exists between SL and TE.

Hypothesis Six

A significant positive relationship exists between TC and TCB.

Hypothesis Seven

A significant positive relationship exists between TC and TE.

Hypothesis Eight

A significant positive relationship exists between TCB and TE.

Hypothesis Nine

A significant positive moderating relationship exists between SL, TC and TE.

Some of the hypotheses discussed in the preceding section have been transformed to statistical hypotheses, which are presented in Table 2.2.

Table 2.2: Statistical hypotheses

Hypothesis 5:	Hypothesis 2:	Hypothesis 3:
$H_0: \gamma_{31}=0$	$H_0: \gamma_{21}=0$	$H_0: \gamma_{11}=0$
$H_a: \gamma_{31}>0$	$H_a: \gamma_{21}>0$	$H_a: \gamma_{11}>0$
Hypothesis 6	Hypothesis 7	Hypothesis 8
$H_0: \beta_{21}=0$	$H_0: \beta_{31}=0$	$H_0: \beta_{32}=0$
$H_a: \beta_{21}>0$	$H_a: \beta_{31}>0$	$H_a: \beta_{32}>0$

CHAPTER THREE

METHOD

3.1 Introduction

The present study wishes to test an explanatory structural model developed in the previous section that would explicate the manner in which servant leadership, team citizenship behaviour and team commitment affect team effectiveness. Specifically, the study attempts to answer the question, how does servant leadership affect team effectiveness? This chapter outlines the methodology employed in answering the research question under investigation.

3.2 Research design

A research design is a strategy for gathering evidence about the knowledge desired (De Vos, Strydom, Fouche & Delpont, 2005). A correlational *ex post facto* study of non-experimental kind was used to empirically test the accuracy of the hypothesised propositions presented in the previous chapter. The correlational strategy involves measuring two or more variables as they exist naturally in order to establish relationships between variables that can be used for prediction. It is ideally suited for the social sciences, where variables are measured as they exist. This study employed a quantitative research approach using multiple measures.

The propositions were tested using a correlative *ex post facto* research design with multiple measures. The reason for using this type of design was to determine the relationships that exist between servant leadership (SL), team citizenship behaviour (TCB), team commitment (TC) and team effectiveness (TE). An *ex post facto* design entails a systematic empirical enquiry in which the scientist does not have direct control of the independent variables under investigation because their manifestations have already occurred (Kerlinger & Lee, 2000, p.379). It tests the empirical validity of the “if X then Y” type of statement. *Ex post facto* designs do not allow for the random assignment or experimental manipulation of variables as is the case in the experimental designs. This resultant lack of control is a major source of erroneous interpretations that may originate from explanations of complex events (Kerlinger & Lee, 2000). The other drawback of *ex post facto* designs relates to a lack of power to randomise as well as the inability to manipulate the interpretations. In order to deal with the inherent weaknesses of the *ex post facto* design, clearly formulated hypotheses are required and

results should be treated with caution (Kerlinger & Lee, 2000). The propositions of the current study were clearly formulated.

3.3 Research participants

The study was conducted using primary and secondary school teachers from schools in and around Stellenbosch, in the Western Cape, South Africa. Each school was regarded as a team hence the teachers were required to give some information about how their (teacher) team functions. Sampling was an important issue in selecting the participants from each team. Sampling refers to taking a subset or segment of the population and using it as representative of that population (Bryman & Bell, 2003). The study initially attempted to use probability random sampling in order to be evenly representative of the population being observed. Probability sampling refers to the probability that every element in the population is given a known non-zero chance of selection and may thus be included in the sample (Oppenheim, 1992). This strategy was changed to convenience sampling due to the procedural and practical concerns which were not making it possible to carry out the study during working hours. Another main concern in sampling is the size of the sample (Terre Blanch & Durrheim, 1999). The sample size must be adequate to allow inferences to be made about the population from the research findings. However, Bryman and Bell (2003) contend that the absolute rather than the relative size of a sample is what increases validation and therefore the sample must be as big as possible. This research study aimed at a sample size of 200 individuals.

A total of 400 questionnaires were distributed to 40 schools in and around Stellenbosch including schools in Kuilsrivier, Kraaifontein, Strand, and Somerset West. Each team received a total of 10 questionnaires to be completed by the teachers. Out of the 400 questionnaires distributed to the members of the teams, 201 completed questionnaires comprising 29 teams were returned. Table 3.1 summarises the demographic statistics of the respondents.

3.4 Data collection and procedure

Access to the sample was achieved through personal delivery of the questionnaires to the various schools in and around Stellenbosch. The participants received a composite questionnaire including a covering letter, a biographical section, and the four measuring instruments. The covering letter gave the reason for the study and instructions on completing the questionnaires. The main advantage of

the self-administered type of questionnaires is that they are easily distributed to a large number of participants and are completed during the participants' own free time.

Table 3.1: Sample Profile

Variable	Frequency	Percentage (%)
Gender		
Male	64	31.8
Female	137	68.2
Age of participants		
Below 20	1	0.5
21 - 30	28	13.9
31 - 40	59	29.4
41 - 50	62	30.8
Above 50	51	25.4
Ethnic group		
Black	50	24.9
Coloured	113	56.2
White	38	18.9
Language of participants		
English	10	5
Xhosa	37	18.4
Afrikaans	148	73.6
Ndebele	1	0.5
Shona	4	2
Education		
Secondary school	3	1.5
Standard 10 or equivalent	3	1.5
Post school certificate	6	3
Diploma/degree	183	91
Postgraduate degree	4	2
Number of years on current position		
Less than 1 year	24	11.9
1 – 5 years	51	25.4
6 – 10 years	34	16.9
11 – 15 years	17	8.5
Above 15 years	75	37.3
Religious orientation		
Christian (Catholic)	51	25.4
Christian (Protestant)	132	67.7
Islamic/Muslim	7	3.5
African Traditional	1	0.5
Other	4	2

The questionnaires were left with a central figure such as a secretary who would issue them out to the teachers. In order to maintain confidentiality, the questionnaires were collected personally from the teachers, except in cases of teacher absenteeism; questionnaires were sealed in an envelope. A total of 400 questionnaires were distributed to participants and 201 were returned, indicating a response rate of 50.25%.

3.5 Measuring instruments

The following measuring instruments were used in measuring the constructs under study.

3.5.1 Servant leadership

SL was measured using the Servant Leadership Questionnaire (SLQ) developed by Barbuto and Wheeler (2006). Despite attempts at creating measuring instruments for the servant leadership construct, including the (Servant) Organisational Leadership Assessment (SOLA) (Laub, 1999), Servant Leadership Profile (Page & Wong, 2000), Revised Servant Leadership Profile (Wong & Page, 2003), and the Servant Leadership Assessment Instrument (Dennis & Bocarnea, 2005), there is as yet no consensus over the construct with much differentiation, rather than integration, in the literature (Barbuto & Wheeler, 2006). The theoretical grounding for the use of the SLQ comes as a result of it being based on the major tenets of the most accepted views in the field, namely those of Greenleaf (1977) and Spears (1995; 1998; 2002).

The SLQ was formulated in an attempt to develop a scale that captures the eleven characteristics of SL (Barbuto & Wheeler, 2002). After creating conceptually consistent definitions of the characteristics, they developed five to seven items for each of the eleven characteristics. Fifty-six items were tested for face validity with a panel of eleven experts (six leadership faculty members from three universities and five doctoral students of leadership), after which four items were re-written and then retested wherein all the items were correctly categorised 80% of the time, indicating face validity (Barbuto & Wheeler, 2006).

The original test was administered on a sample of 80 community leaders and 388 raters from countries in the Midwestern United States. A varimax rotation and Kaiser Normalisation were used in exploratory factor analysis resulting in the extraction of only five factors (23 items) with strong and unique loadings. Reliabilities for the self and rater version of the scale ranged from .68 to .87

and .82 to .92 respectively with no opportunities of improving the coefficient alpha. The rater version of the scale yielded the following coefficient alphas: altruistic calling ($\alpha = .82$), emotional healing ($\alpha = .91$), wisdom ($\alpha = .92$), persuasive mapping ($\alpha = .83$) and organisational stewardship ($\alpha = .83$). Convergent and divergent validity were tested by simultaneously administering tests for transformational leadership and leader-member exchange. Transformational leadership and SL showed strong and consistent patterns between them with low effect sizes indicating their measurement of different phenomena. LMX also shared variance with each of the five sub-scales. Finally, predictive validity was evident from correlations with several outcome variables including extra effort, satisfaction and organisational effectiveness, measured with the MLQ (Barbuto & Wheeler, 2006).

3.5.2 Team citizenship behaviour (TCB)

In order to measure team citizenship behaviour (TCB), a slightly modified version of the Organisational Citizenship Behaviour Scale (OCBS) developed by Podsakoff and Mackenzie (1994) was utilised. The scale is identical to the one used by Podsakoff et al. (1990) except for the fact that the 24 items were re-written to allow the instrument to be self-reported and ensure that the meaning was aligned with the South African context. The instrument consists of five subscales as conceptualised by Organ (1988) namely: altruism, conscientiousness, sportsmanship, courtesy and civic virtue. The reliability coefficients for the subscales ranged from 0.70 for civic virtue to 0.85 for altruism. A confirmatory factor analysis by Podsakoff and colleagues confirmed the hypothesised factor structure, with a Tucker-Lewis fit index of 0.94 ascertaining that all of the items used to assess the five OCB factors load significantly on their intended factors. The Organisational Citizenship Behaviour Scale (OCBS) has sound psychometric attributes (Moorman, 1991; Niehoff & Moorman, 1993; Hui, Law & Chen, 1999).

3.5.3 Team commitment (TC)

Team commitment was assessed using the Team Commitment Survey (TCS) of Bennett (1997, 2000). The TCS is a modification of Allen and Meyer's (1990) Organisational Commitment Scale. The modification involved changing the referent of commitment from the organisation to the team and was heavily influenced by the work of Becker (1992) who questioned the idea of measuring organisational commitment when employees are more likely to be committed to their supervisors, team, union or any other entity. Besides the modification, 11 more items measuring the same three

factors (Affective, Normative and Continuance Commitment) in the Organisational Commitment Scale were added. Hence the scale consists of 35 items. The TCS was standardised for use in South Africa using supervisors and middle-management level employees in a large South African organisation. The internal reliability coefficients of the subscales are: affective commitment – 0.98, continuance commitment – 0.87 and normative commitment – 0.87. The affective commitment subscale measures employees' emotional attachment to, identification with, and involvement in the organisation. The continuance subscale measures the commitment based on the costs that employees associate with leaving the organisation and the normative commitment subscale measures employees' feelings of obligation to remain with the organisation.

3.5.4 Team Effectiveness Questionnaire (TEQ)

The TEQ measures team effectiveness at the team level. It is based on Larson and LaFasto's (1989) grounded theory work that attempted to identify the essential characteristics of effective teams. The TEQ (Larson & LaFasto, 2001) was developed as a short form providing a single-scale assessment of team effectiveness. The Cronbach's alpha coefficient for the TEQ is 0.85. The TEQ clusters behaviours into eleven basic items that measure eight factors identified as measuring team effectiveness. These factors relate to (1) clear elevating goal, (2) results driven structure, (3) competent team members, (4) unified commitment, (5) collaborative climate, (6) standards of excellence, (7) external support/recognition and (8) principled leadership. The TEQ was utilised by Irving (2004) to determine the correlations between servant leadership at both the individual and organisational level. A Cronbach alpha coefficient of 0.8126 was reported for the TEQ scale.

3.6 Statistical analysis

Quantitative techniques were used to analyse the results of the study. Due to the fact that the present study employed a correlational design, bivariate as well as multivariate correlational analyses were employed, since the interrelationships of more than two variables were examined (Babbie & Mouton, 2001). The correlational analyses employed in this study were (a) stepwise multiple regression analysis (using SPSS version 17), (b) factor analysis - confirmatory factor analysis CFA (using LISREL version 8.72), and (c) structural equation modelling (using LISREL version 8.72). Confirmatory factor analysis serves to confirm whether a set of measures (the observed data) are in fact related according to the form described in a model of their relationships (Blaikie, 2003) by producing a series of fit indices. These indices allow the researcher to establish how well the

observed data fits the proposed model. Structural equation modelling handles the relationships between numerous interrelated predictor variables and serves to estimate a series of interdependent multiple regression equations simultaneously (Blaikie, 2003). Structural equation modelling (SEM) was used because (1) it enables researchers to conduct confirmatory factor analyses to assess measurement properties of the scales utilised (Kelloway, 1998), (2) SEM techniques allow for the specification and testing of complex “path” models that incorporate the sophisticated understanding of complex phenomena and (3) SEM provides a unique analysis that simultaneously considers questions of both measurement and prediction (Kelloway, 1998).

3.7 Item and dimensionality analysis

Item analysis is a technique that is generally used to identify and eliminate items from a measure that do not contribute to an internally consistent description of the sub-scale in question. Therefore, high validity and reliability can be incorporated into tests in advance through item analysis, thus, improving tests through the selection, substitution, or revision of items (Anastasi & Urbina, 1997). Nunnally’s (1967) guidelines were used to determine levels of reliability for the scales and subscales which are depicted in Table 3.2.

Table 3.2: The General Guidelines for Interpreting Reliability Coefficients

Reliability coefficient value	Interpretation
0.9 and above	excellent
0.80 – 0.89	good
0.70 – 0.79	adequate
below 0.70	may have limited applicability

The objective of dimensionality analysis is to confirm the uni-dimensionality of each sub-scale and to remove items with inadequate factor loadings or to split heterogeneous sub-scales into two or more homogeneous subsets of items (and revise the structural model).

The decision rules that were followed to determine the number of factors to be extracted, and the items to be included in each factor when conducting exploratory factor analyses were as follows:

- The number of factors to be extracted should not be more than the number of eigenvalues >1.00 , according to Kaiser's (1961) criterion.
- An item not loading >0.30 on any factor will be excluded (Field, 2005; Pallant, 2005; Tabachnick & Fidell, 1996).
- An item loading >0.30 on more than one factor would be excluded if the difference between the higher and the lower loading was 0.25 (Nunnally & Bernstein, 1994; Tabachnick & Fidell, 1996).
- A Kaiser-Meyer-Olkin measure of sampling adequacy (KMO index) value closest to 1, indicating that patterns of correlations are relatively compact and therefore factor analysis should present distinct and reliable factors (Field, 2005). The cut-off value utilised in this study was 0.7. Kaiser (as cited in Field, 2005) recommends accepting values greater than 0.5 as acceptable, values between 0.5 and 0.7 as mediocre, and values between 0.7 and 0.8 as good while values between 0.8 and 0.9 are great and values above 0.9 are superb.

3.8 Multivariate normality

The underlying assumption of most multivariate analysis and statistical tests is that of multivariate normality. Multivariate normality is the assumption that all variables and all combinations of the variables are normally distributed. The PRELIS normalisation has the effect of improving the symmetry and kurtosis of the univariate indicator variable distributions, the null hypothesis of multivariate normality is usually rejected after normalisation. An alternative method of estimation more suitable for data not following a multivariate normal distribution is usually implemented. Weighted least squares (WLS), diagonally weighted least squares (DWLS) and robust maximum likelihood (RML) are the possible solutions when fitting structural equation models that consist of non-normal data (Du Toit et al., 2001, Mels, 2003). Mels (2003), however, recommends the use of robust maximum likelihood estimation if the assumption of a multivariate normal distribution does not hold.

3.9 Model identification

Model identification entails ensuring that the model is identified in order to ascertain that sufficient information is available to obtain a unique solution for the freed parameters to be estimated and tested in the model. Two critical conditions are necessary for model identification. Firstly, a definite

scale should be established for each latent variable. This is achieved by treating each latent variable as a (0; 1) standardised variable (MacCallum, 1995). Secondly, in order to obtain a unique solution for the parameters, in structural equation modelling using LISREL, the number of independent parameters being estimated should be less than or equal to the number of non-redundant elements of S, the sample matrix of covariance among the observed variables (Diamantopoulos & Siguaw, 2000, p.48). This is summarised in the following equation: $t \leq s/2$ where t = number of parameters to be estimated, s = the number of variances and co-variances among the manifest variables represented by the equation $\{(p+q)(p+q+1)\}$ and p = the number of y-variables and q = the number of x variables. In this case $t=34$, $p=9$, $q=5$. Therefore the equation $t \leq s/2$ translates to $34 \leq 105$. This implies an over-identified model with positive degrees of freedom.

3.10 Item parcelling

Item parcelling involves combining items into small groups of items within scales or subscales (Holt, 2004). Its recent popularity in structural equation modelling is probably due to its potential to serve as a data analysis panacea for a variety of data problems, primarily non-normality, small sample sizes, small sample size to variable ratio, and unstable parameter estimates (Bandalos & Finney, 2001). According to Holt (2004), there are as many forms of item parcelling as there are reasons to conduct parcelling. In fact, some of the proposed methods of item parcelling would appear to be having opposite effects (i.e., creating multidimensional parcels and creating unidimensional parcels). Bandalos and Finney (2001) reported three reasons for the increased use of item parcelling namely: to increase the stability of the parameter estimates (29%), improve the variable to sample size ratio (22.6%), and to remedy small sample sizes (21%). The empirical evidence that parcelling is a desirable correction to these data problems is mixed. In the majority of studies assessing the effectiveness of item parcelling to resolve these data problems, item parcelled solutions have been compared to disaggregated analyses without item parcels (Holt, 2004). In a series of studies, Bagozzi and colleagues reported that parcelling was actually preferred to disaggregated analyses in most cases because the measurement error is reduced with parcelled sets of items (Bagozzi & Heatherton, 1994; Bagozzi & Edwards, 1998). Careful consideration of validity, unidimensionality, and level of specificity when constructing item parcels is recommended (Bagozzi & Heatherton, 1994; Bagozzi & Edwards, 1998).

According to Holt (2004), a rationale for item parcelling that is often stated is to reduce the effects of non-normality and the likelihood of forming difficulty factors in factor analyses with binary items. Thompson and Melancon (1996) demonstrated that using item parcelling with non-normal data resulted in more normally distributed item parcels and improved model fit. Their method of item parcelling was to create parcels of items with opposite skew in an iterative procedure that resulted in parcels with less skew than the original items. Little, Cunningham, Shahar, and Widaman (2002) list three reasons why parcelling can be advantageous over using the original items: 1) estimating large numbers of items is likely to result in spurious correlations, 2) subsets of items from a large item pool will likely share specific sources of variance that may not be of primary interest, and 3) solutions from item-level data are less likely to yield stable solutions than solutions from parcels of items. However, if the latent construct is not unidimensional, it is likely that the item parcels are also multidimensional making it difficult to define what the latent construct actually is because the structure confounds the primary factor and systematic variance that is shared across parcels.

Nasser and Takahashi (2003) examined the behaviour of various fit indices as they varied both the number of parcels and number of items per parcel using Sarason's Reactions to Tests instrument. The results support the use of parcels rather than individual items, and the use of a strategy to construct item parcels in which there are fewer parcels but more numbers of items per parcel. Nasser and Takahashi (2003) indicated that solutions from parcelled data with more items per parcel resulted in more normality, validity, continuity and reliability than solutions from parcelled data with fewer items per parcel. However, they did indicate that some indices (i.e., χ^2/df and RMSEA) were less consistent and generally had better fit when more parameters in the model were estimated. As MacCallum, Widaman, Zhang, and Hong (1999) point out, parcelled solutions can be expected to provide better fit in models because they a) have fewer parameters to estimate, b) have fewer chances for residuals to be correlated, and c) lead to a reduction in sampling error.

When parcelling with multidimensional structures, the parcelling can mask many forms of model misspecification. The other caveat of item parcelling is that the unstandardised parameters may be meaningful in clinical practice and that norms may be established based on the scale of the original items. However, these norms may not translate to the reparameterised model with item parcels Little, Cunningham, Shahar, & Widaman (2002).

According to Holt (2004), the studies discussed above have relied on analyses of actual data and theoretical explanations, yet fewer studies have been conducted in which the population structure of the underlying model was known. This is critical, as it is not known in applied studies if better model fit is necessarily a desired goal, as would be the case with a mis-specified model. In simulation studies with known population parameters, it can be determined if the increase in model fit with parcelling methods is due to the increased sensitivity of the parcelling method to a fully specified model, or whether the increase in fit is in error in a mis-specified model.

Marsh, Hau, Balla, and Grayson (1998) and Yuan, Bentler, and Kano, (1997), in separate simulation studies, demonstrated that it was advantageous to parcel rather than to use the same number of individual items; the fit indices were higher and results were more likely to yield a proper solution when parcels were used, rather than the same number of individual items (e.g., six parcels versus six items). However, if the total number of individual items was used (e.g., 12 items instead of six two-item parcels), the individual items were more likely to result in a proper solution (Holt, 2004).

3.11 Recommended item parcelling techniques

The preponderance of evidence from applied studies, theoretical studies of item parcelling, and studies with known population structure, indicates that item parcelling can be an advantageous tool in the study of the underlying structure among latent variables (Bagozzi & Heatherton, 1994; Bagozzi & Edwards, 1998; Bandalos, 2002; Bandalos & Finney, 2001; Hall, Snell & Singer Foust, 1999; Kishton & Widaman, 1994; Lawrence & Dorans, 1987; Little et al., 2002; MacCallum et al., 1999; Manhart, 1996; Marsh et al., 1998; Nasser & Takahashi, 2003; Schau, Stevens, Dauphinee & Del Vecchio, 1995; Thompson & Melancon, 1996; Yuan et al., 1997).

Holt (2004) recommends that researchers conducting item parcelling should:

1. Check the dimensionality of the factors to be parcelled to determine if there is a unidimensional or multidimensional factor structure. The factor structure should be confirmed through replication with multiple samples or with rationale review of item content.
2. Parcel items together that represent similar facets of a construct. If the factor is unidimensional, random methods of combining items can be used to create item parcels. If the factor is multidimensional, isolated parcelling strategies should be used to capture similar

facets of the structure into the same item parcel (i.e., different facets would be separated into different parcels.)

3. Check the normality/difficulty of the original items to be parcelled. If very non-normal, items should be combined in such a way as to maximise the normality of the resulting parcels. For continuous or ordered categorical items, this can be accomplished by combining items with opposite skew or distributional shape. For binary items, this can be accomplished by combining items with opposite item difficulties.
4. Parcel more items per parcel rather than more parcels, as long as the unidimensionality of each parcel can be preserved.
5. If the underlying structure to be parcelled is not known or not clear, do not parcel, as the parcelling may obscure the true underlying structure.

3.12 Model specification

Model specification involves determining every relationship and parameter in the model that is of interest to the researcher. The main goal of the researcher is to determine the theoretical model that generates the sample variance-covariance matrix (Schumacher & Lomax, 2004. p.238). In SEM context, the parameters that require specification are constants that indicate the nature of the relationship between two variables. Although specification can be quite specific regarding both the magnitude and sign of parameters, parameters typically are specified as either fixed or free. Fixed parameters are not estimated from the data and their value typically is fixed at zero. Free parameters are estimated from the data and are those the researcher believes to be non zero. The various indices of model adequacy, particularly the chi-square goodness-of-fit test, indicate the degree to which the pattern of fixed and free parameters specified in a model is consistent with the pattern of variances and co-variances from a set of observed data. The pattern of fixed and free parameters in a structural model defines two components namely the measurement and structural models (Hoyle, 1995). The measurement model describes how each latent variable is operationalised by corresponding manifest indicators while the structural model describes the relationships between the latent variables themselves. The aim of the present study is to develop and test an explanatory structural model that would explicate the manner in which servant leadership affects team effectiveness. The proposed model is shown on the next page.

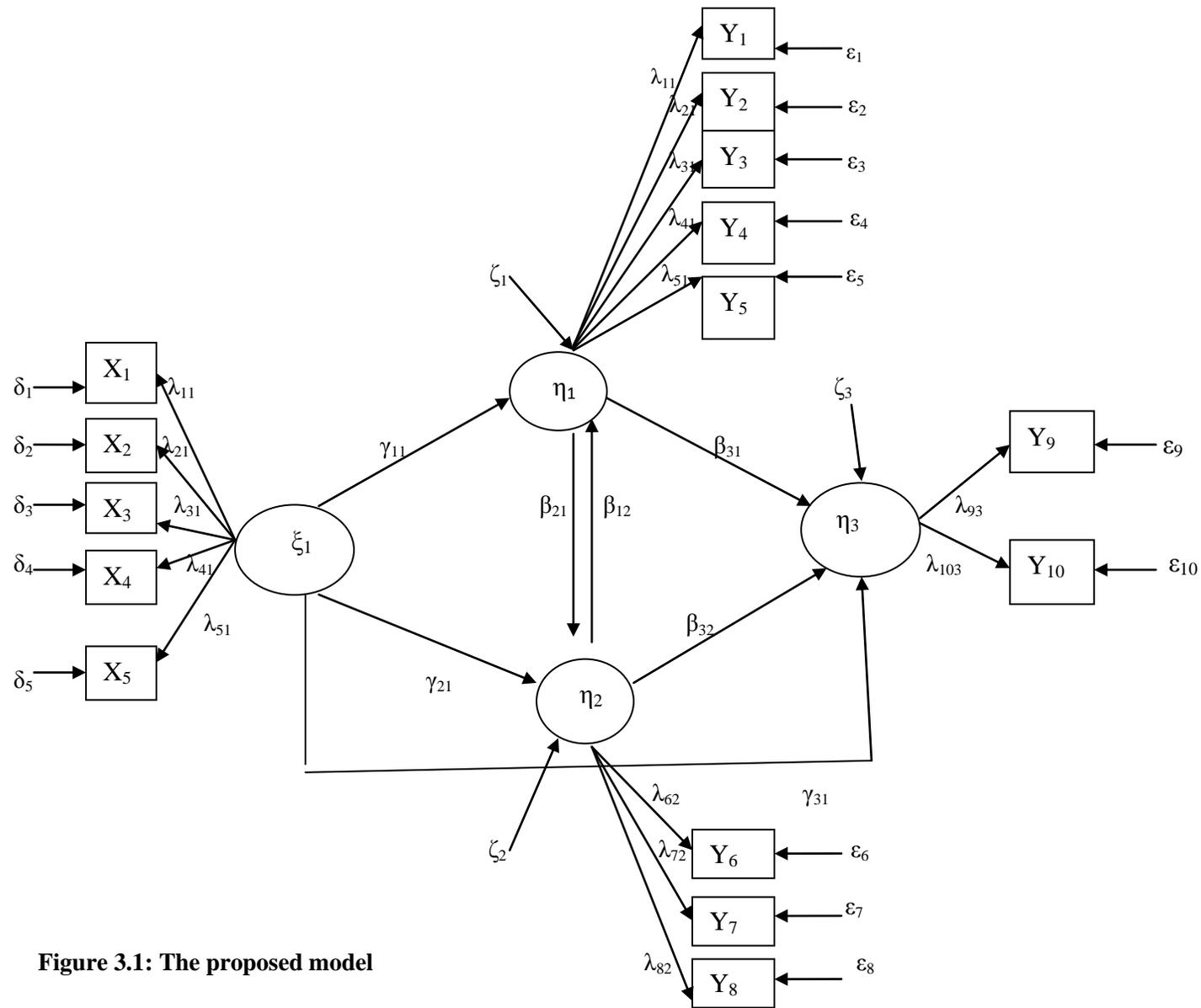


Figure 3.1: The proposed model

3.12.1 Structural equations

$$\eta_1 = \gamma_{11}\xi_1 + \zeta_1$$

$$\eta_2 = \gamma_{21}\xi_1 + \beta_{21}\eta_1 + \zeta_2$$

$$\eta_3 = \gamma_{31}\xi_1 + \beta_{31}\eta_1 + \beta_{32}\eta_2 + \zeta_3$$

3.12.2 Structural equations in matrix form

$$\begin{pmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \end{pmatrix} = \begin{pmatrix} 0 & \beta_{12} & 0 \\ \beta_{21} & 0 & 0 \\ \beta_{31} & \beta_{32} & 0 \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \end{pmatrix} + \begin{pmatrix} \gamma_{11} \\ \gamma_{21} \\ \gamma_{31} \end{pmatrix} \begin{pmatrix} \xi_1 \end{pmatrix} + \begin{pmatrix} \zeta_1 \\ \zeta_2 \\ \zeta_3 \end{pmatrix}$$

3.12.3 Measurement equations for the endogenous variables

$$Y_1 = \lambda_{11}\eta_1 + \varepsilon_1$$

$$Y_2 = \lambda_{21}\eta_1 + \varepsilon_2$$

$$Y_3 = \lambda_{31}\eta_1 + \varepsilon_3$$

$$Y_4 = \lambda_{41}\eta_1 + \varepsilon_4$$

$$Y_5 = \lambda_{51}\eta_1 + \varepsilon_5$$

$$Y_6 = \lambda_{62}\eta_2 + \varepsilon_6$$

$$Y_7 = \lambda_{72}\eta_2 + \varepsilon_7$$

$$Y_8 = \lambda_{82}\eta_2 + \varepsilon_8$$

$$Y_9 = \lambda_{93}\eta_3 + \varepsilon_9$$

$$Y_{10} = \lambda_{103}\eta_3 + \varepsilon_{10}$$

3.12.4 Measurement equations for the endogenous variables

$$\begin{pmatrix} Y_1 \\ Y_2 \\ Y_3 \\ Y_4 \\ Y_5 \\ Y_6 \\ Y_7 \\ Y_8 \\ Y_9 \\ Y_{10} \end{pmatrix} = \begin{pmatrix} \lambda_{11} & 0 & 0 \\ \lambda_{21} & 0 & 0 \\ \lambda_{31} & 0 & 0 \\ \lambda_{41} & 0 & 0 \\ \lambda_{51} & 0 & 0 \\ \lambda_{61} & 0 & 0 \\ 0 & \lambda_{72} & 0 \\ 0 & \lambda_{82} & 0 \\ 0 & \lambda_{92} & 0 \\ 0 & 0 & \lambda_{103} \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \end{pmatrix} + \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \\ \varepsilon_5 \\ \varepsilon_6 \\ \varepsilon_7 \\ \varepsilon_8 \\ \varepsilon_9 \\ \varepsilon_{10} \end{pmatrix}$$

3.12.5 Measurement equations for the exogenous variables

$$X_1 = \lambda_{11}\xi_1 + \delta_1$$

$$X_2 = \lambda_{21}\xi_1 + \delta_2$$

$$X_3 = \lambda_{31}\xi_1 + \delta_3$$

$$X_4 = \lambda_{41}\xi_1 + \delta_4$$

$$X_5 = \lambda_{51}\xi_1 + \delta_5$$

3.12.6 Measurement equations for the exogenous variables in matrix form

$$\begin{pmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \\ X_5 \end{pmatrix} = \begin{pmatrix} \lambda_{11} \\ \lambda_{21} \\ \lambda_{31} \\ \lambda_{41} \\ \lambda_{51} \end{pmatrix} \begin{pmatrix} \xi_1 \end{pmatrix} + \begin{pmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \end{pmatrix}$$

3.13 Conclusion

The research methodology of the study was outlined in this chapter. This included the stating of the technical and psychometrical details of the research instruments used as well as how the data was analysed to answer the research question. The results are presented in the following chapter (Chapter Four) and subsequently discussed in Chapter Five.

CHAPTER FOUR

RESULTS

4.1 Introduction

The model derived from the study of the available literature pertaining to the latent variables that influence the relationship between servant leadership and team effectiveness resulted in the formulation and specification of hypotheses that need to be tested. The purpose of the present chapter is to report the results of the statistical analyses performed to test these hypotheses. The chapter also discusses the treatment of the missing values, the results of item and dimensional analyses, and finally the evaluation of both the measurement and structural models of the hypothesised model that have been substantiated with the data.

4.2 Missing values

Non-response is a common problem when data instruments are completed. Addressing the problem of missing values entails choosing a method that does not have detrimental effects on the analysis for example through a massive sample reduction. The traditional way of dealing with missing data values is to use list wise deletion to generate a data set that only contains the complete data cases. The problem with this approach is that the researcher may be left with a very small data set (Mels, 2003). Imputation by matching (Jöreskog & Sörbom, 1996a) was preferred as a possible solution. Imputation by matching refers to the process of substituting real values for missing values. The substitute values that are used to replace a case are derived from one or more other cases that have a similar response pattern over a set of matching variables (Jöreskog & Sörbom, 1996a). Items with two or less missing values were used as matching variables. Imputation by matching resulted in an effective sample size of 194 cases, where only seven cases were lost. The missing values encountered in the present study are depicted in Table 4.1.

4.3 Item analysis

Item analysis was performed on the items of the servant leadership questionnaire (SLQ), the modified organisational citizenship behaviour scale (OCBS), the Team Commitment Survey (TCS) and the Team Effectiveness Questionnaire (TEQ) using the SPSS Reliability procedure (SPSS Inc, 2009). The purpose of conducting item analysis was to identify and eliminate items not contributing to an internally consistent description of the latent variables measured by these scales.

Table 4.1: The Missing Value Distribution

b2	b3	b4	b6	b7	b8	b9	b10	b11	b12	b13	b14	b15	b16	b17	b18	b19	b20	b21	b22
6	1	3	13	7	7	4	13	3	9	3	3	1	6	7	8	2	3	4	4
c1	c2	c3	c4	c5	c6	c7	c8	c9	c10	c11	c12	c13	c14	c15	c16	c17	c18	c19	c21
1	3	3	4	4	2	5	6	9	7	2	3	2	4	5	3	2	2	2	4
c22	c24	c26	c27	c28	c30	c31	c32	c33	c34	c35	d1	d2	d3	d4	d5	d6	d7	d8	d9
2	1	4	1	2	5	3	3	3	6	1	3	9	1	2	6	12	4	3	3
d10	d11	d12	d13	d14	d15	d16	d17	d18	d19	d20	d21	d22	d23	d24	e1	e2	e3	e4	e5
1	3	3	1	3	6	10	3	5	4	4	3	3	3	6	4	3	3	5	2
e6	e7	e8	e9	e10	e11														
3	2	5	4	3	4														

This procedure ensures that high validity and reliability are built into tests in advance thus improving the selection, substitution or revision of items (Anastasi & Urbina, 1997).

4.4 Reliability analysis of the SLQ

As shown in Table 4.2 the servant leadership questionnaire (SLQ) shows a high internal consistency with all the subscales indicating Cronbach’s alpha coefficients above 0.8. According to Nunnally’s (1967) reliability assessment guidelines, a value in the 0.8 to 0.89 range is good, while values above 0.9 are regarded as excellent. The Emotional Healing subscale has a remarkably high internal consistence value.

Table 4.2: Reliability Analyses of the SLQ

Scale	Sample size (n)	Number of items in scale	Cronbach’s alpha	Mean	Variance	Number of items deleted
Altruistic Calling	194	4	0.812	18.54	25.66	0
Emotional Healing	194	4	0.907	17.58	39.06	0
Wisdom	194	5	0.877	24.13	45.53	0
Persuasive Mapping	194	5	0.872	24.75	39.89	0
Organisational stewardship	194	5	0.896	26.11	40.81	0

4.5 Reliability analysis of the modified Organisational Citizenship Behaviour Scale (OCBS)

The Cronbach’s alpha coefficients exhibited by the modified organisational citizenship behaviour scale (OCBS) were moderate and ranged from 0.498 to 0.752. Reliability coefficients below 0.70 may have limited applicability (Nunnally, 1967). Table 4.3 depicts the reliability analysis output from the Altruism OCBS subscale. The Cronbach’s alpha coefficient for the Altruism OCBS subscale is 0.752 which is adequate. Item d23 has been flagged as being somewhat problematic but its deletion would only increase the Cronbach’s alpha coefficient by 0.003. This realisation coupled with the small number of items in the subscale, led to the decision against deletion.

Table 4.3 Reliability Analysis of the Altruism Subscale

	Scale mean if item is deleted	Scale variance if item is deleted	Corrected item total correlation	Cronbach's alpha if item is deleted
d13	23.71	6.65	0.633	0.662
d1	23.64	7.16	0.547	0.698
d23	23.47	8.23	0.385	0.755
d15	23.43	7.365	0.574	0.687
d10	23.13	8.863	0.491	0.726

4.5.1 Reliability analysis of the Conscientiousness subscale

Table 4.4 depicts the reliability analysis output from the Conscientiousness OCBS subscale. The Cronbach's alpha coefficient for the Conscientiousness OCBS subscale is 0.650, which is moderate. The subscale may have limited applicability. The items correlate moderately and none of the items results in a significant increase in Cronbach's alpha when deleted. Therefore, the removal of any of the items is unwarranted.

Table 4.4: Reliability Analysis of the Conscientiousness Subscale

	Scale mean if item is deleted	Scale variance if item is deleted	Corrected item total correlation	Cronbach's alpha if item is deleted
d18	23.32	10.77	0.352	0.620
d21	24.02	7.93	0.418	0.609
d22	23.64	8.99	0.494	0.551
d24	23.75	10.79	0.352	0.620
d3	23.26	10.18	0.450	0.581

4.5.2 Reliability analysis of the Sportsmanship subscale

The Sportsmanship OCBS subscale has a moderate internal consistency coefficient of 0.689. Item **d16** has been flagged as being problematic and correlating lowly with the other items; its deletion significantly increases the Cronbach's alpha coefficient to 0.710. Therefore, a decision was made to delete the item. Table 4.5 depicts the output of the Sportsmanship subscale.

Table 4.5: Reliability Analysis of the Sportsmanship Subscale

	Scale mean if item is deleted	Scale variance if item is deleted	Corrected item total correlation	Cronbach's alpha if item is deleted
d5	21.96	17.91	0.507	0.612
d16	22.86	18.03	0.317	0.710
d7	21.84	18.08	0.524	0.606
d19	21.90	19.05	0.493	0.622
d2	22.09	18.84	0.429	0.645

4.5.3 Reliability analysis of the Courtesy subscale

The internal consistency coefficient for the Courtesy OCBS subscale is 0.539. The applicability of this subscale may be somewhat limited. As indicated in Table 4.6, none of the items would result in a significant increase in the Cronbach's alpha when deleted. Hence it was decided not to delete any of the items in the Courtesy subscale.

Table 4.6: Reliability Analysis of the Courtesy Subscale

	Scale mean if item is deleted	Scale variance if item is deleted	Corrected item total correlation	Cronbach's alpha if item is deleted
d17	23.86	8.03	0.240	0.523
d20	23.74	7.63	0.389	0.434
d14	23.52	7.46	0.425	0.412
d4	23.42	8.64	0.241	0.517
d8	23.93	7.55	0.252	0.523

4.5.4 Reliability analysis of the Civic Virtue subscale

The Cronbach's alpha coefficient for the Civic Virtue OCBS subscale is 0.498 which is very low compared to the other OCBS subscales. As indicated in Table 4.7, none of the items would result in a significant increase in the Cronbach's alpha when deleted. Therefore, it was decided not to delete any of the items in the Civic Virtue subscale.

Table 4.7: Reliability Analysis of the Civic Virtue Subscale

	Scale mean if item is deleted	Scale variance if item is deleted	Corrected item total correlation	Cronbach's alpha if item is deleted
d9	16.77	5.920	0.274	0.446
d11	17.09	5.069	0.334	0.389
d6	16.73	6.966	0.259	0.454
d12	16.57	7.034	0.335	0.409

4.6 The Team Commitment Survey (TCS) reliability analysis

The Team Commitment Survey comprises three subscales measuring affective, normative and continuance commitment. An initial reliability analysis of the TCS affective subscale resulted in the deletion of items c11, c12, c13, c14, c15, c17, c23, and c24 for the normative subscales. These items were problematic. The deletion resulted in Cronbach's alpha coefficients of 0.857 (affective subscale), 0.797 (continuance subscale) and 0.898 (normative subscales). For reasons discussed in the dimensionality section, reliability analysis was also performed on the total scale and yielded a Cronbach's alpha of 0.912. The corrected item total correlation and squared multiple correlation are generally moderate. This is shown in Table 4.8.

4.7 Reliability analysis of the TEQ

The Team Effectiveness Questionnaire has a high internal consistency value of 0.891. The mean and variance of the TEQ are 59.33 and 111.53 respectively. The corrected item total correlation indicated that the items all correlated moderately with each other and formed part of the same construct. This is shown in Table 4.9.

Table 4.8: Reliability Analysis of the Total TCS Scale

	Scale mean if item is deleted	Scale variance if item is deleted	Corrected item total correlation	Squared multiple correlation	Cronbach's alpha if item is deleted
c1	132.99485	575.767	.316	.347	.911
c2	133.55670	549.067	.620	.550	.907
c3	133.13918	567.872	.451	.527	.910
c4	133.50515	550.821	.468	.578	.909
c5	133.81959	545.662	.485	.590	.909
c6	133.04124	573.553	.235	.419	.912
c7	133.73196	551.938	.499	.453	.909
c8	133.97423	548.564	.512	.497	.908
c9	134.18041	553.796	.366	.478	.911
c10	134.14948	549.433	.449	.642	.910
c16	133.95361	561.920	.394	.349	.910
c18	134.07216	551.933	.444	.506	.910
c19	133.90206	562.669	.341	.400	.911
c20	134.09278	543.908	.553	.494	.908
c21	133.97938	538.466	.634	.569	.906
c22	134.01546	538.077	.580	.539	.907
c25	134.80412	550.127	.509	.517	.908
c26	134.85567	539.430	.541	.608	.908
c27	134.75258	527.223	.684	.652	.905
c28	134.99485	535.756	.504	.504	.909
c29	134.22680	533.772	.634	.694	.906
c30	134.52062	552.386	.445	.406	.910
c31	134.52062	539.660	.611	.555	.907
c32	135.25773	535.032	.543	.513	.908
c33	134.36598	530.503	.644	.695	.906
c34	134.64433	538.624	.561	.542	.907
c35	133.91753	548.739	.512	.463	.908

Table 4.9: Reliability analysis of the TEQ

Factor	Scale mean if Item is deleted	Scale variance if item is deleted	Corrected item total correlation	Cronbach's alpha if item is deleted
1	53.44	102.87	0.405	0.891
2	53.87	97.33	0.529	0.886
3	53.86	94.60	0.652	0.879
4	53.68	98.37	0.577	0.884
5	54.29	92.27	0.542	0.886
6	54.09	93.76	0.600	0.882
7	54.24	90.96	0.604	0.882
8	54.11	87.14	0.761	0.871
9	54.07	87.69	0.697	0.876
10	53.87	89.81	0.703	0.875
11	53.80	90.19	0.687	0.876

4.8 Dimensionality analysis

Principal axis factoring with Varimax rotation was performed on each of the subscales contained in the measures utilised in the study. The purpose of conducting the factor analyses was to confirm the uni-dimensionality of each subscale and to remove the items with insufficient loadings as well as to split the subscales into two or more homogenous subsets of the item. The eigenvalue-greater than-unity-rule of thumb was used to determine the number of factors to be extracted. SPSS Inc (2009) was used to perform the analyses. The items deleted during the item analyses were not included in the exploratory factor analyses.

4.9 Factor analysis of the SLQ

All the five subscales of the SLQ passed the uni-dimensionality test. The application of the eigenvalue-greater-than-unity rule indicated that a single factor adequately explained the observed correlation matrix. Factor loadings of the subscales were, generally, satisfactory ranging from 0.326 to 0.916. The Kaiser-Meyer-Olkin test is a measure of sampling adequacy and assesses the appropriateness of using factor analysis on the data. The KMO statistic varies between 0 and 1. A value of 0 indicates that the sum of partial correlations is large relative to the sum of correlations, indicating diffusion in the pattern of correlations hence factor analysis is likely to be inappropriate (Field, 2005). A value close to 1 indicates that the patterns of correlations are relatively compact hence factor analysis is likely to yield distinct and reliable factors. Kaiser (as cited in Field, 2005) recommends accepting values greater than 0.5 as acceptable, values between 0.5 and 0.7 as mediocre

and values between 0.7 and 0.8 as good while values between 0.8 and 0.9 are great and values above 0.9 are superb. Bartlett's test of sphericity tests the hypothesis that the variance and covariance matrices are identity matrices. An identity matrix is one in which there are ones in the diagonal, and zeros in the off-diagonal. For factor analyses to work some relationships between variables are needed and if the matrix is an identity matrix all the correlation coefficients would be zero. The KMO values are all great and therefore, corroborate the admissibility of factor analysis. In all the subscales, a single factor accounts for more than 50% of the variance. The details are depicted in Table 4.10 below:

Table 4.10: Principal Axis Factoring of the SLQ Subscales

Subscale	Determinant	KMO	% variance explained	% residuals $r > 0.05$
Altruism calling	0.201	0.743	54.786	0
Emotional healing	0.058	0.835	71.771	0
Wisdom	0.067	0.849	60.803	40
Persuasive mapping	0.084	0.839	58.22	20
Organisational stewardship	0.039	0.870	65.061	0

4.10 Dimensional analysis of the OCBS subscales

Of the five modified OCBS subscales, only four were proven to be uni-dimensional. The unidimensionality of the conscientiousness, sportsmanship, civic virtue and altruism subscales was corroborated. The KMO values generally fell in the 0.7 to 0.8 range except for the civic virtue value which was 0.619. The KMO values were acceptable. The determinant values were greater than 0.00001 hence there are no problems of multicollinearity. Table 4.11 depicts the factor analyses output for the modified OCBS subscales.

Table 4.11: Principal Axis Factoring of the Modified OCBS Subscales

Subscale	Determinant	KMO	% variance explained	% residuals $r > 0.05$
Conscientiousness	0.539	0.744	28.797	20
Sportsmanship	0.412	0.713	33.425	50
Civic virtue	0.775	0.619	21.454	33
Altruism	0.265	0.722	39.633	50

4.10.1 Principal axis factoring of the Civic Virtue OCBS subscale

The civic virtue subscale was not proven to be uni-dimensional. Exploratory factor analysis showed the existence of two factors. These two factors explain 23.685% and 10.039% of the variance respectively. The rotated factor matrix depicted in Table 4.12 shows the distribution of the two factors underlying the civic virtue subscale. All the factors loading significantly are above 0.30. The identities of the two factors were subsequently determined based on the common themes in the civic virtue subscale loading on each factor. Factor 1 has a single factor loading relating to one's actions on co-workers named Civic Virtue (Action). It is concerned with the impact of one's action on others. Factor 2 generally relates to creating good relations with other co-workers, termed Civic Virtue (Good Relations). Item **d20** is a complex item with a difference of less than 0.25 between the higher and lower loadings.

Table 4.12: Rotated factor matrix

	Factor	
	1	2
d4	.042	.412
d8	.850	.084
d14	.254	.523
d17	.013	.460
d20	.286	.393

The KMO value is 0.581 which is acceptable and the determinant value is greater than 0.00001 hence there are no problems of multicollinearity as indicated in Table 4.13.

Table 4.13: Principal Axis Factoring of the Modified OCBS Subscales

Subscale	Determinant	KMO	% variance explained	% residuals $r > 0.05$
Civic Virtue (Good Relations)	0.659	0.581	23.685	30
Civic Virtue (Action)			10.039	

4.11 Principal axis factoring of the Affective Commitment subscale

An exploratory factor analysis was performed on the Affective Commitment subscale. The KMO index and the Bartlett's test of sphericity were computed and yielded values of 0.852 and 739.636 (df=45; p=0.000) respectively. The test values proved satisfactory and were therefore regarded as evidence that exploratory factor analysis (EFA) could be carried out on the responses to the TCS, Affective Commitment subscale.

Exploratory factor analysis shows the existence of two factors in the Affective Commitment subscale. These two factors respectively explain 39.923% and 7.650% of the variance. The rotated factor matrix depicted in Table 4.14 shows the distribution of the two factors underlying the affective commitment subscale. Table 4.14 shows that items c2, c6, c7 and c8 are complex items loading on two factors with a difference of less than 0.25 between them. Items loading significantly on factor 1 (c4, c5, c9, c10) relate to negative affective commitment while those loading on factor 2 (c1 and c3) relate to positive affective commitment.

4.11.1 Principal axis factoring of the Continuance Commitment subscale

The KMO index and the Bartlett's test of sphericity for the Continuance subscale were computed and yielded values of 0.788 and 739.636 (df=45; p=0.000) respectively. The test values were acceptable and therefore hinted at the admissibility of exploratory factor analysis (EFA). Exploratory factor analysis showed the existence of a single factor in the Continuance Commitment subscale.

The factor accounts for 39.931% of the variance. This supports the unidimensionality of the continuance subscale. Table 4.15 shows that all the items in the Continuance subscale have high significant factor loadings.

Table 4.14: Rotated factor matrix

	Factor	
	1	2
c1	.091	.607
c2	.483	.528
c3	.207	.765
c4	.682	.273
c5	.715	.225
c6	.407	.318
c7	.367	.481
c8	.359	.518
c9	.603	.198
c10	.820	.181

4.11.2 Dimensional analysis of the Normative Commitment subscale

The KMO index and the Bartlett's test of sphericity were computed and yielded values of 0.895 and 1040.118 (df=55; p=0.000) respectively. The test values were regarded as evidence that exploratory factor analysis (EFA) could be carried out on the responses to the TCS, Normative Commitment subscale.

Table 4.15: Factor matrix

	Factor
	1
c16	.533
c18	.629
c19	.587
c20	.667
c21	.719
c22	.640

Exploratory factor analysis showed the existence of two factors in the Normative Commitment subscale. These two factors explain 45.899% and 7.261% of the variance respectively. The rotated factor matrix depicted in Table 4.16 shows the factor loading pattern of the subscale items on the two factors underlying the normative commitment subscale. Items loading significantly on factor 1 (c29, c33, c34 and c35) relate to positive normative commitment. These items convey positive evaluation of the team. Factor 2 loadings (c25, c26 and c32) allude to the cost of leaving the team. However, some of the items are complex items loading on both factors. These factors (c27, c28, c30 and c31) are highlighted in Table 4.16.

Table 4.16: Rotated Factor Matrix

	Factor 1	Factor 2
c25	.238	.632
c26	.160	.830
c27	.454	.678
c28	.339	.542
c29	.771	.305
c30	.506	.274
c31	.583	.423
c32	.326	.577
c33	.745	.312
c34	.621	.334
c35	.675	.140

The factor structure as determined by the design intentions of Bennet (1997) was imposed on the TCS questionnaire responses including the items recommended for deletion in the foregoing item and dimensional analysis procedures. However, the measurement model reflecting the scoring key and original design intentions of the scale developer, failed to produce a reasonable model fit. It was therefore decided to create two item parcels for team commitment and items were randomly assigned to the two parcels. Interestingly, item analysis was performed on the total scale and yielded

a Cronbach's alpha of 0.912 which shows excellent internal consistency. The output is shown in Table 4.8, in the previous section on item analyses.

4.12 Dimensional analysis of the TEQ subscales

Exploratory factor analysis showed the existence of two factors in the Team Effectiveness Questionnaire (TEQ). These two factors explain 44.495% and 7.814% of the variance respectively. The rotated factor matrix depicted in Table 4.17 below shows the distribution of the two factors underlying the TEQ. All the factors loading significantly are above 0.30. Table 4.17 shows that items e1 and e2 are complex items loading on the two factors. Items significantly loading on factor 1 (e8, e9, e10 and e11) relate to Team Effectiveness (Leader) because they are focusing on the role played by the leader in spearheading team effectiveness. Factor 2 (e3, e4, e5, e6 and e7) relate to Team Effectiveness (Team) as they tap on the role of the team in promoting effectiveness. The KMO value of the TEQ is 0.878, which is very good, and the determinant is 0.0004 which is greater than 0.00001. This is shown in Table 4.18.

Table 4.17: Rotated Factor Matrix

	Factor 1	Factor 2
e1	.216	.393
e2	.297	.491
e3	.324	.666
e4	.185	.706
e5	.274	.528
e6	.187	.738
e7	.381	.508
e8	.762	.381
e9	.750	.314
e10	.840	.252
e11	.748	.302

Table 4.18: Principal Axis Factoring of the TEQ Subscales

Subscale	Determinant	KMO	% variance explained	% residuals $r > 0.05$
Team Effectiveness (Leader)	0.0004	0.878	44.495	25
Team Effectiveness (Team)			7.814	

4.13 Parameter estimation method

The rationale behind parameter estimation is to generate numerical values for the freed and constrained parameters in the model. Specifically, the goal of estimation is to minimise the differences between each element found in the sample covariance matrix and the corresponding elements in the implied covariance matrix (Diamantopoulos & Siguaaw, 2000). LISREL 8.54 contains seven methods that can be used to estimate the parameters of a model namely: Instrumental variables (IV), Two-Stage Least Squares (TSLS), Unweighted Least Squares (ULS), Generalised Least Squares (GLS), Maximum Likelihood (ML), Generally Weighted Least Squares (WLS) and Diagonally Weighted Least Squares (DWLS). The IV and TSLS are fast, non iterative, limited information techniques but are statistically less efficient than full-information techniques which estimate the entire system of equations simultaneously. The ULS, GLS, ML, WLS and DWLS are full-information techniques that are statistically more efficient but are, however, susceptible to specification errors (Diamantopoulos & Siguaaw, 2000). The default estimation method when fitting models to continuous data in LISREL 8.54 is maximum likelihood (ML) which provides consistently efficient estimation under the assumption of multivariate normality and is relatively robust against departures from multivariate normality (Diamantopoulos & Siguaaw, 2000). This is also true for the generalised least squares (GLS) and full information maximum likelihood (FIML) methods for structural equation modelling (Mels, 2003). Lack of multivariate normality generally inflates the chi-square statistic such that the overall chi-square fit statistic for the model as a whole is biased towards a Type 1 error (rejecting a model that should not be rejected). In the present study the univariate and multivariate normality of the data were evaluated using PRELIS.

Table 4.19 Test of Univariate Normality for Continuous Variables before Normalisation

Variable	Skewness		Kurtosis		Skewness and Kurtosis	
	Z-Score	P-Value	Z-Score	P-Value	Chi-Square	P-Value
SL_1	-2.268	0.023	-1.890	0.059	8.717	0.013
SL_2	-0.738	0.461	-5.488	0.000	30.666	0.000
SL_3	-2.051	0.040	-3.482	0.000	16.331	0.000
SL_4	-2.688	0.007	-2.859	0.004	15.401	0.000
SL_5	-4.534	0.000	0.976	0.329	21.509	0.000
TC_1	-4.166	0.000	0.481	0.631	17.585	0.000
TC_2	-2.848	0.004	-0.927	0.354	8.968	0.011
TCB_1	-5.922	0.000	4.230	0.000	52.967	0.000
TCB_2	-5.745	0.000	3.417	0.001	44.680	0.000
TCB_3	-3.984	0.000	2.109	0.035	20.325	0.000
TCB_4	-4.644	0.000	2.544	0.011	28.036	0.000
TCB_5	-6.204	0.000	4.729	0.000	60.857	0.000
TE_1	-4.786	0.000	2.032	0.042	27.037	0.000
TE_2	-4.042	0.000	0.623	0.533	16.724	0.000

Relative Multivariate Kurtosis = 1.184

Table 4.20 Test of Multivariate Normality for Continuous Variables Before Normalisation

Skewness			Kurtosis			Skewness and Kurtosis	
Value	Z-Score	P-Value	Value	Z-Score	P-Value	Chi-Square	P-Value
39.055	15.649	0.000	265.241	8.751	0.000	321.460	0.000

Table 4.19 indicates that the fourteen indicator variables failed the test of univariate normality ($p < 0.05$). Table 4.20 indicates that the null hypothesis that the data follows a multivariate normal distribution has to be rejected ($\chi^2 = 321.460$; $p < 0.05$). PRELIS was subsequently employed to normalise the data.

Table 4.21 Test of Univariate Normality for Continuous Variables After Normalisation

Variable	Z-Score	P-Value	Z-Score	P-Value	Chi-Square	P-Value
SL_1	-0.060	0.952	0.012	0.990	0.004	0.998
SL_2	-0.119	0.905	-0.676	0.499	0.471	0.790
SL_3	-0.220	0.826	-0.387	0.699	0.198	0.906
SL_4	-0.080	0.937	-0.280	0.780	0.085	0.959
SL_5	-0.221	0.825	-0.259	0.796	0.116	0.944
TC_1	-0.032	0.974	0.055	0.956	0.004	0.998
TC_2	-0.010	0.992	0.077	0.939	0.006	0.997
TCB_1	-0.349	0.727	-0.441	0.659	0.317	0.853
TCB_2	-0.279	0.780	-0.405	0.685	0.242	0.886
TCB_3	-0.199	0.842	-0.112	0.911	0.052	0.974
TCB_4	-0.255	0.799	-0.312	0.755	0.162	0.922
TCB_5	-0.276	0.783	-0.068	0.946	0.081	0.960
TE_1	-0.296	0.767	-0.369	0.712	0.224	0.894
TE_2	-0.238	0.812	-0.270	0.787	0.129	0.937

Table 4.22 Test of Multivariate Normality for Continuous Variables after Normalisation

Skewness			Kurtosis			Skewness and Kurtosis	
Value	Z-Score	P-Value	Value	Z-Score	P-Value	Chi-Square	P-Value
25.652	7.042	0.000	249.860	6.543	0.000	92.411	0.000

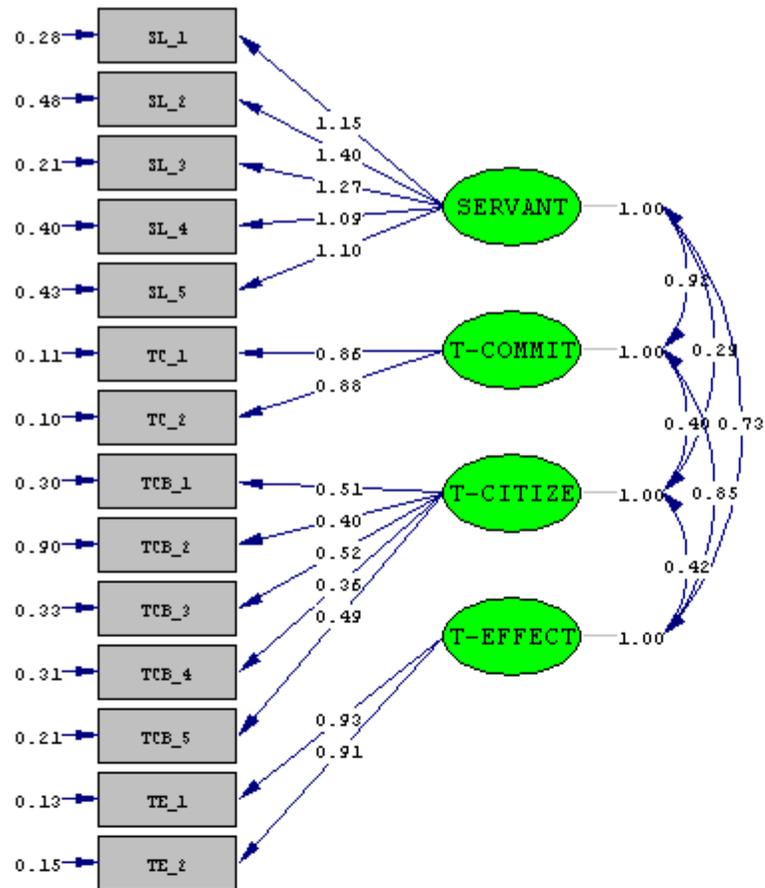
Table 4.21 indicates that although the normalisation procedure employed using PRELIS succeeded in improving the normality on all the fourteen indicator variables, the results continue to reflect high levels of skewness and kurtosis. As a result, the null hypothesis of multivariate normality still has to be rejected hence it was decided to use robust maximum likelihood to test the measurement model. Table 4.22 indicates that the chi square of the normalised data improved but the researcher still rejects the null hypothesis of multivariate normality ($\chi^2=92.411$, $p<0.05$).

4.14 Assessment of goodness-of-fit of the measurement model

The main purpose of assessing a model's overall fit is to determine the degree to which the model as a whole is consistent with the empirical data at hand (Diamantopoulos & Siguaw, 2000). Structural Equation Modelling (SEM) helps to explain the patterns of co-variances found amongst the observed variables in terms of the relationships hypothesised by the measurement and structural models. The measurement model describes how each latent variable is operationalised by corresponding manifest indicators while the structural model describes the relationships between the latent variables themselves. In order to validly test and provide some sound conclusive evidence pertaining to the fit of the model, some evidence was required to substantiate the validity of the manifest indicators as credible measures of the underlying latent variables that they were supposed to measure. Unless the operational measures are valid measures of the underlying latent variables, assessment of the relations of interest is problematic. For this reason, in practice, the evaluation of the measurement part of the model precedes the detailed evaluation of the structural part of the model (Diamantopoulos & Siguaw, 2000). Instead of fitting the endogenous and exogenous measurement models separately, a single measurement model is fitted to evaluate the model under study.

4.15 Fitting the servant leadership, team commitment, team citizenship behaviour and team effectiveness model to the total sample

The LISREL programme, version 8.54 (Jöreskog & Sörbom, 1996a) was used to perform a confirmatory factor analysis on the measurement model to determine the fit of the model. The Robust Maximum Likelihood estimation method was used to produce the estimates due to the failure of the data to satisfy the multivariate normality assumption. The path diagram of the fitted measurement model is presented in Figure 4.1



Chi-square=144.05, df =71, P-value=0.00000, RMSEA=0.073

Figure 4.1: The Servant leadership, Team Commitment, Team Citizenship Behaviour and Team Effectiveness Measurement Model

The full spectrum of the fit indices provided by the LISREL programme is depicted in Table 4.23 below and followed by a subsequent discussion of their relevance as goodness of fit indices.

Table 4.23 Goodness-of-Fit Statistics for the Measurement Model

Degrees of Freedom	71
Minimum Fit Function Chi-Square	176.65 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square	164.96 (P = 0.0)
Satorra-Bentler Scaled Chi-Square	144.05 (P = 0.0)
Chi-Square Corrected for Non-Normality	261.68 (P = 0.0)
Estimated Non-centrality Parameter (NCP)	73.05
90 Percent Confidence Interval for	(42.60 ; 111.28)
Minimum Fit Function Value	0.92
Population Discrepancy Function Value (F0)	0.38
90 Percent Confidence Interval for F0	(0.22 ; 0.58)
Root Mean Square Error of Approximation (RMSEA)	0.073
90 Percent Confidence Interval for RMSEA	(0.056 ; 0.090)
P-Value for Test of Close Fit (RMSEA < 0.05)	0.016
Expected Cross-Validation Index (ECVI)	1.10
90 Percent Confidence Interval for ECVI	(0.94 ; 1.30)
ECVI for Saturated Model	1.09
ECVI for Independence Model	23.40
Chi-Square for Independence Model with 105 Degrees of Freedom	4488.32
Independence AIC	4516.32
Model AIC	212.05
Saturated AIC	210.00
Independence CAIC	4576.07
Model CAIC	357.16
Saturated CAIC	658.13
Normed Fit Index (NFI)	0.97
Non-Normed Fit Index (NNFI)	0.98
Parsimony Normed Fit Index (PNFI)	0.76
Comparative Fit Index (CFI)	0.98
Incremental Fit Index (IFI)	0.98

Relative Fit Index (RFI)	0.96
Critical N (CN)	137.16
Root Mean Square Residual (RMR)	0.060
Standardised RMR	0.063
Goodness of Fit Index (GFI)	0.89
Adjusted Goodness of Fit Index (AGFI)	0.84
Parsimony Goodness of Fit Index (PGFI)	0.60

A variety of fit indices are used to assess the model fit. According to Tanaka (as cited in Kelloway 1998, p. 23), at least two traditions in the assessment of model fit are apparent namely the assessment of the absolute and the comparative fit of the model. The assessment of the absolute fit of the model is concerned with the ability of the model to reproduce the actual covariance matrix. The assessment of the comparative fit of the model may be further subdivided into the assessment of comparative and parsimonious fit. The assessment of comparative fit, on the other hand, compares two or more competing models to assess which model provides the better fit to the data. The assessment of parsimonious fit is based on the recognition that one can always obtain a better fitting model by estimating more parameters.

The chi-square statistic is the traditional measure for overall model fit in co-variance structure models. It provides a test of perfect fit in which the null hypothesis is that the model fits the population data perfectly. A statistically significant chi-square leads to the rejection of the null hypothesis, implying imperfect fit and possible rejection of the model. Thus the null hypothesis tested by the chi-square test is $H_0: \Sigma = \Sigma(\theta)$ (Diamantopoulos & Siguaw, 2000). The p-value associated with the Normal Theory χ^2 value in Table 4.23 (0.0) indicates a significant test statistic ($p < 0.05$). This suggests that there is a significant discrepancy between the covariance matrix implied by the measurement model and the observed covariance matrix, thus rejecting the exact fit null hypothesis. The measurement model is therefore not able to reproduce the observed covariance matrix (Kelloway, 1998). The use of the chi-square as a goodness-of-fit index has been affected by its known sensitivity to departures from multivariate normality (particularly excessive kurtosis), variations in sample sizes, and the assumption that the model fits perfectly in the population (Diamantopoulos & Siguaw, 2000). Hence numerous alternative indices of assessing model fit were

proposed and tested (Hoyle, 1995). The LISREL programme version 8.54 (Jöreskog and Sörbom, 1996a), reports 18 indices of model fit, of which four relate to absolute fit.

The root mean square error of approximation (RMSEA) shows how well a model, with unknown but optimally chosen parameter values, fits the population covariance matrix if it were available. It is a measure of closeness of fit and is generally regarded as one of the most informative fit indices. When assessing the RMSEA, values less than 0.05 are indicative of good fit, between 0.05 and under 0.08 of reasonable fit, between 0.08 and 0.10 of mediocre fit and above 0.10 of poor fit (Diamantopoulos & Siguaaw, 2000). In this instance, the RMSEA is 0.073 which indicates reasonable fit. LISREL also provides a 90% confidence interval for the RMSEA (0.056; 0.090) indicating that the hypothesis of close fit is not rejected. The LISREL programme also tests the null hypothesis of close fit, which in this case is $H_0: \text{RMSEA} \leq 0.05$ is equal to 0.016. Table 4.23 summarises the fit indices.

Another fit index provided by LISREL is the Root Mean Squared Residual (RMR). It is a summary measure of fitted residuals and presents the average value of the difference between the sample covariance (variance) and a fitted (model-implied) covariance (variance). The main drawback inherent in the interpretation of the fitted residuals (and therefore the RMR statistic) is that their size varies with the unit of measurement and the RMR varies from variable to variable. This problem is resolved by concentrating on the standardised residuals, which are the fitted residuals divided by the estimated standard errors. The standardised residual can be considered “large” if it exceeds the value of 2.58 in absolute value. A summary measure of standardised residuals is the standard RMR; values below 0.05 are indicative of acceptable fit (Diamantopoulos & Siguaaw, 2000). In this case the values of RMR and standardised RMR were 0.06 and 0.063 respectively; as the latter value exceeds 0.05 it raises some doubts regarding the model’s fit.

The next three measures of fit are generally regarded as absolute fit indices in that they directly assess how well the covariances predicted from the parameter estimates reproduce the sample covariances. Their computations do not depend on a relative comparison with a ‘baseline’ model; in contrast relative fit indices measure the proportionate improvement in fit by comparing the target model with a more restricted, nested baseline model (Diamantopoulos & Siguaaw, 2000). The goodness-of-fit (GFI) is an indicator of the relevant amount of variances and co-variances

accounted for by the model and hence show how closely the model comes to perfectly reproduce the observed co-variance matrix. The adjusted goodness-of-fit index (AGFI) is the GFI adjusted for the degrees of freedom in the model while the parsimony goodness-of-fit index (PGFI) makes a different type of adjustment to take into account model complexity. The values of the GFI and AGFI should range between 0 and 1 and values greater than 0.90 are usually interpreted as reflecting acceptable fit. Acceptable values for the PGFI are much lower. Generally, the goodness-of-fit index (GFI) is recommended as the most reliable measure of absolute fit (Diamantopoulos & Siguaw, 2000). In this case, the GFI = 0.89, AGFI = 0.84 and PDFI = 0.60 indicating acceptable fit.

The next set of fit indices to be discussed is the relative fit indices, which show 'how much better the model fits compared to a baseline model, usually the independence model.' With the exception of the non-normed fit index (NNFI) all the indices in this group have a range between 0 and 1 with values closer to 1 representing good fit. The NNFI can take a value greater than 1 and lower values of the PNFI are expected in relation to the non-parsimonious NFI (Diamantopoulos & Siguaw, 2000). In this case, the NFI = 0.97, NNFI = 0.98, CFI = 0.98, Relative Fit Index = 0.96, Incremental Fit Index = 0.98 and the PNFI = 0.76. These indices generally indicate a reasonable fit of the model over the independence model.

The final measure of fit included in Table 4.23 is the critical N (CN) statistic. It differs from the previous fit indices in that it shows 'the size that a sample must reach in order to accept the fit of a given model on a statistical basis.' Generally, the CN value should be greater than 200 (Diamantopoulos & Siguaw, 2000). In this instance, CN = 137.16 which is below the suggested threshold. However, according to Diamantopoulos and Siguaw (2000), both the value of the CN statistic and the cut-off point has been challenged in the literature and therefore the CN statistic has to be interpreted with caution.

4.16 The unstandardised LAMBDA-X matrix

The unstandardised Lambda-X matrix (see Table 4.24 below) shows the loadings of the manifest variables on the latent variables. All the manifest variables load significantly on the latent variables that they were designed to reflect. Significant loadings are indicated by $t\text{-values} \geq |1.96|$. Significant loadings confirm the validity of the indicators (Diamantopoulos & Siguaw, 2000).

Table 4.24: The Unstandardised LAMBDA-X Matrix

	SERVANT	T-COMMIT	T-CITIZE	T-EFFECT
SL_1	1.15 (0.07) 17.24			
SL_2	1.40 (0.08) 17.54			
SL_3	1.27 (0.07) 18.38			
SL_4	1.09 (0.07) 15.10			
SL_5	1.10 (0.07) 15.67			
TC_1		0.86 (0.05) 17.35		
TC_2		0.88 (0.05) 17.95		
TCB_1			0.51 (0.06) 9.27	
TCB_2			0.40 (0.07) 5.42	
TCB_3			0.52 (0.06) 8.30	
TCB_4			0.36 (0.06) 6.55	
TCB_5			0.49 (0.05) 10.19	
TE_1				0.93 (0.05) 17.32
TE_2				0.91 (0.05) 17.09

Note: Completely standardised factor loadings in bold; standard error estimates in brackets; significant factor loadings (in shade) are indicated by $t\text{-values} \geq |1.96|$ *

Although the factor loadings indicate that the Lambda-X matrix is significant, Diamantopoulos and Siguaw (2000) warn against absolute reliance on the unstandardised loadings and their associated t-values. The problem is that it may be difficult to compare the validity of different indicators measuring a particular construct. This is due to the fact that indicators of the same construct may be measured on very different scales hence direct comparisons of the magnitudes of the loadings are inappropriate. Furthermore, since each latent variable has to be assigned a scale by fixing the loadings of one of its indicators to a unit, the loadings of the other indicators for that latent variable are only interpretable relative to the unit of the reference indicator. If a different indicator is used as the reference variable, the magnitudes of the loadings will change hence the magnitudes of the standardised loadings should also be inspected (Diamantopoulos & Siguaw, 2000). The standardised loadings are discussed and shown in Table 4.25.

The values shown in the completely standardised solution matrix represent the regression slopes of the regression of the standardised indicator variables on the standardised latent variables. The completely standardised loadings therefore indicate the average change expressed in standard deviations in the indicator variable associated with one standard deviation change in the latent variable. The square of the completely standardised factor loadings indicate the proportion of indicator variance explained in terms of the latent variable it is meant to express. From Table 4.25, it can be deduced that loading of the second TCB indicator on the TCB latent variable is somewhat problematic as it shows the insensitivity of the manifest variable to change.

The squared multiple correlations (R^2) of the indicators depict the extent to which the measurement model is adequately represented by the observed variables (Byrne, 1998, p.104). In other words, the squared multiple correlations show the proportion of variance in an indicator that is explained by the underlying latent variable. A high R^2 value would indicate that variance in the indicator under discussion reflects variance in the latent variable to which it has been linked to a large degree. The rest of the variance not explained by the latent variable can be ascribed to systematic and random measurement error (Diamantopoulos & Siguaw, 2000). The R^2 values range from 0.00 to 1.00 and also serve as reliability indicators Bollen(as cited in Byrne, 1998, p.104). An examination of the R^2 values shown in Table 4.26 reveals above average correlations except for variables TCB_1, TCB_2, TCB_3, TCB_4 and TCB_5, which range from low to moderate in terms of indicator strength.

Table 4.25: Completely Standardised Lambda-X Matrix

	SERVANT	T-COMMIT	T-CITIZE	T-EFFECT
SL_1	0.91	--	--	--
SL_2	0.90	--	--	--
SL_3	0.94	--	--	--
SL_4	0.86	--	--	--
SL_5	0.86	--	--	--
TC_1	--	0.93	--	--
TC_2	--	0.94	--	--
TCB_1	--	--	0.69	--
TCB_2	--	--	0.39	--
TCB_3	--	--	0.67	--
TCB_4	--	--	0.55	--
TCB_5	--	--	0.74	--
TE_1	--	--	--	0.93
TE_2	--	--	--	0.92

Table 4.26 Squared Multiple Correlations for X – Variables

SL_1	SL_2	SL_3	SL_4	SL_5	TC_1
0.82	0.80	0.89	0.75	0.74	0.87
TC_2	TCB_1	TCB_2	TCB_3	TCB_4	TCB_5
0.89	0.47	0.15	0.45	0.30	0.54
TE_1	TE_2				
0.87	0.84				

4.17 Examination of measurement model residuals

The essence of structural equation modelling is to determine the fit between the restricted covariance matrix $[\Sigma(\theta)]$, implied by the hypothesised model, and the sample covariance (S); any discrepancy between the two is captured by the residual covariance matrix (Byrne, 1998, p.119).

Table 4.27: The Measurement Model Standardised Residuals

Standardised Residuals						
	SL_1	SL_2	SL_3	SL_4	SL_5	TC_1
	-----	-----	-----	-----	-----	-----
SL_1	- -					
SL_2	- -	- -				
SL_3	- -	- -	- -			
SL_4	- -	- -	- -	- -		
SL_5	7.96	0.09	- -	- -	- -	
TC_1	1.52	- -	- -	- -	- -	- -
TC_2	- -	- -	- -	- -	- -	- -
TCB_1	1.17	1.12	0.43	1.23	2.99	0.94
TCB_2	-0.96	-1.64	-1.02	-0.85	-0.70	0.78
TCB_3	-3.27	-2.59	-4.39	-2.27	-1.95	-2.95
TCB_4	0.86	1.38	2.10	3.32	2.99	1.48
TCB_5	-0.38	0.68	0.39	1.20	0.99	0.23
TE_1	- -	- -	- -	- -	0.94	- -
TE_2	-0.22	- -	1.33	0.08	0.61	0.92
Standardised Residuals						
	TC_2	TCB_1	TCB_2	TCB_3	TCB_4	TCB_5
	-----	-----	-----	-----	-----	-----
TC_2	- -					
TCB_1	0.94	- -				
TCB_2	0.78	-1.88	- -			
TCB_3	-2.84	0.72	1.92	- -		
TCB_4	1.32	1.15	-0.25	-1.42	- -	
TCB_5	0.60	-1.05	0.43	0.84	0.00	- -
TE_1	- -	1.89	-0.84	-2.53	0.97	0.34
TE_2	- -	1.34	-0.71	-2.79	0.12	0.51
Standardised Residuals						
	TE_1	TE_2				
	-----	-----				
TE_1	- -					
TE_2	- -	- -				

Standardised residuals can be interpreted as z-scores (i.e. number of standard deviations above or below the mean). Standardised residuals are considered large if they exceed +2.58 or -2.58

(Diamantopoulos & Siguaaw, 2000). A large positive residual would indicate that the model underestimates the co-variance between two variables, while a negative residual shows that the model overestimates the covariance between variables. Underestimation indicates that the model needs to be modified by adding additional paths, which could better account for the covariance between the variables. If the model overestimates the covariance between the variables, the model should be modified by trimming paths that are associated with the particular term (Jöreskog & Sörbom, 1993).

Table 4.28: Summary Statistics for Standardised Residuals

Smallest standardised residual	-4.39
Median standardised residual	0.00
Largest standardised residual	7.96
Largest negative standardised residuals	
Residual for TCB_3 and SL_1	-3.27
Residual for TCB_3 and SL_2	-2.59
Residual for TCB_3 and SL_3	-4.39
Residual for TCB_3 and TC_1	-2.95
Residual for TCB_3 and TC_2	-2.84
Residual for TE_2 and TCB_3	-2.79
Largest positive standardised residuals	
Residual for SL_5 and SL_1	7.96
Residual for TCB_1 and SL_5	2.99
Residual for TCB_4 and SL_4	3.32
Residual for TCB_4 and SL_5	2.99

An examination of the summary statistics for the standardised residuals reveals that there are ten values greater than 2.58, which hints at a possible misfit in the model.

The standardised residuals are presented using a stem-and-leaf plot. Although the stem-and-leaf plot is similar to frequency distributions, its main advantage is that it is able to convey summary information related to individual, rather than group, values (Byrne, 1998). A well-fitted model is characterised by standardised residuals that are symmetrically clustered around the zero point, with most being in the middle of the distribution and only a few in the tails. An excess of residuals on

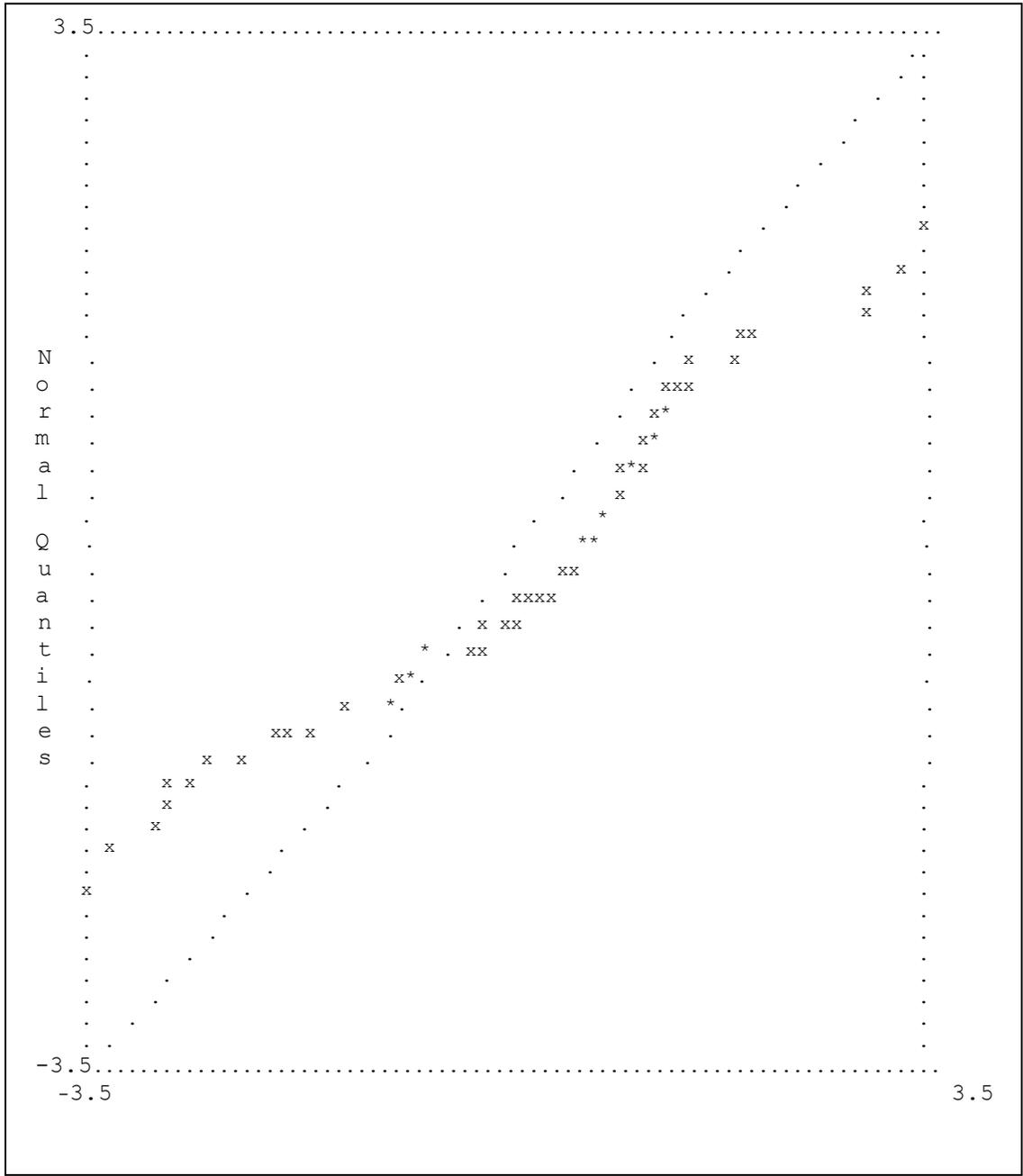


Figure 4.3: Q-plot of Standardised Residuals

Table 4.29: Modification Indices for LAMBDA-X

	SERVANT	T-COMMIT	T-CITIZE	T-EFFECT
	-----	-----	-----	-----
SL_1	- -	0.94	1.62	0.55
SL_2	- -	1.01	0.07	0.57
SL_3	- -	25.78	1.20	1.29
SL_4	- -	4.18	1.43	0.54
SL_5	- -	0.03	4.71	0.63
TC_1	- -	- -	0.01	- -
TC_2	- -	- -	0.01	4.54
TCB_1	2.30	2.43	- -	5.47
TCB_2	1.05	0.01	- -	0.53
TCB_3	11.96	13.34	- -	11.83
TCB_4	4.93	2.74	- -	0.72
TCB_5	0.49	0.48	- -	0.50
TE_1	0.86	0.09	0.21	- -
TE_2	1.37	0.18	0.22	- -

Model modification indices are aimed at answering the question whether any of the currently fixed parameters, when freed in the model, would significantly improve the parsimonious fit of the model. Modification indices (MI) indicate the extent to which the chi-square fit statistic decreases when a currently fixed parameter in the model is freed and the model re-estimated (Jöreskog & Sörbom, 1993). Large modification index values (>6.6349 at a significance level of 0.01) are indicative of parameters that, if set free, would improve the fit of the model significantly ($p < 0.01$) (Diamantopoulos & Siguaw, 2000; Jöreskog & Sörbom, 1993). In this case, (SL_3) and (TCB_3) load on team commitment, while (TCB_3) loads on servant leadership. The magnitudes of the completely standardised expected parameter changes (maximum 1.40) associated with the fixed parameters in this matrix do not warrant setting any of these parameters free.

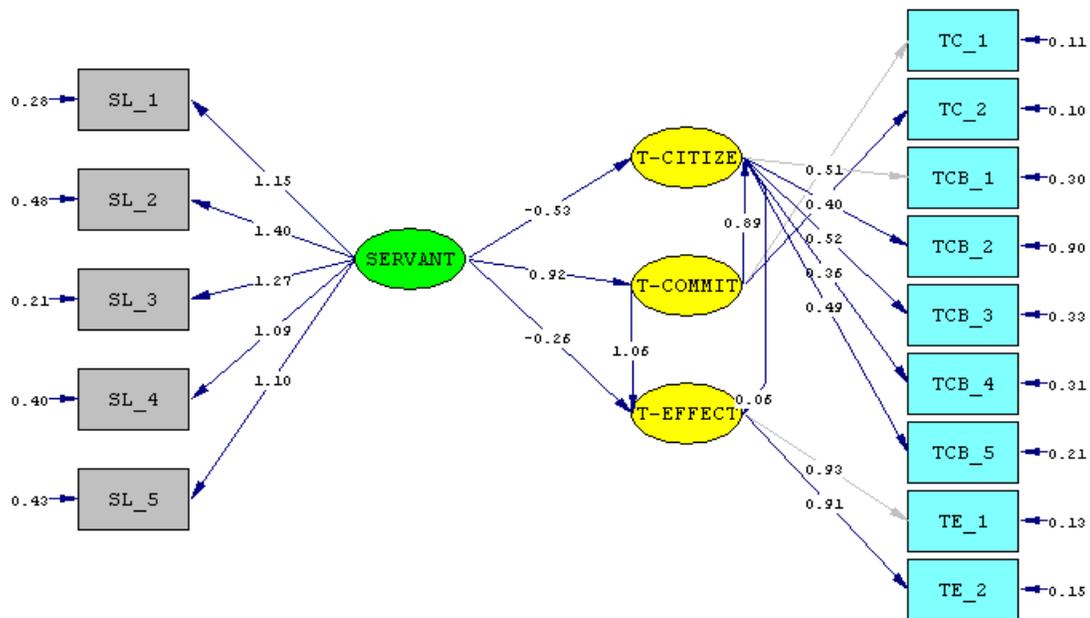
It is important to note that parameters with high MI values should only be freed if it makes substantive sense to do so (Kelloway, 1998). The expected change for the parameter is the expected value of the parameter if it is freed. The standardised and completely standardised expected changes are the expected values in the standardised and completely standardised solution if the parameter were freed. According to Jöreskog and Sörbom (1993, p.127), modification indices should be used in the process of model evaluation and modification (1) when the chi-square is large relative to the degrees of freedom, in which case one examines the modification indices and relaxes the parameter with the largest modification index if this parameter can be interpreted substantially (2) if it does not make sense to relax the parameter with the largest modification index, in which case one considers

the second largest modification index, e.t.c., and (3) if the signs of certain parameters are specified *a priori*, positive or negative, the expected parameter changes associated with the modification indices for these parameters can be used to exclude models with parameters having the wrong sign.

4.18 Structural model fit

The structural model describes the relationships between the latent variables themselves and indicates the amount of unexplained variance. When assessing the structural model, it is important to focus on the relationships between the exogenous and endogenous variables with the goal of ascertaining the fit between the proposed relationships and the available data. The details pertaining to the purposes of the various fit indices have been discussed under the measurement model section, hence the structural model fit indices are presented briefly.

The LISREL program version 8.54 (Jöreskog & Sörbom, 1996a) was used to determine the fit of the structural model. The Robust Maximum Likelihood estimation method was used to produce the estimates. An admissible solution of parameter estimation was reached after 51 iterations. A full spectrum of the indices provided by the LISREL programme is presented in Table 4.30 and the path diagram of the fitted measurement model is depicted in Figure 4.4.



Chi-Square=144.05, df =71, P-value=0.00000, RMSEA=0.073

Figure 4.4: The servant leadership, team commitment, team citizenship behaviour and team effectiveness structural model

Table 4.30 Goodness-of-Fit Statistics for the Measurement Model

Degrees of Freedom	71
Minimum Fit Function Chi-Square	176.65 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square	164.96 (P = 0.0)
Satorra-Bentler Scaled Chi-Square	144.05 (P = 0.0)
Chi-Square Corrected for Non-Normality	261.68 (P = 0.0)
Estimated Non-centrality Parameter (NCP)	73.05
90 Percent Confidence Interval for	(42.60 ; 111.28)
Minimum Fit Function Value	0.92
Population Discrepancy Function Value (F0)	0.38
90 Percent Confidence Interval for F0	(0.22 ; 0.58)
Root Mean Square Error of Approximation (RMSEA)	0.073
90 Percent Confidence Interval for RMSEA	(0.056 ; 0.090)
P-Value for Test of Close Fit (RMSEA < 0.05)	0.016
Expected Cross-Validation Index (ECVI)	1.10
90 Percent Confidence Interval for ECVI	(0.94 ; 1.30)
ECVI for Saturated Model	1.09
ECVI for Independence Model	23.40
Chi-Square for Independence Model with 105 Degrees of Freedom	4488.32
Independence AIC	4516.32
Model AIC	212.05
Saturated AIC	210.00
Independence CAIC	4576.07
Model CAIC	357.16
Saturated CAIC	658.13
Normed Fit Index (NFI)	0.97
Non-Normed Fit Index (NNFI)	0.98
Parsimony Normed Fit Index (PNFI)	0.76
Comparative Fit Index (CFI)	0.98
Incremental Fit Index (IFI)	0.98

Relative Fit Index (RFI)	0.96
Critical N (CN)	137.16
Root Mean Square Residual (RMR)	0.060
Standardised RMR	0.063
Goodness of Fit Index (GFI)	0.89
Adjusted Goodness of Fit Index (AGFI)	0.84
Parsimony Goodness of Fit Index (PGFI)	0.60

The p-value associated with the Normal Theory χ^2 value in Table 4.30 (0.0) indicates a significant test statistic ($p < 0.05$). This implies that the structural model is not able to reproduce the observed covariance matrix (Kelloway, 1998).

The RMSEA is 0.073, which indicates reasonable fit. LISREL also provides a 90% confidence interval for the RMSEA (0.056; 0.090), indicating that the hypothesis of close fit is not rejected. The LISREL program also tests the null hypothesis of close fit, which in this case is $H_0: RMSEA \leq 0.05$ is equal to 0.016. Table 4.30 summaries the fit indices. The values of RMR and standardised RMR are 0.06 and 0.063 respectively because the latter value exceeds 0.05 it raises some doubts regarding the model's fit.

Generally, the goodness-of-fit index (GFI) is recommended as the most reliable measure of absolute fit (Diamantopoulos & Siguaw, 2000). In this case, the GFI = 0.89, AGFI = 0.84, and PDFI = 0.60 indicating acceptable fit.

The relative fit indices show 'how much better the model fits compared to a baseline model, usually the independence model (Diamantopoulos & Siguaw, 2000). In this case the NFI = 0.97, NNFI = 0.98, CFI = 0.98, the Relative Fit Index = 0.96, the Incremental Fit Index = 0.98 and the PNFI = 0.76. These indices generally indicate a reasonable fit of the model over the independence model. The CN value is 137.16, which is below the suggested threshold.

4.19 Examination of structural model residuals

Standardised residuals are considered large when they exceed +2.58 or -2.58 (Diamantopoulos & Siguaw, 2000). Large positive residuals indicate that the model underestimates the co-variance between two variables and negative residual shows that the model overestimates the covariance between variables (Jöreskog and Sörbom, 1993). In the present study, the structural model standardised residuals comprised six negative and four positive residuals as shown in Table 4.31.

Table 4.31: Standardised Residuals

	TC_1	TC_2	TCB_1	TCB_2	TCB_3	TCB_4
	-----	-----	-----	-----	-----	-----
TC_1	- -					
TC_2	- -	- -				
TCB_1	0.94	0.94	- -			
TCB_2	0.78	0.78	-1.88	- -		
TCB_3	-2.95	-2.84	0.72	1.92	- -	
TCB_4	1.48	1.32	1.15	-0.25	-1.42	- -
TCB_5	0.23	0.60	-1.05	0.43	0.84	0.00
TE_1	- -	- -	1.89	-0.84	-2.53	0.97
TE_2	0.92	- -	1.34	-0.71	-2.79	0.12
SL_1	1.52	- -	1.17	-0.96	-3.27	0.86
SL_2	- -	- -	1.12	-1.64	-2.59	1.38
SL_3	- -	- -	0.43	-1.02	-4.39	2.10
SL_4	- -	- -	1.23	-0.85	-2.27	3.32
SL_5	- -	- -	2.99	-0.70	-1.95	2.99
Standardised Residuals						
	TCB_5	TE_1	TE_2	SL_1	SL_2	SL_3
	-----	-----	-----	-----	-----	-----
TCB_5	- -					
TE_1	0.34	- -				
TE_2	0.51	- -	- -			
SL_1	-0.38	- -	-0.22	- -		
SL_2	0.68	- -	- -	- -	- -	
SL_3	0.39	- -	1.33	- -	- -	- -
SL_4	1.20	- -	0.08	- -	- -	- -
SL_5	0.99	0.94	0.61	7.96	0.09	- -
Standardised Residuals						
	SL_4	SL_5				
	-----	-----				
SL_4	- -					
SL_5	- -	- -				

Table 4.32 Summary Statistics for Standardised Residuals

Smallest standardised residual =	-4.39
Median standardised residual =	0.00
Largest standardised residual =	7.96
Largest negative standardised residuals	
Residual for TCB_3 and TC_1	-2.95
Residual for TCB_3 and TC_2	-2.84
Residual for TE_2 and TCB_3	-2.79
Residual for SL_1 and TCB_3	-3.27
Residual for SL_2 and TCB_3	-2.59
Residual for SL_3 and TCB_3	-4.39
Largest positive standardised residuals	
Residual for SL_4 and TCB_4	3.32
Residual for SL_5 and TCB_1	2.99
Residual for SL_5 and TCB_4	2.99
Residual for SL_5 and SL_1	7.96

Four large positive standardised residuals and six large negative standardised residuals indicate ten observed covariance terms in the observed sample covariance matrix being poorly estimated by the derived model parameter estimates. An inspection of the variables associated with these standardised residuals reveals no clear specific suggestions for possible model modification. However, the high number of covariance terms poorly reproduced by the fitted model parameters hints at the problems inherent in using the model to explain the theoretical constructs under study.

The distribution of the residuals in the stem-and-leaf (in Figure 4.5) seems to be slightly positively skewed implying that the model might be underestimating the residuals. An examination of the Q-plot (in Figure 4.6) reveals a clear deviation from the dotted line; thereby providing further evidence specification of the model is somehow problematic.

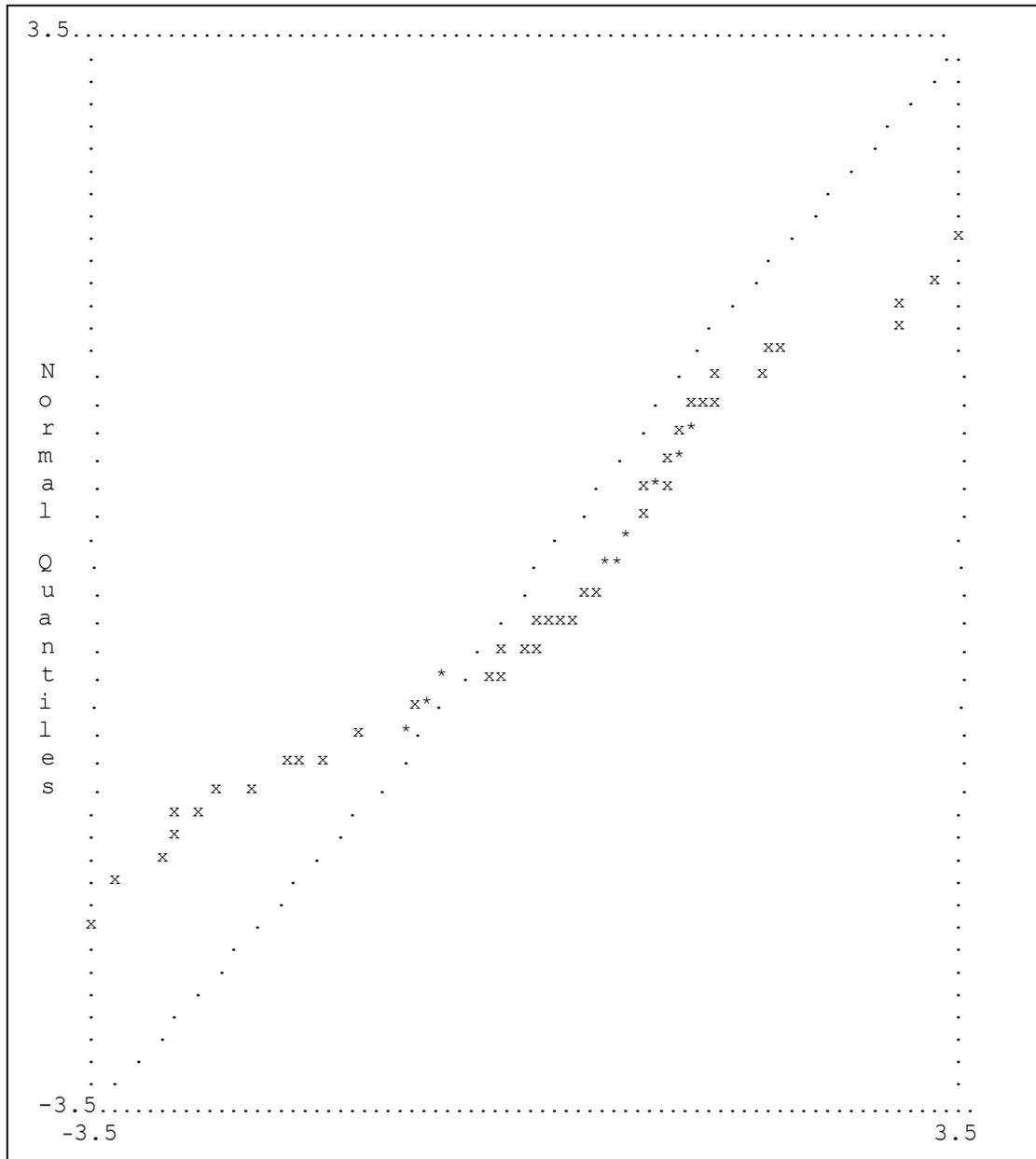


Figure 4.6: Q-Plot of Standardised Residuals

The unstandardised Γ matrix is used to assess the significance of the estimated path coefficients γ_{ij} , expressing the strength of the influence of ξ_j (exogenous latent variables) on η_i (endogenous latent variables). The parameters are significant if ($p < 0.05$) if $t > |1.96|$ (Diamantopoulos & Siguaw, 2000). A significant γ estimate implies that the corresponding null hypothesis is rejected in favour of

the alternative hypothesis. It is important to note that a significant β or γ path coefficient estimate does not imply a causal effect. When using correlational data obtained via an *ex post facto* research design, it is not possible to isolate the empirical system sufficiently enough to label the relationship among the variables as strictly causal (Cliff, 1988). An *ex post facto* design of this nature, therefore, precludes the drawing of causal inferences from significant paths coefficients (Theron, Spangenberg & Henning, 2004). In the present study, the hypotheses that are linked to the gamma matrix are hypothesis one (SL and TE), two (SL and TC) and three (SL and TCB). The gamma matrix is presented in Table 4.33.

Table 4.33: The Completely Standardised Gamma Matrix of Path Coefficients for the Structural Model

GAMMA	
	SERVANT
T-CITIZE	-0.53 (0.25) -2.07
T-COMMIT	0.92 (0.06) 15.37
T-EFFECT	-0.26 (0.18) -1.40

Note: completely standardised path coefficients in bold; standard error estimates in brackets, shaded t-values $\geq |1.96|$ indicate significant parameter estimates

Hypothesis 2: $H_0: \gamma_{21}=0$; $H_a: \gamma_{21}>0$

A very strong significant positive relationship exists between servant leadership and team commitment ($t = 15.37$, $p<0.05$). Therefore, the null hypothesis of no relationship between servant leadership and team commitment is rejected.

Hypothesis 3: $H_0: \gamma_{11}=0$; $H_a: \gamma_{11}>0$

The null hypothesis of no relationship between servant leadership and team citizenship behaviour is rejected ($t = -2.07$, $p<0.05$), while the alternative hypothesis stating the existence of a relationship

between servant leadership and team citizenship behaviour is not rejected. Servant leadership has a slightly strong inverse relationship with team citizenship behaviour.

Hypothesis 5: $H_0: \gamma_{31}=0$; $H_a: \gamma_{31}>0$

The null hypothesis of no relationship between servant leadership and team effectiveness is not rejected ($t = -1.40, p<0.05$), instead the alternative hypothesis is rejected. Servant leadership has a very weak negative effect on team effectiveness.

4.21 The Beta matrix

The unstandardised Beta matrix is used to assess the significance of the estimated path coefficients β_{ij} , expressing the strength of the influence of η_j on η_i . The unstandardised β_{ij} estimates are also significant if ($p<0.05$) if $t > |1.96|$ (Diamantopoulos & Siguaw, 2000). A significant β estimate implies that the corresponding null hypothesis is rejected in favour of the alternative hypothesis. The hypotheses that relate to the Beta matrix in the present study are hypothesis 6, 7 and 8 which allude to (TC and TCB), (TC and TE), and (TCB and TE) respectively.

Table 4.34: The Completely Standardised Beta Matrix of Path Coefficients for the Structural Model

	T-CITIZE -----	T-COMMIT -----	T-EFFECT -----
T-CITIZE	- -	0.89 (0.28)	- -
T-COMMIT	- -	- -	- -
T-EFFECT	0.06 (0.06)	1.06 (0.20)	- -
	0.93	5.37	

Note: Completely standardised path coefficients in bold; standard error estimates in brackets; shaded t-values $\geq |1.96|$ indicate significant parameter estimates

Hypothesis 6: $H_0: \beta_{21}=0$; $H_a: \beta_{21}>0$

The relationship between team commitment and team citizenship behaviour is corroborated ($t = 3.13; p<0.05$) and the sign indicating the direction of the relationship is consistent with the nature of the relationship hypothesised to exist between the two latent variables. Therefore the null hypothesis

of no relationship between team commitment and team citizenship behaviour is rejected in favour of the alternative hypothesis alluding to the existence of a relationship.

Hypothesis 7: $H_0: \beta_{31}=0$; $H_a: \beta_{31}>0$

The relationship between team commitment and team effectiveness is supported ($t = 5.37$; $p<0.05$) and the sign indicating the direction of the relationship is consistent with the nature of the relationship hypothesised to exist between the two latent variables. Therefore, the null hypothesis of no relationship between team commitment and team effectiveness is rejected in favour of the alternative hypothesis. The t value is high enough to suggest a reasonably strong relation between the two constructs.

Hypothesis 8: $H_0: \beta_{32}=0$; $H_a: \beta_{32}>0$

The relationship between team citizenship behaviour and team effectiveness is not corroborated ($t = 0.93$; $p<0.05$). Therefore, the null hypothesis of no relationship between team effectiveness and team citizenship behaviour is accepted, while the alternative hypothesis alluding to the existence of a relationship is rejected.

4.22 Direct and indirect effects

A direct effect, the influence of one variable on another, is represented in a structural model by a single path. An indirect effect assesses the impact of one variable on another as that variable's influence works through one or more intervening variables (Hoyle & Kenny, 1999). It is the effect of an independent variable on a dependent variable through one or more intervening or mediating variables. The sum of the direct and indirect effects of an independent variable, on a dependent variable is the total effect of the independent variable (Kelloway, 1998). An assessment of the indirect effect of the variables under study allows researchers to consider the implications of indirect relationships posited in the model. LISREL computes an estimated standard error and an accompanying t-value for each indirect effect in the model (Diamantopoulos & Siguaw, 2000). On the contrary, Diamantopoulos and Siguaw (2000) warn that the indirect effect statistics should be interpreted with caution when any of the contributing parameter estimates are insignificant.

Table 4.35: Total Effects of KSI on ETA

		SERVANT

T-CITIZENSHIP	0.29 (0.08)	3.43
T-COMMITMENT	0.92 (0.06)	15.37
T-EFFECTIVENESS	0.73 (0.07)	11.24

Note: Completely standardised path coefficients in bold; standard error estimates in brackets; shaded t-values $\geq |1.96|$ indicate significant parameter estimates

The total effect of servant leadership on team citizenship behaviour, team commitment and team effectiveness variables are all significant ($p < 0.05$).

Table 4.36: Indirect Effects of KSI on ETA

		SERVANT

T-CITIZENSHIP	0.81 (0.27)	3.01
T-COMMITMENT		-----
T-EFFECTIVENESS	0.99 (0.19)	5.33

Note: Completely standardised path coefficients in bold; standard error estimates in brackets; shaded t-values $\geq |1.96|$ indicate significant parameter estimates

The indirect effect of servant leadership on team citizenship behaviour and team effectiveness variables are all significant ($p < 0.05$). There are no indirect effects for servant leadership and team commitment latent variables.

Hypothesis 4 and 9

An indirect effect is a sequence of two or more direct effects and is represented visually by multiple arrows (Hair, Black, Babin, Anderson & Tatham, 2006). The relationship of SL and team effectiveness is mediated upon by team commitment and team citizenship behaviour. Hypothesis

four and nine seek to determine whether team citizenship behaviour and team commitment respectively mediate the effect of servant leadership on team effectiveness. According to Hair, Black, Babin, Anderson and Tatham, (2006), the size of an indirect effect is a function of the direct effects that comprise it. In order to determine if team citizenship behaviour and team commitment are significant mediators of the servant leadership-team effectiveness relationship, the following assumptions and calculations were made:

Suppose the following applies:

$$SL = A$$

$$TCB = B$$

$$TC = C$$

$$TE = D$$

From the model the following relations can be discerned

$$(1) A \rightarrow B = (SL \rightarrow TCB) = (-0.53)$$

$$(2) B \rightarrow D = (TCB \rightarrow TE) = (0.006)$$

The indirect effect of A→B→D (SL→TCB→TE)

$$= (0.006 \times -0.53)$$

$$(3) = \underline{\underline{-0.00318}}$$

$$(4) A \rightarrow C \quad (SL \rightarrow TC)$$

$$(5) C \rightarrow D \quad (TC \rightarrow TE)$$

The indirect effect of A→C→D (SL→TC→TE)

$$= (0.92 \times 1.06)$$

$$(6) = \underline{\underline{0.9752}}$$

From equation (3) above, it can be concluded that TCB is not a significant moderating variable of the association of servant leadership and team effectiveness. Therefore, hypothesis four is not supported. However, team commitment is a strong moderator of the effect of servant leadership on team effectiveness, as depicted in equation (6).

Table 4.37 Total Effects of ETA on ETA

	T-CITIZE	T-COMMIT	T-EFFECT
	-----	-----	-----
T-CITIZE	--	0.89 (0.28)	--
		3.13	
T-COMMIT	--	--	--
T-EFFECT	0.06 (0.06)	1.11 (0.18)	--
	0.93	6.20	

Note: Completely standardised path coefficients in bold; standard error estimates in brackets; shaded t-values $\geq |1.96|$ indicate significant parameter estimates

The total effect of team commitment on team citizenship behaviour ($t = 3.13$) and team effectiveness ($t = 6.20$) variables are all significant ($p < 0.05$) while the total effect of team citizenship behaviour on team effectiveness is not significant.

Table 4.38: Indirect Effects of ETA on ETA

	T-CITIZE	T-COMMIT	T-EFFECT
	-----	-----	-----
T-CITIZE	---	---	---
T-COMMIT	---	---	---
T-EFFECT	---	0.05 (0.05)	---
		0.97	

Note: Completely standardised path coefficients in bold; standard error estimates in brackets; shaded t-values $\geq |1.96|$ indicate significant parameter estimates

The indirect effect of team commitment on the team effectiveness variable is not significant ($t = 0.97$, $p < 0.05$). However, due to the nature of the structural model there are no indirect effects for the other endogenous variables.

The ability of the model to account for the variance in the team citizenship behaviour latent variable is problematic. Approximately 20% of the variance is explained by the variables linked to team citizenship behaviour. In contrast, the ability of the model to account for the variance explained by the team commitment and team effectiveness latent variables is satisfactory. Approximately 80% of

the variance on team commitment and 70% of the variance on team effectiveness can be explained in terms of the model.

Table 4.39: The R² for the Structural Equations

	R ²
T-CITIZEN	0.21
T-COMMIT	0.84
T-EFFECT	0.74

4.23 Structural model modification indices

Model modification indices are aimed at answering the question whether any of the currently fixed parameters, when freed in the model, would significantly improve the parsimonious fit of the model. Unfortunately, the structural model did not produce any modification indices.

4.24 Power assessment

According to Diamantopoulos and Sigauw (2000, p.93), power assessment is an often neglected but important issue in model evaluation. Statistical power refers to the probability of rejecting the null hypothesis that the model fits the data given that the null hypothesis is false. When testing a model's fit, via the chi-square test, the probability of making a Type 1 error is emphasised, that is rejecting a correct model.

This probability is captured by the significance level, α , which is usually set at 0.05. The probability of making a Type 1 error therefore refers to the probability of not rejecting the null hypothesis given that the null hypothesis is true. A significant chi-square result indicates that if the null hypothesis is true (that is the model is correct in the population), then the probability of incorrectly rejecting it is low (that is less than five times out of 100 if $\alpha = 0.05$). However, another error that can occur is not to reject an incorrect model. This type of error is known as a Type II error and the probability associated with it is denoted as β . The probability of making a Type II error therefore refers to the probability of not rejecting the null hypothesis given that the null hypothesis is false. The probability of avoiding a Type II error is, therefore, $1 - \beta$ and it is this probability that indicates the power of the

hypothesis test. Thus the power of the test indicates how likely it is that a false null hypothesis (that is the incorrect model) is rejected.

Power analysis is vital for the determination of sample size in model testing. When dealing with large samples researchers face the question of whether a statistically significant chi-square estimate of overall fit implies that serious specification errors are present or whether the test has excessively high power. Non significant chi-squares can occur in the face of substantial specification errors in small samples where the power is more likely to be low. In small samples the model cannot be rejected because even sizable misspecifications would not be detected by the test. On the other hand, if the test is significant but the power is high, then it is imperative to investigate whether the high value of the test statistic is due to gross misspecifications, or to the high sensitivity of the test to even trivial misspecification errors. Problems are also faced when the test is not significant but power is low because one does not know whether the low value of the test statistic reflects the 'correctness' of the model or lack of sensitivity to specification errors.

In the ideal scenario, the null hypothesis would not be rejected under conditions of high power as this would imply that any serious specification errors would have been detected if they had existed (Diamantopoulos & Siguaw, 2000). The above discussion makes it imperative to consider power assessment during model evaluation.

Two types of power calculations can be undertaken. Firstly, the power associated with a test of exact fit (that is, testing the null hypothesis that the model fits perfectly in the population) can be estimated. Secondly, the power associated with a test of close fit can be estimated, whereby the null hypothesis is that the model has a close, albeit imperfect fit with the population. The null hypothesis takes the error due to approximation into account and is regarded as more realistic (Diamantopoulos & Siguaw, 2000, p. 95).

The two ways of calculating power discussed above utilise the RMSEA statistic. If the model fits perfectly in the population the error due to approximation is set at 0. Thus the null hypothesis of exact fit can be represented as $H_0: RMSEA = 0$. A specific value of the alternative hypothesis must be stated since power depends on the specific value of a parameter under the alternative hypothesis.

A reasonable value under H_a is $RMSEA = 0.05$ as values less than 0.05 are indicative of good fit. For the test of close fit the null and alternative hypotheses can be formulated as $H_0: RMSEA \leq 0.05$ and $H_a: RMSEA = 0.08$. A reasonable value to assume under H_a for $RMSEA$ is 0.08 since $RMSEA = 0.08$ is the upper limit for reasonable fit.

Given the information on H_0 , H_a , a significance level (α) of 0.05 and a sample size N , the power of the test becomes a function of the degrees of freedom (v) in the model where $v = \frac{1}{2}[(p+q)(p+q+1)-t] = 105-34 = 71$. Assuming that all the other factors are equal, the power of the test will increase as the degrees of freedom increase (Diamantopoulos & Siguaaw, 2000). MacCallum, Browne and Sugawara (1996) compiled power tables and an SAS program that can be consulted in the determination of power. The use of power tables is the easier option as one can simply read off power estimates associated with different sample sizes and degrees of freedom. However, since not all possible combinations of N and v are listed in the tables for many models and sample sizes, only approximate power estimates can be obtained. The use of the SAS program allows one to specify a value hence it provides greater flexibility in power assessment than the power tables. An SPSS translation of the SAS syntax provided by MacCallum et al. (1996) was used to derive the power estimates for the tests of exact and close fit. In the present study, a significance level (α) of 0.05, a sample size of 194 and the degree of freedom (v) in the model calculated using the formula $\frac{1}{2}[(p+q)(p+q+1)-t] = 71$ were the inputs for the power calculations.

As indicated in Table 4.40, a power value of 0.788 was obtained for the test of exact fit. This power value is reasonably large. In this case the null hypothesis of exact fit is rejected. The power of the test of close fit is calculated to be 0.869 which is high and implies that under the conditions that characterised this specific study, approximately 87% of incorrect models would be rejected. This boosts confidence in the model.

Table 4.40: Power Assessment for the Structural Model for the Tests of Exact and Close Fit

ALPHA	RMSEA(0)	RMSEA (A)	N	POWER	DF
0.0500	0.000	0.0500	194	0.787599	71
0.0500	0.0500	0.0800	194	0.869024	71

4.25 Conclusion

The purpose of this chapter was to present the results of the statistical analyses achieved through the use of the LISREL (version 8.54) and SPSS (version 17.0) statistical packages. The results are discussed in Chapter Five which also provides direction for future studies.

CHAPTER FIVE

DISCUSSION OF RESEARCH RESULTS AND RECOMMENDATIONS FOR FUTURE RESEARCH

5.1 Introduction

The previous chapters focused on the introduction of the research problem, the literature on how the various latent variables relate to influence team effectiveness, the methodology and the results respectively. In this chapter the results presented in Chapter Four are discussed. The present study purported to answer the question, how does servant leadership affect team effectiveness? The specific objectives of the study consequently were to (1) develop an explanatory structural model that explicates the manner in which servant leadership affects team effectiveness, (2) test the model's absolute fit, and (3) evaluate the significance of the hypothesised paths in the model. The conclusions, limitations, recommendations of the study and the direction for future research are included in the present chapter.

5.2 Assessment of model fit

The measurement model fit assesses the extent to which a hypothesised model fits the data and provides information on the validities and reliabilities of the observed indicators (Diamantopoulos & Siguaw, 2000), while the structural part of the model describes the relations among the latent variables. Interestingly, the fit indices for both the measurement and structural models are identical. The goodness-of-fit of the measurement and structural models was assessed through structural equation modelling. After an in-depth analysis of the goodness-of-fit indices, it was concluded that both the measurement and structural models fit the data reasonably well. Further examination of the measurement and structural model residual distribution showed that the distribution of the standardised residuals was positively skewed which hints at the tendency for the model to overestimate the observed covariance terms. An examination of the Q-plot revealed a clear deviation from the dotted line, thereby providing further evidence that the models did not fit perfectly. The modification indices for the measurement model were examined to determine whether any of the currently fixed parameters, when freed in the model, would significantly improve the parsimonious fit of the model. However, the magnitudes of the completely standardised expected parameter changes associated with the fixed parameters in this matrix did not warrant setting any of these parameters free. Although the fit indices were identical for both the measurement and structural

models, no modification indices were produced for the structural model. The fit indices for both models are depicted in Tables 4.23 and 4.30 in Chapter Four. An examination of the R^2 values shown in Table 4.26 revealed above average correlations for most of the indicator variables except for variables TCB_1 (0.47), TCB_2 (0.15), TCB_3 (0.45), TCB_4 (0.30) and TCB_5 (0.54), which were low. This was an indication that the instrument used to measure team citizenship behaviour was somehow problematic. With regard to power assessment, the power value of the test of exact fit (0.788) was reasonably large. In this case the null hypothesis of exact fit was rejected. The power of the test of close fit was 0.869, which is high and thus implied that under the conditions that characterised this specific study, approximately 87% of the incorrect models would be rejected. This boosted confidence in the model.

Hypothesis 1

Table 5.1 Exact and Close Fit Statistics

	SATORRA-BENTLER SCALED CHI-SQUARE (exact fit)	RMSEA (close fit)
Measurement model	144.05 (P = 0.0)	0.073
Structural model	144.05 (P = 0.0)	0.073

As depicted in Table 5.1, the null hypothesis of exact fit was rejected but the null hypothesis of close fit was not rejected in both the measurement and structural models. It can therefore be concluded that the model reasonably reproduces or approximates the observed covariance matrix. The exact and close fit statistics in conjunction with the goodness-of-fit indices enabled the researcher to conclude that both the measurement and structural models fit reasonably well with the data.

Hypothesis 2

A very strong significant positive relationship exists between servant leadership and team commitment ($t = 15.37, p < 0.05$). This implies that high levels of servant leadership are associated with high levels of team commitment in the current data set. This is consistent with the findings reported by Dannhauser (2007) in a study involving sales persons from 100 dealerships working in the South African automobile industry. The confirmation of the relationship is not surprising given the understanding that servant leadership incorporates the ideals of empowerment, total quality, team building, participatory management and service ethic into a leadership philosophy. However,

the findings contradict Drury's (2004) results, which reported a statistically significant inverse but small relationship between servant leadership and organisational commitment.

Hypothesis 3

The null hypothesis of no relationship between servant leadership and team citizenship behaviour is rejected ($t = -2.07, p < 0.05$) while the alternative hypothesis stating the existence of a relationship between servant leadership and team citizenship behaviour is not rejected. Servant leadership has a slightly strong inverse relationship with team citizenship behaviour. The findings suggest team citizenship behaviour decreases as servant leadership increases. This is surprising, since previous studies have documented the positive influence of supportive leadership styles on citizenship behaviour (e.g. LePine, Erez, & Johnson, 2002; Podsakoff, MacKenzie, Paine, & Bacharach, 2000; Schlecker & Engelbrecht, 2006). Ehrhart and Naumann (2004) also emphasise the importance of leadership behaviours for the development of OCB norms and practices in groups. The possible explanation for the inverse negative relationship could be the need for employees to be thrown into the 'deep end' and learn to swim on their own. This, in the long run, creates a sense of creativity and autonomy that fosters the need to engage in extra-role activities although job demands and specifications could limit employees from doing so.

Hypothesis 4

The relationship of SL and team effectiveness is mediated upon by team commitment. Although various studies have failed to confirm a significant effect between servant leadership and team effectiveness, team commitment has been documented as being positively associated with servant leadership. Therefore, deducing from this line of thinking, it is expected that team commitment should be a good mediator of team effectiveness. Commitment is a work attitude and generally attitudes are formed from the process of socialisation and, once formed they are not easily changed. Hence the ability of a servant leader to purposefully develop positive feelings of nurturance, service and employee empowerment probably creates a strong sense of commitment, which subsequently enhances team effectiveness.

Hypothesis 5

The null hypothesis of no relationship between servant leadership and team effectiveness is not rejected ($t = -1.40, p < 0.05$) instead, the alternative hypothesis is rejected. Servant leadership had a

very weak negative effect on team effectiveness. This finding is consistent with the findings of Dannhauser (2007). However, the finding contradicts Irving's (2004) results which reported a significant relationship between servant leadership and team effectiveness at multiple levels. Both the current and Dannhauser's (2007) studies were conducted in South Africa while the Irving (2004) study was carried out in the U.S.A; one is tempted to explain the differences in terms of cross cultural influences.

Hypothesis 6

The relationship between team commitment and team citizenship behaviour is corroborated ($t = 3.13$; $p < 0.05$) and is consistent with the nature of the relationship hypothesised to exist between the two latent variables (O'Reilly & Chatman, 1986; Williams & Anderson, 1991). Therefore the null hypothesis of no relationship between team commitment and team citizenship behaviour is rejected in favour of the alternative hypothesis which alludes to the existence of a relationship. The results indicate that as team commitment increases, so does team citizenship behaviour. In order to enhance extra-role behaviours, organisations have the option of instituting both intrinsic and extrinsic motivational benefits that assure leadership support and, ultimately, culminate in the creation of a work environment in which employees naturally feel accountable for their behaviour and hence engage in behaviour that drives the organisation forward.

Hypothesis 7

The relationship between team commitment and team effectiveness is supported ($t = 5.37$; $p < 0.05$). The association of team commitment and team effectiveness is in line with previous findings (Salas, Goodwin & Burke, 2008). Hence as team commitment increases, team effectiveness is also enhanced. In the present study, it can be argued that team commitment is an "indispensable" component in the functioning of teams. It has been reported, in the preceding discussion, to be vital for the promotion of extra-role behaviours and also as a very strong moderator for the association of servant leadership and team effectiveness. Consequently, as pointed out earlier, the organisation's ability to purposefully influence employees' team commitment is crucial for a team's success. A highly committed team is likely to engage in extra-role behaviours as well as promote effective team functioning.

Hypothesis 8

The relationship between team citizenship behaviour and team effectiveness is not corroborated ($t = 0.93$; $p < 0.05$). Therefore the null hypothesis of no relationship between team commitment and team citizenship behaviour is accepted, while the alternative hypothesis alluding to the existence of a relationship is rejected. This finding is surprising given that team commitment positively affects team citizenship behaviour and subsequently influences team effectiveness. One would naturally expect team citizenship behaviour to influence team effectiveness. However, the possible explanation for the lack of relationship between team citizenship behaviour and team effectiveness could be the lack of a direct relationship. It might be that another variable, such as job satisfaction, actually moderates the relationship between the two. Future studies should look at ways of addressing this research gap.

Hypothesis 9

Hypothesis nine intended to determine whether team citizenship behaviour mediated the effect of servant leadership on team effectiveness. A statistical analysis, based on the assumption that the size of an indirect effect is a function of the direct effects that comprise it, revealed that team citizenship behaviour is not a significant moderating variable of the association of servant leadership and team effectiveness. This might be due to the absence of a direct link between team citizenship behaviour and team effectiveness. Besides, in the current study servant leadership has been reported to have an inverse association with team citizenship behaviour. Another explanation could be that the nature of the sample (teachers) does not believe in offering services that are not paid for in going the “extra mile,” given their relatively low salaries in relation to their already heavily burdened job expectations and work load. They may feel that they are actually wasting their time by engaging in extra-role behaviours.

5.3 Limitations of the study

The use of the English language as the mode of communication posed some challenges as some of the schools refused to participate because the language of the questionnaire was against their official language policy. Although the procedures involved in the translation of standard research instruments is cumbersome, future studies face the challenge of having to address the use of the participants’ mother language in data collection.

The modified Organisational Citizenship Behaviour Scale developed by Podsakoff and Mackenzie (1994) exhibited some low internal consistency coefficients in the present study. With the exception of the sportsmanship subscale (0.710) which was acceptable, the other scales were lower than 0.7 and hence according to Nunnally's (1967) guidelines had limited applicability. Another slightly different issue pertains to the use of the TEQ as a team effectiveness measure. Although the TEQ has good psychometric properties, questions still arise as to whether it indeed measures team effectiveness. Irving (2004) contends that the TEQ was not designed to measure the contextual dimensions of effectiveness.

Another limitation of the study relates to the sample. Most of the participants were drawn from tschools that are predominantly black and coloured and only a small proportion of primarily white schools agreed to take part in the study. The generalisability of the findings therefore is rather limited. Another limitation is the sample itself, i.e. teachers. It could be homogenous and therefore future studies should look at more heterogeneous demographics represented in the sample.

Collecting research data at a single point in time (by making use of a single-point-in-time survey measurement) rather than long-term and continued measurement (e.g. longitudinally over a period of time), may have exacerbated same-source or common method biases. Conversely, prior research, for instance, by MacKenzie, Podsakoff and Fetter (1991, 1993) examined the effects of specifically, OCBs on managerial evaluations, and found that such biases did not appear to be very strong. However, despite this finding Podsakoff and MacKenzie (1994) posit that a longitudinal design could reduce this potential influence. Podsakoff and MacKenzie (1994) state three advantages that a longitudinal study would have over cross-sectional studies such as the one reported in this study. These include the following:

1. It would permit a better assessment of the causal priority of servant leadership, team commitment, and team citizenship behaviour and team effectiveness.
2. It would allow examination of the longer-term effects of servant leadership, team commitment and team citizenship behaviour on team effectiveness; and
3. It would reduce the potential effects of same-source or common method biases.

Rylander (2003) and Arnolds and Boshoff (2004) also called for a movement way from the practice of measurement at a single point-in-time during employment, since organisational constructs (such as the ones used in the present study) cannot optimally be measured by such means.

5.4 Suggestions for future research

Future studies should consider the possibility of expanding the current model by incorporating other latent variables that have been discussed in the literature review as being of relevance. These variables include emotional intelligence, trust and procedural justice.

The studies should also consider using larger sample sizes to ensure that the eventual sample size after addressing the missing values problem is not less than 200, which is the minimum sample size recommended when using structural equation modelling for testing hypothesised models. It also adds value to the study if the researcher considers a multi-group analysis in order to ascertain whether, for instance, the insignificant loadings reported for the team citizenship behaviour scale utilised in the study are due to sample invariance, or to a lack of sound psychometric properties of the instrument. In the current study, the team citizenship behaviour instrument proved to be problematic. Multiple group analysis in structural equation modelling is very useful because it allows one to compare multiple samples across the same measurement instrument or multiple population groups (e.g., males vs. females) for any identified structural equation model. The LISREL program enables the researcher to test whether the groups meet the assumption that they are equal by examining whether different sets of path coefficients are invariant.

5.5 Practical implications

The fit indices obtained for the evaluation of both the measurement and structural models have, generally been reasonably acceptable. From the results obtained in this study it can be concluded that a very weak negative relationship exists between servant leadership and team effectiveness, while significant positive relationships exist between servant leadership and team commitment, team commitment and team citizenship behaviour team and team commitment and team effectiveness. Team citizenship behaviour has a slightly strong inverse effect on team effectiveness. Although the positive relationships are very informative and serve an instructive purpose especially for future research purposes, the negative and weak relationships should not at all be ignored.

However, against the prior discussion and interpretation of the results, these results could be ascribed mainly to the specific sample (teachers) that was used for this study.

The major contribution of the present study relates to the human resource function specifically in the formulation of credible and valid psychological explanations of the behaviour of employees and of how interventions can be instituted to demonstratively affect efficient and equitable improvement in the behaviour/performance of employees. The findings of the study generally emphasise the central role played by team commitment in the quest to understand the factors at play when employees perform their roles. Servant leadership is also recommended as one of the people-oriented leadership styles that fosters employee development and has a significant influence on team effectiveness when employees feel committed to their work. Team commitment also enhances employees' engagement in extra-role behaviour. However, in the current sample it appears that the employees' attitude towards performing unpaid for extra role behaviours is negative. In order to resolve this issue, a sense of pride and nurturance in one's chosen profession has to be developed.

5.6 Conclusion

The relationship between servant leadership and teams is a promising area for professionals concerned with enhancing the functioning of teams regardless of the research design. Servant leadership incorporates the ideals of empowerment, team building, participatory management and the service ethic necessary for the promotion of people-oriented skills. The variables that have been utilised in the present study are both context dependent and context sensitive. It is hoped that the practical implications of the present study will contribute immensely to the advancement of human potential. Directions for future research have been suggested for the continuous improvement of team dynamics in the workplace.

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APPENDIX A: QUESTIONNAIRE
THE RELATIONSHIP BETWEEN SERVANT LEADERSHIP, TEAM
COMMITMENT, TEAM CITIZENSHIP BEHAVIOUR AND TEAM
EFFECTIVENESS: AN EXPLORATORY STUDY.

Dear Participant

Purpose Of The Study

The objective of the study is to understand how leadership style and certain behaviours affect work team effectiveness. The questionnaire attempts to tap some information on how your team functions. In this study, the term **team leader** refers to the **Principal** and the **teachers** constitute **the team members**. Please respond as truthfully as possible to all the questions and statements.

Rights Of Participants

Participation in this study is voluntary, you may therefore not be forced, to complete the questionnaire and you may at any moment decide to withdraw.

You will not be required to identify yourself. The information obtained during this study will not be utilised to identify participants and will not be used for any other purpose.

By completing the attached questionnaire you are confirming that you understand your rights and that you give permission that your results may be utilised to investigate the research.

Thank you in anticipation.

Bright Mahembe

Department Of Industrial Psychology
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SECTION A: BIOGRAPHICAL INFORMATION

Demographic Data

Please provide, for statistical purposes, the following information about yourself. Tick the appropriate response.

Q1. Gender

1. Male	
2. Female	

Q2. Age

1. Below 20	
2. 21 -30	
3. 31 - 40	
4. 41 -50	
5. Above 50	

Q3. Language

1. English	
2. Afrikaans	
3. Xhosa	
4. Venda	
5. Ndebele	
6. North Sotho	
7. South Sotho	
8. Zulu	
9. Tswana	
10. Other (specify)	

Q4. Ethnic Group

1. Black (African)	
2. Coloured	
3. White	
4. Indian	
5. Other (<i>specify</i>)	

Q5. Highest Qualification Obtained

1. Secondary school	
2. Standard 10 or equivalent	
3. Post school certificate	
4. Diploma/Degree	
5. Other (<i>specify</i>)	

Q6. How long have you been in your current position?

1. Less than 1 year	
2. 1 – 5 years	
3. 6 – 10 years	
4. 11 – 15 years	
5. Above 15 years	

Q7. Religious Orientation

1. Christian (Catholic)	
2. Christian (Protestant)	
3. Islamic/Muslim	
4. Jewish	
5. African Traditional	
6. Hindu	
7. Buddhist	
8. Other (Specify)	

**Please proceed to the next set of questions.
Remember to read the instructions carefully before you begin.**

SECTION B: Servant Leadership

The following statements describe how team leaders typically think, feel and act at work. In responding to the statements you will provide us with information about how YOUR team leader/Principal typically deals with situations in the workplace. For each statement, please indicate the degree to which you agree or disagree with the statement, in terms of your Team Leader/Principal's behaviour in the workplace. You need to choose your reaction to each statement from one of seven options for each statement, ranging from "Never" (number 1) to "Always" (number 7). Respond to each statement by crossing the number that best reflects your view. Work quickly and try to answer as accurately as possible. There are no right and wrong answers. Read each statement carefully and choose only ONE answer! **FOR EXAMPLE:** If you feel the following statement describes how your team leader mostly behaves, and then make your cross in block number 6 (as illustrated below).

Statement	Never	Seldom	Sometimes	Unsure	Often	Mostly	Always
b1. My Team Leader (Principal) provides opportunities for independent action.	1	2	3	4	5	6 X	7
b2. My Team Leader (Principal) puts my interests ahead of his/her own.	1	2	3	4	5	6	7
b3. My Team Leader (Principal) does everything s/he can to serve me.	1	2	3	4	5	6	7
b4. My Team Leader (Principal) is one I would turn to if I had a personal trauma.	1	2	3	4	5	6	7
b5. My Team Leader (Principal) seems alert to what is happening.	1	2	3	4	5	6	7
b6. My Team Leader (Principal) offers compelling reasons to get me to do things.	1	2	3	4	5	6	7
b7. My Team Leader (Principal) is good at anticipating the consequences of decisions.	1	2	3	4	5	6	7
b8. My Team Leader (Principal) is good at helping me with my emotional issues.	1	2	3	4	5	6	7
b9. My Team Leader (Principal) has great awareness of what is going on.	1	2	3	4	5	6	7
b10. My Team Leader (Principal) is very persuasive.	1	2	3	4	5	6	7
b11. My Team Leader (Principal) believes that the organisation needs to play a moral role in society.	1	2	3	4	5	6	7
b12. My Team Leader (Principal) is talented at helping me to heal emotionally.	1	2	3	4	5	6	7
b13. My Team Leader (Principal) seems very much in touch with what is going on.	1	2	3	4	5	6	7
b14. My Team Leader (Principal) is good at convincing me to do things.	1	2	3	4	5	6	7
b15. My Team Leader (Principal) believes that our organisation needs to function as a community.	1	2	3	4	5	6	7
b16. My Team Leader (Principal) sacrifices his/her own interests to meet my needs.	1	2	3	4	5	6	7
b17. My Team Leader (Principal) is a person that could help me mend my feelings of resentments.	1	2	3	4	5	6	7
b18. My Team Leader (Principal) is gifted when it comes to persuading me.	1	2	3	4	5	6	7
b19. My Team Leader (Principal) sees the organisation for its potential to contribute to society.	1	2	3	4	5	6	7

b20. My Team Leader (Principal) encourages me to have a community spirit in the workplace.	1	2	3	4	5	6	7
b21. My Team Leader (Principal) goes above and beyond the call of duty to meet my needs.	1	2	3	4	5	6	7
b22. My Team Leader (Principal) seems to know what is going to happen.	1	2	3	4	5	6	7
b23. My Team Leader (Principal) is preparing the organisation to make a positive difference in the future.	1	2	3	4	5	6	7

SECTION C: Team Commitment

Please think about your team and your role in the team and react honestly to the listed statements. For each statement, please indicate how strongly you agree or disagree with the statement. React to each statement by crossing the number of the box that best reflects your views and how you feel. There are seven possible responses to each statement ranging from "I Strongly Disagree" (number 1) to "I Strongly Agree" (number 7). Indicate your response by placing a cross (X) on the scale value that best describes your response.

Statement	Strongly Disagree	Disagree	Slightly disagree	Undecided	Slightly agree	agree	Strongly agree
c1. I consider myself to be a team member.	1	2	3	4	5	6	7
c2. I am happy working in this team.	1	2	3	4	5	6	7
c3. Working as part of this team is important to me.	1	2	3	4	5	6	7
c4. I regret having been involved in this team.	1	2	3	4	5	6	7
c5. I do not feel a strong sense of "belonging" to this team.	1	2	3	4	5	6	7
c6. I dislike teamwork.	1	2	3	4	5	6	7
c7. I am enthusiastic about being in this team.	1	2	3	4	5	6	7
c8. This team has great personal meaning for me.	1	2	3	4	5	6	7
c9. I do not feel very involved in this team.	1	2	3	4	5	6	7
c10. I do not feel emotionally attached to this team.	1	2	3	4	5	6	7
c11. I really feel as if this team's problems are my own.	1	2	3	4	5	6	7
c12. I have put too much into this team to consider changing it now.	1	2	3	4	5	6	7
c13. Changing teams would be difficult for me to do.	1	2	3	4	5	6	7
c14. There are no pressures to keep me from changing teams.	1	2	3	4	5	6	7

c15. Changing teams now would require considerable personal sacrifice.	1	2	3	4	5	6	7
c16. I feel I have too few options to consider leaving this team	1	2	3	4	5	6	7
c17. It would be very hard for me to leave this team now, even if I wanted to	1	2	3	4	5	6	7
c18. If I had not put so much of myself into this team, I might consider changing teams	1	2	3	4	5	6	7
c19. It would be very disruptive for me personally if I chose to leave this team right now.	1	2	3	4	5	6	7
c20. It would be costly for me to change from this team now	1	2	3	4	5	6	7
c21. Right now, staying with this team is a matter of necessity as much as desire	1	2	3	4	5	6	7
c22. I believe people who have been trained for teamwork have a responsibility to stay in that team for a reasonable period of time	1	2	3	4	5	6	7
c23. I do not feel any obligation to remain in this team.	1	2	3	4	5	6	7
c24. I feel a responsibility to the team to continue in it.	1	2	3	4	5	6	7
c25. I would feel guilty if I left the team.	1	2	3	4	5	6	7
c26. The team deserves loyalty	1	2	3	4	5	6	7
c27. I feel I ought to remain in my team.	1	2	3	4	5	6	7
c28. Even if it were to my advantage, I do not feel it would be right to leave my team now.	1	2	3	4	5	6	7
c29. I owe a great deal to my team	1	2	3	4	5	6	7
c30. I would not leave my team right now because I have a sense of obligation to the people in it.	1	2	3	4	5	6	7
c31. This team produces the right quantity (amount) of work.	1	2	3	4	5	6	7
c32. This team produces the right quality (standard) of work.	1	2	3	4	5	6	7
c33. This team produces work cost effectively	1	2	3	4	5	6	7
c34. I am content within this team.	1	2	3	4	5	6	7
c35. I am satisfied within this team.	1	2	3	4	5	6	7

SECTION D: Team/Organisational Citizenship Behaviour

Please respond to the following statements by indicating the extent to which you agree or disagree with each statement. Indicate your response by placing a cross (X) on the scale value that best describes the way you feel.

Statement	Strongly Disagree	Disagree	Slightly disagree	Undecided	Slightly agree	Agree	Strongly agree
d1. I help others who have heavy workloads	1	2	3	4	5	6	7
d2. I can be described as the classic “squeaky wheel” that always needs greasing.	1	2	3	4	5	6	7
d3. I believe in giving an honest day’s work for an honest day’s pay.	1	2	3	4	5	6	7
d4. I try to avoid creating problems for co-workers.	1	2	3	4	5	6	7
d5. I consume a lot of time complaining about trivial matters.	1	2	3	4	5	6	7
d6. I keep abreast of developments in the organisation.	1	2	3	4	5	6	7
d7. I tend to make problems bigger than they are.	1	2	3	4	5	6	7
d8. I consider the impact of my actions on co-workers.	1	2	3	4	5	6	7
d9. I attend meetings that are not mandatory but are considered important.	1	2	3	4	5	6	7
d10. I am always ready to lend a helping hand to those around me.	1	2	3	4	5	6	7
d11. I attend functions that are not required, but help the organisation image.	1	2	3	4	5	6	7
d12. I read and keep up with organisation announcements, memos, e.t.c.	1	2	3	4	5	6	7
d13. I help others who have been absent.	1	2	3	4	5	6	7
d14. I do not abuse the rights of others.	1	2	3	4	5	6	7
d15. I willingly give my time to help others who have work related problems.	1	2	3	4	5	6	7
d16. I tend to focus on what is wrong with my situation rather than the positive side.	1	2	3	4	5	6	7

d17. I take steps to try to prevent problems with other workers.	1	2	3	4	5	6	7
d18. My attendance at work is above the norm.	1	2	3	4	5	6	7
d19. I always find fault with what the organisation is doing.	1	2	3	4	5	6	7
d20. I am mindful of how my behaviour affects other people's jobs.	1	2	3	4	5	6	7
d21. I do not take extra breaks.	1	2	3	4	5	6	7
d22. I obey rules and regulations even when no one is watching.	1	2	3	4	5	6	7
d23. I help orient new people even though it is not required.	1	2	3	4	5	6	7
d24. I am one of the most conscientious employees.	1	2	3	4	5	6	7

SECTION E: Team Effectiveness

Please respond to the following statements by indicating the extent to which you agree or disagree with each statement. Indicate your response by placing a cross (X) on the scale value that best describes the way you feel.

Statement	Strongly Disagree	Disagree	Slightly disagree	Undecided	Slightly agree	Agree	Strongly agree
e1. Achieving the team goal is a higher priority than any individual objective.	1	2	3	4	5	6	7
e2. The team has an established method for monitoring individual performance and providing feedback.	1	2	3	4	5	6	7
e3. The team possesses the essential skills and abilities to accomplish the team's objectives.	1	2	3	4	5	6	7
e4. There is a clearly defined need - a goal to be achieved or a purpose to be served - that justifies the existence of the team.	1	2	3	4	5	6	7
e5. Team members trust each other sufficiently to accurately share information, perceptions, and feedback.	1	2	3	4	5	6	7
e6. The team exerts pressure on itself to improve performance.	1	2	3	4	5	6	7

e7. The team is given the resources it needs to get the job done.	1	2	3	4	5	6	7
e8. The Team Leader (Principal) provides the necessary autonomy to achieve results.	1	2	3	4	5	6	7
e9. Our Team Leader (Principal) is willing to confront and resolve issues associated with inadequate performance by team members.	1	2	3	4	5	6	7
e10. Our leader is open to new ideas and information from team members.	1	2	3	4	5	6	7
e11. Our leader is influential in getting outside constituencies - for instance the next level of management, board, industry, media - to support our team's effort.	1	2	3	4	5	6	7

Thank you for your participation in this survey. We value your input!