

AN ANALYSIS OF THE INFLUENCE OF LEADERSHIP ON THE PERFORMANCE OF EMPLOYEES IN A CEMENT FACTORY IN THE NORTH WEST PROVINCE OF SOUTH AFRICA

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Declaration

I, Thomas More Jabulani Thelingwani solemnly declare that the contents contained in this research mini-dissertation in partial fulfilment of the requirements of the Master in Business Administration are my own work.

Signed: 

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A handwritten signature in black ink, appearing to be 'T. Thelingwani', with a stylized, cursive script.

Thomas Thelingwani

Abstract

The purpose of this study was to investigate the relationship between leadership and performance of subordinates in a cement factory. The research focussed on servant leadership as it is a leadership which can make real changes in industries in South Africa and yet it is not fully explored. While a lot of research has been done on servant leadership, very little has been done to investigate the how servant leadership affects performance of subordinates in industry environment. The present study therefore sought to answer how servant leadership influences performance of subordinates in industrial environment. Servant leadership dimensions namely servant leadership culture, servant leadership style, relationship that exists between servant leader and follower and the perception of followers on servant leadership were measured and correlated against performance of subordinates. Pearson (r) correlation analyses were used to examine the relationship between servant leadership dimensions mentioned above and performance of subordinates. A statistically significant and positive correlation was found between servant leadership and performance for the dimensions of servant leadership tested. The tests proved that the stronger the existence of servant leadership in an organisation the better the performance of subordinates.

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Chapter 1

Introduction

1.0 Introduction

Every organisation aims to maintain competitive edge over its rivals by responding to internal and external factors that impact on its performance. External environment factors include the state of the country's economy, the political situation and the effects of globalisation. Internal factors are those factors that are entirely within the control of the organisation such as leadership, strategies, staff retention, and skills development. Although performance of an organisation is a function of the efforts of almost everybody in the organisation, the greatest impact on performance depends on how the leaders in the organisation direct the activities of others. According to Diliza (2006), Chief Executive officer of the South African Chamber of Mines, an organisation can only succeed through its leaders making use of the full potential of their subordinates. The relationship through which one person influences the behaviour of other people is what is known as leadership. The research concentrated on the South African context and environment.

On scanning the South African internal environment in the human resources arena, effective leadership ranks high in those organisations that are on the top list in terms of performance. In the book "Meet the CEOs" Barron et al.(2006), Tom Boardman, one of South Africa's most influential Chief Executive Officers who was responsible for transforming the Nedbank group into a successful banking corporation, concedes that only way to improve the bottom line is through better leadership, a leadership based on listening, understanding and empathy.

1.1 Background to the study

South Africa comes from a historical background of separate existence between racial groups both in the work place and outside the working environment. The historical background sheds some light on cultures that exists in industry today. Some companies have put a lot of effort in the transformation process leading to different culture shifts, yet some have moved very slowly. These culture shifts are primarily depended on the leadership at the helm of the organisations. The research explored

the kind of cultures fostered by successful leaders. Relationship between a leader and a subordinate acts as a catalyst in the performance of an organisation, yet we often find challenges in these relationships in South Africa. As an example the black leader to white subordinate relationship is sometime marred by elements of mistrust and if not managed properly can lead to less performance.

Organisations in some cases share the same natural resources used as raw materials for their processes yet one organisation makes use of the resources better than the other. The common factor is the people who are gathered to render the service for which the corporations are enfranchised. These corporations are run by a multitude of people ranging from low level to Chief executive Officers. It is the belief of the researcher that the people who direct performance are the leaders of these corporations. The research therefore focused on how the leaders of these companies conduct their business.

The “Voluntaristic Perspective (Child, 1972)” assumes that organisational leaders are directly responsible for organisational outcomes. The studies of Meindl, Ehrlic and Dukerich (1985) and Cannella and Menroe (1997) emphasise the importance of leadership expertise in an organisation. The research carried out by Fordham Graduate School of Business on the high lights of good performance at Infosys in 2000, the leadership style of Narayana Murthy, the Chief Executive Officer described as humble, straight forward, belief in sharing wealth with employees and leading by example played a big role in placing Infosys as the most admired company in India. This is well supported by theories of Servant Leadership developed by Robert Greenleaf (1977) which postulates that a leader should lead with agapao love, humility, trust, by being visionary for the followers, through empowering and serving the followers. The above demonstrates that leadership plays a role in the performance of followers. Leadership therefore deals with influencing the followers to perform better with the ultimate aim of achieving organisational objectives. Leaders lead teams of people and it is important that these teams are cohesive and are aligned to achieving organisational objectives.

The Hay Group (2007) in conjunction with the Fortunes magazine (2007) conducted research on World’s most admired companies and published the reasons for the

strong reputations. The most admired Companies Survey sheds light on what makes an organisation earn prestigious reputation. Hay Group has done the survey for the last ten years. Seven key areas in which the admired companies do well have been identified as success through people, strong organisation culture, profound employee engagement, strategy that gets executed, managed innovation, balance in local and global presence and long term focus. The common denominator in these seven key areas is good leadership in the respective areas. The focus in these most admired companies is development of leaders to ensure sustainable development. Jack Welsh, former CEO of General Electric, the highest scoring most admired company summarised it in the following words, "My main job was developing talent. I was a gardener providing water and other nourishment to our top 750 people, of course, I had to pull out some weeds, too" (Hay Group Survey, 2007:8). This statement provides very vividly leadership role in an organisation: to give direction and alignment of people to business strategies.

The findings by the Hay group in 2007 sheds some light on what is required to rank top on the list of admired companies. The summary of findings indicated that the most admired companies prepared for unexpected resignations (forced or voluntary) of CEO and other top executives. These top companies also managed to plan for executive leadership transitions. Finally, the 2007 report also reviewed that most admired companies defined critical leadership competencies and groom internal talent for future leadership roles. According to the Hay group survey, leaders in most admired companies take a "hands on" approach to development of future leaders. Laffley, by Chairman and CEO of Procter & Gamble states, "The people we hire, and the focus we put on their development as leaders, are critical to P & G's ability to innovate and compete. Nothing I do will have a more enduring impact on P & G's long term success than helping to develop other leaders."

In South Africa, a scan of the most successful Chief Executive Officers shows that their organisations pay a lot of attention on the leadership domain. In the book "Meet the CEOs", by Barron et al. (2006) Zeth Malele, Chief Executive Officer of Aliva.com, a leading IT company in South Africa believes in "respect the individual, deal with them with integrity but stay focused on unleashing the energy within them to achieve your objective." Dr Mokone – Matabane, CEO of Sentec, a telecommunications

company in South Africa, also confirms, "You need to be a good listener because, as a leader you cannot do it alone. You need a team to do the job."

Revelations by Brian Molefe, CEO of the public Investment Corporation in South Africa helps to shed some light on the challenges that face South Africa today. According to Molefe entrepreneurship was an avenue that was not accessible to blacks in those days. What then needs to be done to make black leaders accepted in corporations? What also needs to be done to make the white counterparts accept that black leaders are equally competent? This challenge has not been properly researched in South Africa; hence the research seeks to establish what relationship needs to prevail in South African organisations to solve the bitterness associated with the past.

1.2 Problem Statement

Collins (2001) challenged the notion that people are your most important assets and instead postulated, the right people are. The question is therefore, what are the qualities of the right people and what is it in them that enable them to turn their theoretical skills into practical solutions in order to drive performance of their organisations?

Many companies base their improvement plans only on updating the technology used in the process of manufacturing consumer goods and pay less attention to the human resources assets. The results of pursuing this kind of strategy normally yields only short term gains. The better performing companies have sophisticated programs for developing people talents to enhance performance. In the paper "Management of Human Assets at Infosys", an Information technology company voted as the most admired company in India in 2000, the high performance achieved by Infosys is attributed to the company's belief that "Human resources represent the collective expertise, innovation, leadership, entrepreneurial and managerial skills endowed in the employees of an organisation."

The research therefore sought to analyse how leadership influence the performance of employees in the cement industry.

1.3 Research Questions:

The main question for this study is:

- ❖ How does leadership influence the performance of subordinates in the cement factory?

The following sub-questions are raised:

- ❖ How is leadership perceived by subordinates in the cement factory?
- ❖ What kind of relationships develop between subordinates and their leaders in a cement factory?
- ❖ In what ways does a leader facilitate better performance in a cement factory?
- ❖ What kinds of cultures are fostered by successful leaders in a cement factory?

1.4 Justification for the study

The purpose of the research is to further the body of knowledge on leadership influence on the performance of employees. The South African industries are the benefactor of the research as they are plagued with historical problems that do not have concern for people. Leaders of any organisation can also benefit from the recommendations for improving performance that will come out of this research.

1.5 Definition of terms

Reliability-

Running hours / (Running hours + Stoppage time). Reliability is an international key performance indicator used in the Cement industry. It is a measure of how well a piece of equipment will run continuously after factoring out constraints that arise which are not under the control of the factory. Levels of reliability above 95% are regarded as good.

Leadership-

Relationship through which one person influences the behaviour of other people.

CEO

CEO stands for Chief Executive Officer and refers to the top manager of a company with executive duties as a director.

Performance

A measure of how effective a unit is at producing the required outputs

Culture

Culture simply refers to how things are done in an organisation, as an example the “Lafarge way”. Lafarge believes in people development, encouraging employees to perform at their best and sustainable development.

OLA

Organisational Leadership Assessment

Cement factory

The cement factory belonging to Lafarge situated in Lichtenburg, North West Province, South Africa

Servant Leadership

Servant leadership refers to a practical altruistic philosophy which is exhibited by leaders with genuine regard and care for the welfare of their followers. These leaders put the welfare of their followers first and are prepared to lose what they possess in pursuit of other's interests.

1.6 Assumptions of the study

The following assumptions are made in the study:

- ❖ It is assumed that all factors are supportive of a performing environment; hence no adjustments will be made for external impacts like economy, political, legal and technological.
- ❖ Other internal factors like staff-turnover, teamwork, finance, skills and machinery impact insignificantly on performance compared to leadership.

1.7 Scope of the Research

The research was carried out in a cement factory situated in Lichtenburg, which is in the North West Province of South Africa. This is the biggest single cement factory in South Africa employing 393 people. The levels of management at this factory can be divided into three, line supervision (supervisors), middle management (Engineers), senior managers (Heads of Departments). The Plant Manager is responsible for directing the activities of heads of departments.

1.8 Overview of the research

The research paper consists of five chapters. Chapter 1 introduces the background, problem statement, research questions, justification for the study, assumptions of the study and scope of the research. Chapter 2 covers the known literature on leadership while Chapter 3 is mainly concerned with the Research Methodology. The results of the research are presented and analysed in Chapter 4. Finally Chapter 5 presents the summary of findings, recommendations and conclusions

Chapter 2

Literature Review

2.0 Introduction

Despite the advice available from the theories on leadership and motivation a lot of organisations still underperform. It is also difficult to understand why departments in the same organisations perform differently despite common vision on leadership targeted by the same organisation. Most of the theories presented in the existing literature tend to be task oriented and fail to give the required attention to people aspects of leadership. It is the belief of the writer that servant leadership addresses this gap in leadership and was therefore is focused on in the research. The global economy continues to insist on quality at low cost. The only way to do this in a sustained way is through the empowerment of people. The empowerment of people can only come through a high trust culture and an empowerment philosophy that converts bosses into servants and coaches. A low trust culture that is characterised by high control management, political posturing, protectionism, cynicism and adversarialism cannot cope with the dynamic global market. This, unfortunately still characterises structures and systems in place in South Africa today. Servant leadership offers solutions to the changing environment and will continue to increase its relevance.

A comparison of servant leadership with other theories of leadership is presented in this chapter to show how servant leadership can make a difference in the situation in South Africa. It is worth mentioning at this stage that existing theories think about the task and then plan beating people the required methodologies of performing the tasks. The approach of servant leadership is the other way round- people first then the tasks.

2.1 Overview of Chapter 2

The chapter opens by giving the general definition of leadership and its relationship to productivity. As outlined in Chapter 1, the focus of the research is on how servant leadership influences the performance of subordinates in a cement factory. A review

of how servant leadership is perceived by subordinates is carried out. The chapter will discuss:

- 1) The kind of relationships that exist between servant leaders and their followers.
- 2) An in depth review of how a servant leader facilitates performance
- 3) Lastly, the kind of work culture fostered by servant leaders is reviewed.
- 4) Empirical studies on servant leadership elsewhere

2.2 Leadership definition

Leadership is defined as “a social influence process in which the leader seeks the voluntary participation of subordinates in an effort to reach organisational goals” (Kreitner and Knick, 2004:595). The emphasis in this definition is the discretionary effort that comes out of followers that are given the right direction and quality of leadership. This discretionary effort increases the productivity in an organisation. Through effective leadership people are motivated to stretch targets on their own. They are not content until they beat the previously set record output. This is exhibited at different levels in an organisation and is not only a function of top managers.

Leaders create an enabling organisation culture and work place atmosphere, which is conducive for goal achievement. They inspire, coach, motivate and develop their followers to succeed. Leaders are not contented with the status quo but rather continually challenged, are innovative, visionary and more concerned with long-term view of the organisation. Organisations are always faced or forced to review their strategies from time to time. Successful organisations manage the change management process well and stay ahead of their competitors. Ability to change or lead change is a strength that is characteristic of effective leadership.

There are various types of leadership styles available. Examples are situational leadership, transformational and Charismatic. These styles have already been tried and are mostly task oriented. Servant leadership however has different approach as it focuses on people first. South Africa is going through a challenging phase in terms of

people management. It is therefore the belief of the researcher that servant leadership will make a difference in the South African context. The focus of the research was therefore being on servant leadership.

2.2 Theoretical Framework

2.2.1 What is Servant Leadership?

Servant leadership refers to a practical altruistic philosophy which is exhibited by leaders with genuine regard and care for the welfare of their followers. These leaders put the welfare of their followers first and are prepared to lose what they possess in pursuit of other's interests. The motivation is to increase others' welfare. The thrust in Servant Leadership is to foster collaboration, trust, foresight, listening, and ethical use of power and empowerment. In the book "Servant Leadership, A Journey into nature of legitimate power and greatness" , Greenleaf (1977) states that the role of a manager has changed from one who "drives results and motivation from outside in, to one who is a servant leader- one who seeks to draw out, inside out." (Greenleaf 1977:3). This means the leader is more interested in the growth and development of the follower than just the use of coercive methods of getting the job done.

Another way of vividly explaining Servant leadership is through the use of moral authority (or conscience). Servant leaders believe in moral authority whereas traditional managers survive through ego management. According to Greenleaf (1990), ego "focuses on one's own survival, pleasure and enhancement to the exclusion of others, ego is tyrannical, despotic and dictatorial. " Conscience on the other hand "sees life in terms of service and contribution, in terms of others' security and fulfilment.

Green leaf (1970) developed the philosophy of servant leadership which centres on giving priority to others even at the expense of own welfare. In an essay on "The Servant as leader" Greenleaf (1970:7) says "The servant –leader is servant first It begins with the natural feeling that one wants to serve, to serve first. Then conscious choice brings one to aspire to lead. That person is sharply different from one who is leader first, perhaps because of the need to assuage power drive or to acquire

material possessions. The leader first and the servant first are two extreme types. Between them there are shadings and blends that are part of the infinite variety of human nature.”

The difference between leader first and servant first can best be explained by the care for followers manifested in the servant first. Servant leaders therefore ensure that other people’s priority needs are being served. According to a test developed by Greenleaf (1970), the following questions should be answered:

- ❖ Do those served develop as persons?
- ❖ Do they, while being served become healthier, wiser, freer, more autonomous?
- ❖ What is the effect on the least privileged in society?
- ❖ Will the persons served benefit or at least not further be deprived?

Patterson(2003) defines the seven constructs of servant leadership ,defining servant leaders as “those leaders who lead the organisation by focusing on their followers, such that their followers are the primary concern and the organisation concern are peripheral ”(Patterson 2003:5). In defining the seven constructs Paterson (2003) suggests that “the servant leader demonstrates agapao love, act with humility, is altruistic, is visionary for the followers, is trusting, empowers followers, and finally is serving.” Leaders with agapao love respect each employee as a person with wants, needs and desires. An analysis of the above definition of agapao love in leaders is consistent with leaders who motivate their employees to perform better.

Patterson (2003) states that humble leaders realise that they must leave into the world everything they own including the intellectual knowledge. Passing on of knowledge and experience improves the skills of the followers leading to better performance. Humble persons are eager and willing to listen to the opinions of others. This leads to most optimal solutions to problems.

According to Cleamer (2003), servant leaders energize people by working for them and are of the opinion that people are not things to be manipulated, labelled, boxed, bought and sold. They must be treated as people with talents that can be further developed.

Altruism is a motivator in servant leadership. It refers to the art of placing others before oneself. Monroe (1994: 862) defined altruism as "behaviour intended to benefit another, even if it means sacrificing personal welfare." This principle can be interpreted as a selfless dedication to the improvement of the follower performance which naturally leads to organisational performance.

According to Farling, Stone and Winston (1999), it is extremely crucial that leaders understand clearly that it is their function to serve others. They postulate that leaders get satisfaction through motivation to serve on behalf of others. Farling, Stone and Winston (1999) proposed the following test for servant leadership.

- ❖ As a leader do people believe that you are willing to sacrifice your own self interest for the good of the group?
- ❖ Do followers see that you are willing to consider their ideas?
- ❖ Do you understand what is happening in your followers' lives?
- ❖ Do people consult you in times of traumatic experience?
- ❖ Do you have strong awareness of what is happening?
- ❖ Do others contribute their ideas in your presence?
- ❖ Do others believe that you are preparing the organisation to make positive difference in the world?
- ❖ Do you help people to grow and do you develop them?
- ❖ Are you visionary for the followers?

Servant leadership approach is therefore consistent with organisational performance. It is not a concept that is easy to apply to all leaders in an organisation. However, the more servant leaders you have the better the people issues are addressed. Practical examples in the world are also available. The selfless dedication displayed by Nelson Mandela to the struggle of the African people in South Africa is an outstanding example of display of servant leadership qualities. According to Benson (1994), Nelson Mandela stated from the dock during the Rivonia trial Mandela in 1964 "during my lifetime I have dedicated myself to the struggle of the African people. I have fought against white domination, and I have fought against black domination. I have cherished the ideal of a democratic and free society in which all persons live together in harmony and with equal

opportunities. It is an ideal which I hope to live for and to achieve. But if needs be, it is an ideal for which I am prepared to die.”

2.2.2 What kinds of cultures are fostered by servant leaders to promote organisational performance?

Introduction

Servant leadership, when fully implemented in an organisation bears fruit in a number of ways. Workers experience the organisation as a servant minded organisation characterised by authenticity, valuing and developing of people, the building of community and the providing and sharing of positive leadership. The people are trusted and are trustworthy throughout the organisation. They are motivated to serve each other's interest before their own self interest and learn willingly from each other. Leaders and workers view each other as partners working in a spirit of collaboration. The culture fostered by servant leaders is analysed in the following sections. The analysis is done from the view point of the worker, combined worker management view, the teams, the leadership, and from general outlook.

The workers

When servant leadership is visible in an organisation the workers are valued for who they are and what they offer to the organisation. They are considered as human capital and are encouraged to develop their potential to the fullest. Both leaders and workers listen to each other and joint decision making in some important matters is done. Relations are strong and healthy and diversity is valued.

The team

People are willing to work together and a high level of community is displayed. The working environment is positive and alive. Followers and leaders work together in collaboration than in competition.

General culture

People are open and accountable, honest, have integrity. This is a people first environment in which risks are encouraged, failure can be learned from and creativity is encouraged and the environment is characterised by open and effective communication.

The outlook

Organisations that are led by Servant leaders attract well motivated workers. The outlook is positive and full of hope for success. Continuous improvement is a value that is enshrined in servant oriented organisation.

The leadership

Power and leadership are shared and workers are encouraged to take part in important decisions. Goals are clear and well aligned. The vision of the organisation is known to all and shared in the entire organisation.

Feedback Process

From the body of knowledge through studies and surveys it has been established that employees have a big appetite to know how they have performed. As an example, if a lecturer gives feedback to a student as to how the standard of performance measures against competitive standards the student is motivated to reach high standards. This can be compared to following up on individual objectives with feedback program directed at letting the employees know how they are performing against set goals. Kreitner and Kinick (2004: 326) define two functions of feedback – instructional and motivational. Instructional feedback clarifies or teaches new behaviour. Feedback motivates when it serves as a reward or promises reward. This is consistent with servant leaders' belief that only objective feedback yields better performance. It is therefore expected that effective leaders lead through providing objective feedback to their followers to enhance their performance. The following questions were therefore asked in each department at a cement factory where research was conducted to establish the leaders' ability to provide objective feedback:

- ❖ Does the feedback relate to existing performance goals and expectations?
- ❖ Is the feedback linked to any measurable results?
- ❖ Is there feedback given on time?
- ❖ Does the feedback focus on performance and not personality?
- ❖ Is the feedback based on accurate and credible information?

2.2.3 Ways a Servant Leader facilitates better performance of followers

Greenleaf (1977) proposes that there are ten characteristics that describe a Servant leader. These are briefly described below.

2.2.3.1 Listening

In this attribute of Servant leadership the leader makes a commitment to intently listen to the views of others. According to Greenleaf (1977), this includes being in touch with one's own inner voice and seeking to understand what one's body, spirit and mind are communicating. Servant leaders are excellent listeners. They are receptive and genuinely interested in the views, ideas and input of others. The perception of the followers towards the servant leaders is that they are interested in their ideas; hence they voluntarily give forward their good ideas. Servant leaders also make their followers feel that they are valued and that their contribution is required.

2.2.3.2 Empathy

Servant leaders can walk into the shoes of their followers. They understand and empathise with others' circumstances and problems. This is a skill that usually comes more naturally to some managers but pertinent to servant leaders. Servant leaders ask the right questions in order to read, guess and interpret the non-verbal cues of their followers. By feeling empathy for their followers servant leaders get emotional information about them and their situation.

Goleman (1998:100) states "social skills allows leaders to put their emotional intelligence to work in that the leader's job is to get work done through people and social skills make that possible." He further explains that social skills persuade others to respond to leadership through influence, communication that is inclusive of listening and convincing messages, inspiration and guidance. Goleman (1998:100) also suggests that emotional intelligence skill of empathy plays a key role in serving others through identifying another's stated and unstated need and matching it to the appropriate product or service.

In the book, *The Empathic Physician*, Zinn (1993:306), describes empathy as meaning “the process of understanding a person’s subjective experience by vicariously sharing that experience while maintaining an observant stance.”

The medical profession probably gives a more concise meaning of empathy. Platt (1992) developed the following steps for effective empathy:

- ❖ Recognise the presence of strong feeling like anger, fear, disappointment
- ❖ Pause to imagine how the patient is feeling
- ❖ State your perception of how the patient is feeling
- ❖ Legitimise that feeling
- ❖ Respect the patient’s effort to cope with the predicament
- ❖ Offer support and partnership

2.2.3.3 Healing

Potential for healing oneself and others is a major strength of Servant Leadership. It is a powerful force for transformation and integration. This is particularly relevant in the South African context which is marred by a bitter past history of apartheid. Servant leaders are available to their followers when something is troubling the followers. They have the necessary emotional intelligence to assess the health and spirit of followers.

2.2.3.4 Awareness

According to Greenleaf (2003), general and self awareness strengthens the servant leader. Awareness is a measure of ability to sense what is happening around. Servant leaders are always looking for information about what is taking place in the environment with the objective of advising their followers on which course of action to pursue.

2.2.3.5 Persuasion

A servant leader believes in the use of persuasion as compared to utilisation of position authority. The principle of persuasion is based on having a gentle non judgemental argument with people to ensure that a wrong is righted by individual voluntary action. Servant leaders never force others to do things but are rather naturally persuasive. They use their ability of persuasive conversations to the fullest

to get people around them to create a successful future. Servant leaders also believe that leadership mastery is accomplished by discovering and developing distinctions in language use during persuasion. In the newsletter "Lead with vision, Live on Purpose", George (2005: 1) says "Leaders make a difference by creating possibilities and breakthroughs. They do this through the way they speak and listen. The conversations they start change the world around them, in small and big ways."

2.2.3.6 Conceptualisation

Servant leaders have the ability to dream for their followers. Greenleaf (1977) refers to servant leaders as people who can "dream great dreams" for their followers. Conceptualisation refers to the art of looking beyond the known beliefs, assumptions, prevailing theories and habitual conclusions. In the paper entitled "Conceptualisation: The route to relevance and depth" Greenleaf (1977) defines conceptualisation as "the use of particulars to illuminate (bring to light within the mind) a generalisable idea or construct and also as the act of thinking through and seeing beyond existing ideas to discover higher order ideas from within one's own mind."

2.2.3.7 Foresight

According to Greenleaf (1977), foresight means "ability to understand the lessons from the past, the realities of the present, and the likely consequences of a decision in the future." Servant leaders have the ability to see what the future looks like and take the required precautions to ensure that the potential harm of their followers is minimised. They do this by scanning patterns in the environment and anticipate consequences of decisions with accuracy.

2.2.3.8 Stewardship

Stewardship in Servant leaders comes from the care they take for their followers. They always hold something in trust for their followers. The term stewardship comes from medieval times when a steward was assigned the responsibility of grooming a young prince to become a successful king. Servant leaders have a strong sense of stewardship as they have a desire to prepare the people in the

organisation so that they contribute to the greater good of the society. They prepare followers to make a positive difference in the world.

2.2.3.9 Commitment to the growth of people

Individual development plans for followers are the documents that are placed high on the agenda and kept most up to date by Servant Leaders. They believe that all people have something to offer and that their talents should be identified and improved continuously. They work hard to develop people spiritually, personally and professionally.

2.2.3.10 Building community

The last characteristic of servant leaders according to Greenleaf (1977) is building teams that can work cohesively together. Servant leaders have a strong sense of community spirit and believe an organisation needs to function as a community. Laub (1999) argues that working collaboratively with others is one of the primary means by which servant leaders build community.

2.2.3.11 Empowering

Patterson (2003) states that servant leadership dimension of empowerment is one of the primary pathways used by servant leaders in supporting followers in goal clarification and attainment. Patterson (2003:24) writes “by empowering followers, servant leaders are allowing them the freedom to proceed toward their goals, helping them make their dreams reality.”

2.2.3.12 Humility

Patterson (2003) describes humility in servant leadership as a leader’s ability to grasp the idea of not knowing, understanding, or having all answers. This then makes the leader believe in continuous self evaluation of one-self before others. One of the defining characteristics of human nature is the ability to discern one’s own faults, to be broken as the result of such faults, and in response to seek a meaningful change.

2.2.3.13 Vision

Servant leaders dream for their followers and convert these dreams into reality. They want to see their followers potential put to great use. Greenleaf (1977:5) states “For

something great to happen there must be dream. Behind every achievement there is a dreamer of great dreams.” The dreamer is the servant leader.

2.2.4 Empirical studies on servant leadership

2.2.4.1 Western Michigan schools study

Kelly and Williamson (2003) conducted a study in 42 schools in Western Michigan in the United States to examine the relationship between servant leadership, school climate and student achievement. They used the Organisational Climate Description Questionnaire for secondary schools developed by Hoy, Tarter, and Kottkamp (1991) to assess school climate. To measure perceptions of servant leadership they used the servant leadership profile developed by Page and Wong (2000). Student achievement data was collected from the Michigan Department of Education. Statistical tests were carried out to determine the relationship between student achievement (dependent variable) and servant leadership, school climate as independent variables.

The study concluded that the greater the behaviours of the principal fit into a servant leadership model, the more the value of the openness of school climate. It was also found that the more open the school climate was, the better the student achievement. Servant leadership behaviour was found to be a significant predictor of student achievement. In other words, the value of servant leadership behaviour was directly proportional to student achievement.

This research seeks to explore the influence of servant leadership on the performance of employees in a cement factory. The above study therefore provides some insight into the methodology for measuring servant leadership, climate fostered by servant leaders. The student achievement measurement is comparable to performance measurements in the production departments and reliability measurements in the maintenance department.

2.2.4.2 An inductive model of servant leadership –study

The objective of the study was to understand the phenomenon of servant leadership in organisations by exploring its generic values and attributes. The values shared by well-known servant leaders were then extended to work situations.

In this study a sample of servant leaders from history was considered. The study consisted of the following together with a brief description of the importance of the above in history is necessary:

Dr Martin Luther King

Dr Martin Luther King changed the American government's position about racism.

Mother Theresa

She was a comforter of the sick, the old, the poor, and looked after children consigned to dustbins.

William Booth

He was born in economic and spiritual poverty and yet he founded a worldwide organisation dedicated to their destruction.

Abraham Lincoln

Abraham Lincoln is well-known for his peaceful struggle for freedom from slavery.

Dr Albert Schweitzer

He is remembered for his humanitarian work in Africa.

Eleanor Roosevelt

His achievement was in regard to greater rights for women, children, Blacks and the poor in America.

In this study Chin and Smith (2006) summarised the attributes exhibited by these great men and women (servant leaders) of the world. It was established that all of them exhibited altruism. They were always willing to give for no financial compensation. Their missions bore some risk to their lives and yet they still performed their tasks with passion and perseverance. They gave their time and had visions. Other attributes found in them included commitment, love, forgiveness, justice, boldness, exemplary, serving, self controlled, inspirational, encouraging, humility, wisdom, peaceful, listening, articulate mentoring and integrity.

2.2.4.3 Becoming a servant leader – study by University of Nebraska

The above study, “Becoming a servant leader” by Barbuto and Wheeler (2007) had the objective of investigating what characteristics make a servant leader.

From this study it was also concluded that some of the characteristics of servant leadership come more naturally to some people than others. Calling, empathy, healing and stewardship are more difficult to learn and grow. The other characteristics like listening, awareness, foresight and growth are learnable skills. In summary the study concluded that the following are characteristics of a servant leader: calling, listening, empathy, healing, awareness, persuasion, conceptualisation, foresight, stewardship, and growth and building community.

2.2.4.4 Servant leadership in sports- a concept whose time has arrived. Eastern Washington University

The purpose of the study was to examine the impact of Servant Leadership coaching behaviour on: athlete motivation, athlete satisfaction, athlete’s psychological profile for sport. Participants were drawn from two universities as follows: 251 athletes: 135 male, 110 female, 6 no response, mean age 19.76 years

The conclusion of the study was thus: Athletes who identify their coach as having a servant leadership style were more task oriented, they perceived more choice, had more interest and enjoyment and as a result gave more effort. The athletes who identified with servant leadership perceived less tension and pressure as well. On the coaches’ side, those with servant leadership style produced athletes who were more motivated, mentally tougher and more satisfied.

Other studies in sport found the more effective school superintendents were found to possess servant leadership and that servant leader characteristics correspond to preferred leader behaviour of their subordinates, the more empowered athletes had servant leaders as their coaches, modern day athletes prefer leaders who seek input regarding team decisions, provide positive feedback and recognition, exhibit sensitivity

to athletes needs in and out of sport setting and demonstrate an athlete centred attitude.

2.2.4.5 A study of followers in Ghana and the USA: Exploring Servant Leadership across Cultures

Hale and Fields (2007) explored the extent to which followers in Ghana and the USA have experienced the three servant leadership dimensions in a work station and the extent to which followers relate leadership dimensions to judgements about leadership effectiveness . The three servant leader constructs investigated are:

Service, Humility, and Vision.

Data for the study came from working sixty adults studying in Ghana and ninety seven from the United States of America studying in seminaries.

Leader effectiveness was measured using a six item scale developed by Ehrhart and Klein (2001) which assessed leader performance, leader's style, whether the follower enjoyed working with the leader, how well the leader got along with the follower, the extent to which the follower admired the leader and how close the leader was close to follower's ideal leader.

Servant leadership was measured by using 18 items adapted from Patterson (2003). The 18 items were designed around service to followers, humility in interaction with followers and involvement of followers in establishing vision.

The study concluded that: There were no significant differences in the effects of service and humility between the Ghanaian and USA samples. Vision had a significantly stronger relationship with leader effectiveness for Ghana. Followers in Ghanaian culture exhibit view leaders who provide less vision as inadequate and ineffective. Ghanaians experience servant leadership less frequently than North Americans. The study is particularly relevant to the current research as most African cultures share the same cultural values and history of western colonisation. The impact of servant leadership in South Africa is therefore more likely to be the same as in Ghana.

2.2.4.6 Servant leadership in church and non profit making business

The objective of this study was to investigate the relationship between servant leadership and team effectiveness. To collect data Delphi methods were used. This method utilised the expert knowledge of 200 church leaders, whose opinions were sought on the research study. Irving (2004) examined 200 leaders in churches and non profit making business and found that servant leadership characteristics correlated strongly with team effectiveness.

2.2.4.7 Servant leadership and organisational commitment

The objective of the study was to test theory of servant leadership in three organisational constructs namely: Job satisfaction, organisational commitment and perceptions of servant leadership by employee level.

The research design tested three hypotheses:

Hypothesis 1:

There is a difference between categories of employees in their perception of servant leadership.

Hypothesis 2:

There is correlation between servant leadership and job satisfaction.

Hypothesis 3:

There is correlation between servant leadership and organisational commitment.

Luab's OLA (1999) Organisational Leadership assessment and Meyer et al (1991)'s organisational commitment scales were used. 170 employees took part which was a 76% response rate. Drury (2004) found that there is a significant difference between employees at various position and roles in the organisation in their perceptions of servant leadership across the organisation. A positive correlation was found between servant leadership and job satisfaction for all levels of workers. Drury (2004)'s work proved that there is a negative correlation between servant leadership and commitment.

2.2.4.8 The relationship between servant Leadership, trust, team commitment and demographic values- University of Stellenbosch- South Africa (August 2006)

The study by Dannhauser and Boshoff (2006) was undertaken to investigate the relationship between the levels of servant leadership as perceived by followers, trust in organisation, management and colleagues, and team commitment. The study also explored whether demographic variables had any impact on follower perception of the level of servant leadership of their leaders, trust and commitment.

Participants were drawn from an automobile retail organisation owning 100 dealerships in South Africa. Certain criteria was decided on as to which dealer was appropriate for the study for example, strong balance sheet, business strategies and people orientated.

For purposes of data collection, Sales Managers were treated as the leaders and sales persons as followers. Data gathering was done by means of a combination of three questionnaires: The Rater version of the Barbutto and Wheeler (2005) Servant leadership questionnaire; The Feres (2001) Workplace Trust Survey and; the team commitment survey developed by Bennett (1997).

The Rater version of Servant leadership Questionnaire was made up of 23 items largely made up of questions addressing altruistic calling, emotional healing, wisdom, persuasive mapping and organisational stewardship.

The work place trust survey comprised 36 items measuring trust in organisation, trust in the manager and trust in co workers. The team commitment survey consisted of 11 items measuring the team's dedication to the organisation.

The following were concluded in the study: Servant leadership, trust and team commitment are related. Team commitment is more influenced by trust in colleagues than in the manager. Demographic influences have no significant influence on Servant leadership.

2.2.4.9 Exploring Ubuntu and the African Renaissance

A conceptual Study of Servant leadership from an African Perspective

Creff (2004) investigated Ubuntu, the African Renaissance and how future partnerships and organisational intervention could be viewed from the perspective of a thorough knowledge and respect for African culture, while advancing a servant leadership approach.

A connection was found between Ubuntu and Servant leadership. The common values and characteristics are “collectivist rather than individual focus”, a focus on the individual rather than a corporation, humility, altruism, trust, empowerment, commitment to a leader and service.

2.2.4.10 Team effectiveness and six essential servant leadership themes

– Study at Regent University

The objective of the study done by Irving (2006) was to investigate the impact of servant leadership on team effectiveness. In particular the study focused on how the six essential servant leadership themes impact on team effectiveness. The six themes utilised in this study are: Supporting and resourcing, Providing accountability, Engaging in honest self evaluation, Fostering collaboration, Communicating with clarity and Valuing and Appreciating.

The study was conducted in non-profit making organisation and over 700 participants were involved. The research sample was collected from 1800 members through email. This ensured random sampling. 740 responses were received and only 719 could be used for analysis giving a response rate of 40.5%. The Organisational Leadership Assessment tool (OLA) developed by Laub in 1998 was used to measure the servant leadership attributes while the Team Effectiveness Questionnaire was used for measuring team effectiveness. The OLA (Laub, 1998) assessment tool tests for six servant leader attributes. The six attributes are valuing people, building community, developing people, displaying authenticity, providing leadership, sharing leadership. The Team effectiveness Questionnaire (Irving & Longbitham, 2006)

focused on the following: team goal achievement, team contributions and team cohesion.

The study established the following: Leadership which provides support and resources is a significant predictor of team effectiveness. Leadership that holds people accountable for reaching their work goals is a significant predictor of team effectiveness. Secondly leadership that honestly evaluates itself before evaluating others is a significant predictor of team effectiveness. Organisations which encouraged getting workers to work together rather than competing against each other show a significant predictor of team effectiveness. Communicating clear plans and goals for the organisation is a significant predictor of team effectiveness. Lastly leadership that makes employees feel appreciated by their supervisor for what they contribute is a significant predictor of team effectiveness.

2.2.5 Measuring performance of employees

The research objective is to establish the relationship between servant leadership and performance of employees. The literature review would therefore not be complete without performance of employees being measured. Performance and its measurement are therefore dealt with in the following sections.

2.2.5.1 Performance of employees

Traditionally performance of employees was based on financial measures. Financial objectives alone do not adequately measure the health of an organisation and a single pursuit of financial objectives could lead to long term ruin. Various other ways of measuring performance of employees are in use. The Goal approach by Denisen, (1990) and systems approach by Eccles (1991) provides good examples. The two approaches do not do as good a job as the Balanced Scorecard approach and Performance Index instrument. The last two will be described in more detail in the following sections.

Balanced Scorecard Approach

According to Bergen and Benco (2002), the balanced scorecard approach measures an organisation's performance from four key perspectives: financial, customer, internal business processes, learning and growth. Improvement in employee learning

and growth results in improved internal business processes which leads to better outputs, customer satisfaction and better market share.

The modern approach is to convert organisations into learning organisations. Balanced Scorecard measures for learning and growth emphasise on employee capabilities, motivation and empowerment. According to Houldsworth (2006), employee capabilities can be defined in a competency model made up of five clusters: personal effectiveness cluster, cognitive cluster, achievement cluster, influence cluster and management cluster. In the personal effectiveness cluster self-control, self-confidence, organisational commitment, flexibility, and interpersonal understanding are measured. In the cognitive arena, technical expertise, information seeking, analytical thinking and conceptual thinking are focused on. The achievement cluster seeks for innovation, initiative and customer service orientation. In the influence cluster, relationship building and organisational awareness are measured. Finally the management cluster is concerned with teamwork, developing others and directiveness.

Metrics based on internal business process aim to provide the customer with need satisfying commodities at the right quality and time. Output metrics and meeting quality specifications fall into this category.

Nearly every business entity aims to please the customer as dissatisfied customers will find new suppliers. Chabrow (2003), Holloway (2002) and Needleman (2003) emphasise the increasing importance of customer focus and customer satisfaction. The applicable metric for the purposes of this research is customer satisfaction and the research focused mainly on internal customer satisfaction.

The fourth perspective in the Balanced Scorecard approach is financial. The traditional metrics are operating income, economic value added and return on investment. Cost control and staying within budget is still critical in business.

The Balanced Scorecard approach has a number of strengths. It focuses on company's strategic direction. The performance measures relate to the mission of the

company. It enables employees to understand their role in impacting the company bottom line.

Development of a Questionnaire for assessing work unit performance: Study done at University of Stellenbosch, South Africa

Spangenberg and Theron (2004) carried out a study to develop a generic work unit performance measure that could be used in the private and public sector. A sample was drawn from part time MBA students from the University of Stellenbosch. The students came from middle management positions in the companies they worked for. 60 students participated out of the 115 students. Unit performance was assessed by superiors, peers and subordinates of these managers. A total of 257 completed performance index questionnaires were received.

The performance index instrument developed consists of eight dimensions. The first one is related to productivity and measured outputs like goals, quantity and quality. Core people process is the second dimension and has to do with communication, organizational interaction, conflict management, and idea generation, integrity, learning through feedback and rewarding performance. Work unit climate assessment measures teamwork, work group cohesion, agreement on core values, achievement related thinking, and commitment of the unit. Employee satisfaction dimension focuses on empowerment, and career progress. Adaptability centres on the flexibility of the unit and innovation. Capacity reflects the financial control and income generating ability of the unit. Market share dimension is concerned with customer satisfaction and responsiveness. Lastly growth dimension focuses on future potential of the unit. The above constructs were simplified for ease of understanding of the respondents in the performance questionnaire.

2.2.6 Conclusion on Literature Review

Servant leadership is a long term, transformational approach to work and life that has potential for creating a positive change in South Africa. The main strength of Servant leadership is concern for and service to followers. Servant leaders are effective because the needs of the followers are looked after so that they reach

their full potential. This translates to followers performing at their best. Servant leadership forces organisations from self-serving, domineering leadership and makes those at the helm of organisations think harder on how to respect, value and motivate people under them.

Bennis (1987) defines Servant leadership as a counterbalance to the glorification, deification, and lionisation of leaders who have neglected or forgotten what they are there for. It is easy for organisations to get totally consumed with the bottom line, with financial stakeholders, and not with workers, not with all the clawed cartography of people whose lives are affected by the organisation. This is what Servant Leadership can provide solution to. Servant Leadership is about “the nature of legitimate power and greatness” (Greenleaf, 2003: 28). It is about searching for people’s capabilities and possibilities rather than their limitations.

In conclusion servant leadership, if applied in South African Industries can accelerate the employment equity issues and the correction of the imbalance of the past by focusing on the growth of the followers. It would provide a win more win more solution. The companies would gain through greater productivity arising out of committed and dedicated workers. The workers would gain out of the growth focus and the requirements of the affirmative action would be met with ease. This is true because the days of managing by the stick are very limited and do not produce long term results.

Chapter 3

Research Methodology

3.0 Introduction

- ❖ There are two very critical variables in the process of designing the research methodology. These are independent and dependent variables. Performance is therefore the dependent variable. The performance is influenced by subordinate perception of the servant leadership existing at the cement factory in which the research was carried out. It is also influenced by the relationship that exists between subordinates and their leaders. The extent to which servant leadership facilitates better performance is also a factor to be considered. Finally, the culture at the cement factory also impacts on the performance. Questionnaires were used to probe answers for the research questions from respondents. Statistical tools, in particular Pearson correlation tests were utilised to assess the relationship between dependent and independent variables (Refer to appendix 8).

3.1 Chapter overview

This chapter is structured as follows:

- ❖ Introduction
- ❖ Context of study
- ❖ Definition of the variables
- ❖ Sampling
- ❖ Methods of data collection for independent variable
 - Reliability and validity issues
- ❖ Method of data collection for the depended variable
 - Reliability and validity issues
- ❖ Data analysis
- ❖ Ethical considerations

3.2 Context of study

The research was carried out in a cement factory situated in Lichtenburg, which is in the North West Province of South Africa. This is the biggest single cement factory in South Africa with 393 permanent employees. The choice of this factory appeared relevant because it is where the researcher is working. It is also situated in an area previously dominated by Afrikaans speaking whites. Leadership was therefore not necessarily following servant leadership principles but was influenced by racial origins. The researcher also chose this particular factory to cut down on time and costs.

3.3 Definition of variables

The variables are therefore defined as follows:

3.3.1 Dependant variable

Performance, in this research is the dependant variable

3.3.2 Independent variable

The independent variables are:

- ❖ Perception of the subordinates on existence of servant leadership at the cement factory
- ❖ Existing servant leader relationships between leaders and subordinates
- ❖ Servant leadership existence at the cement factory
- ❖ Servant leadership culture at the cement factory

3.4 Sampling

Webster (1985) defined a sample as a finite part of a statistical population whose properties are studied to gain information about the whole. In this research it is a set of respondents (employees) selected from a larger population (393 employees at a cement factory). The selected sample assessed the variables. Sampling was used because it was more economical and saved time.

3.4.1 Sampling size

3.4.1.1 Selection of samples

The sample was drawn from skilled personnel from a cement factory. Respondents came from all departments at a cement factory namely: Maintenance, Production,

Process, Quality, Human Resources, Purchasing, and Packing. The skilled category consisted of employees from Hay grade 8 to Hay Grade 16. The basis for selecting this group was the language barrier in the lower grades as English is not the normal language of communication. The sample population was a total of 111. Out of the 111, 55 people were from the Maintenance department and 56 from other departments as detailed in tables P1 and M1 below. The performance at factory level is more a function of how line supervisors lead their direct reports. The research was therefore focused on how the line supervisors and their teams perform.

3.4.1.2 Production, Quality, Human Resources, Purchasing and Process Sample

The sample from the non-maintenance departments will be as follows;

Table P1

	Production	Quality	HR/Safety	Packing	Purchasing	Process/Env
No of workers	16	5	2	4	2	0
No. line Managers	5	2	5	0	4	5
Section Managers	1	1	1	1	0	1
Total	22	8	8	5	6	6
Total Non Maintenance			55			
Demographics						
	Production	Quality	HR/Safety	Packing	Purchasing	Process
Ladies		3	2	0	3	2
Men		6	5	6	3	3
Whites		3	2	3	6	0
Asians, Blacks, Coloureds		6	2	3	0	5

3.4.1.3 Maintenance Sample

The eight engineering teams each consisting of 5 people were used as samples for obtaining information on independent variables. The table below summarises the information on the Maintenance sample:

Table M1

	K3	CM	PP	BS	MS	Elec	Meth
No of workers	7	5	3	4	3	12	13
No. line Managers	1	1	2	1	1	3	0
Total	8	6	5	5	4	15	13
Section Managers	1					1	1
Section Total	26					16	14
Grand Total	56						
Demographics							
	K3	CM	PP	BS	MS	Elec	Meth
Ladies	0	0	0	0	0	0	3
Men	8	6	5	5	5	15	11
Whites	7	5	5	5	4	9	11
Asians, Blacks,	1	1	0	0	0	6	3

3.4.1.4 Age distribution on the Sample

Table AD1

Section	Average Age
Production	36.8
Eng Methods	43
Eng Packing	41.6
Eng Cement Mills	36.5
Eng Machine Shop	43
Eng Boiler shop	48.5

Quality	39.8
Electrical	40
Eng PCS	36.7
Process	31.5
Safety	36.1
Packing	35.8
HR	37.5
Purchasing	46

3.5 Method of data collection for dependent and independent variables

For both dependant and independent variables questionnaires were used to collect data. A brief description of the use and advantages of using questionnaires is outlined below.

3.5.1 What is a questionnaire?

Questionnaires probe respondents for their opinions or feeling about a particular work situation or influence that a particular person has on others. A questionnaire should be well developed so as to solicit the most accurate information sought.

(http://www.cc.gatech.edu/classes/cs6751_97_winter/Topics/quest-design - 30/09/2008)

3.5.2 Advantages of questionnaires

Questionnaires have been chosen for measurement of leadership effectiveness for two main reasons: They are easy to administer confidentially. Confidentiality is essential to ensure respondents give their honesty opinions. They avoid approaching people with embarrassing questions. The second reason is that questionnaires are inexpensive to administer and they also optimise time usage. Each respondent receives identical set of questions and this helps to interpret from a large number of respondents. Questionnaires are also designed so that answers to questions are scored and the scores can be analysed to measure opinions of the respondents.

Further respondents have enough time to consider their responses carefully without interference from an interviewer as an example.

(Questionnaire Design: http://www.cc.gatech.edu/classes/cs6751_97_winter/Topics/quest-design - 30/09/2008)

3.5.3 Disadvantages of questionnaires

Questionnaires are standardised and this makes it impossible to explain any points in the questions that participants might misinterpret. Respondents may also respond superficially especially if the questionnaire is too long. If the participant does not see any benefit there will be less motivation to provide information. In a work place employees might think that they might be penalised by giving their real opinion. In this study this disadvantage was dealt with by making the questionnaire anonymous. One of the biggest setbacks of questionnaires is that there is no real possibility for follow up on answers. Further, if the designer of the questionnaire forgets to ask a question it is not practical to go back to the respondents, especially if they are anonymous. Respondents may also misunderstand the questions due to poor design of the questionnaire or simply language problem.

(Source: http://www.icbl.hw.ac.uk/lti/cookbook/info_questionnaires/index.html 2008/10/27)

3.5.4 Rating key

5= strongly agree ;4= Agree ;3= Undecided;2= disagree ;1= strongly disagree

3.6 Design of Questionnaires- Independent variable

The questionnaire design was based on servant leadership attributes from the literature review. The details of the attributes used are as detailed in the questionnaires in appendices. The empirical studies reviewed also shed some light on methods of sampling and measuring servant leadership constructs. However two instruments for measuring servant leadership attributes were found to be the most powerful. The two are: The Organisational Leadership Assessment tool (OLA) developed by Laub (1998) and the Conceptual Framework for Measuring Servant Leadership developed by Page and Wong (2000). The above two measuring tools deserve some explanation and this will be done in the following sections.

3.6.1 Organisation Leadership Assessment

Laub (1998) developed the Organisational Leadership Assessment (OLA). The purpose of the instrument is to measure how servant leadership practices and beliefs impact on ways people perform in their organisation. The instrument is designed for use by all levels in the organisation, workers, managers and top managers. The questions are designed for easy of understanding at any level in the organisation. To explain the reason for selecting this instrument and the power of this instrument the psychometric properties are reviewed in the following sections.

Psychometrics

OLA possesses the following psychometric properties:

Construct Validity

Construct Validity was determined by a panel of experts called together to determine the necessary and essential attributes of servant leadership. A Delphi process was used to bring the experts to consensus on the constructs that symbolise the servant minded organisation.

Reliability

Horsman (2001), Thompson (2002 and Ledbetter (2003) carried out reliability tests and obtained scores higher than the original 0.9802 on the Cronbach- Alpha coefficient. The above test shows that OLA has a high reliability

Item Analysis

Original field tests by Laub (1999) and Ledbetter's study (2003) showed the lowest item to item correlation of 0.41 and the highest of 0.77. This shows that all items have strong correlation with the instrument as a whole.

Test –Retest

Ledbetter (2003) conducted a test –retest study on the OLA and found a significant correlation between the Test and Retest indicating that the validity of OLA remains consistent over time. Both the Test and Retest were significant at statistical $p < 0.01$

Job Satisfaction Scale

Horsman (2001) and Thompson (2002) found a strong correlation between OLA score and the Job Satisfaction scale.

3.6.2 The Conceptual Framework for Measuring Servant Leadership

Page and Wong (2000) developed the Conceptual Framework for Measuring Servant Leadership (CFMSL). The purpose of this instrument is to assess servant leadership existence in an organisation. The instrument is divided into four sections. Section 1 deals with character orientation of the leader. It is concerned with cultivating servant attitude and focuses on the leader's values, credibility and motive. This section also addresses servant leadership attributes of integrity, humility, and servanthood. Section 2 is people oriented and is concerned with developing and caring for people. The focus is on empowering, developing and caring for people. Section 3 is task oriented and is concerned with visioning, goal setting and leading. Lastly Section 4 is process oriented and deals with increasing organisational efficiency. The focus is on modelling, team building and shared decision making.

Psychometrics

Page and Wong (2000) calculated the statistical alpha values for each of the subscales in the 4 sections already described above in a pilot study done on 18 students enrolled in a leadership course. The alpha coefficients were as follows:

Total	0.937
Integrity	0.796
Humility	0.656
Servanthood	0.761
Caring for others	0.714
Empowering others	0.765
Developing others	0.916
Visioning	0.569
Goal setting	0.768
Leading	0.837
Modelling	0.763

Team building	0.815
Shared decision making	0.802

Interpretation of the above results

An alpha coefficient of 0.70 or higher indicates acceptable levels of internal reliability and this means all the items in the same category measure the same attribute. The visioning attribute shows alpha value less than 0.70 which indicates an unacceptable level of reliability. In this research the questionnaires have been designed using the OLA and CFMSL. This takes care of the visioning low reliability as additional measuring items have been imported from OLA.

3.6.3 Questionnaires – independent variables

From the literature review, OLA and CFMSL the following questionnaires was developed.

- ❖ *Perception of followers on servant leadership- Refer to Appendix 1*
- ❖ *Relationship between followers and leaders- Refer to appendix 2*
- ❖ *Ways in which servant leader facilitates performance- Refer to appendix 3*
- ❖ *Servant leadership Culture which fosters performance- Refer to appendix 4*

3.7 Design of questionnaire for the dependent variable

Performance Index developed by Spangenberg and Theron (2004) approach as reviewed in Chapter 2 was used for measuring performance of units. Performance of units was assessed by means of a performance questionnaire based on eight performance dimensions in the Performance Index. It is difficult to measure productivity for support departments like Human Resources and Quality departments. The approach in this study was therefore be to develop a performance measuring instrument that applies to all departments. As with the independent variable it is important to check the psychometrics of the Performance Index instrument. This is done in the following section.

Psychometrics of the Performance Index

Spangenberg and Theron (2004) item analysed eight Performance Index sub-scales using the SPSS Reliability Procedure (SPSS, 1990). The objective was to identify and eliminate items not contributing to an internally consistent description of the unit performance facet in question. No items were deleted after this analysis. The table below indicate the reliability of the Performance Index.

Scale	Alpha
Production and efficiency	0.8310
Core people processes	0.8843
Work unit climate	0.9036
Employee satisfaction	0.9070
Adaptability	0.8449
Capacity	0.8510
Market share	0.8856
Future Growth	0.8701

Interpretation of the above results

An alpha coefficient of 0.70 or higher indicates acceptable levels of internal reliability and this means all the items in the same category measure the same attribute. All alpha values are above 0.7 indicating that the Performance Index is a highly reliable instrument for measuring performance.

3.7.1 Performance Questionnaire

A questionnaire for measuring performance that applies to all units at the cement factory was developed using the Performance Index. The details of the questionnaire are given in Appendix 5.

3.8 Confidentiality and Ethics

The responses from the sample population was treated with confidence and data presented in such a manner that identity of any respondent is not revealed. The data collected was used for the purposes of this research. The purpose for which the data is required was made known to all respondents. Further the researcher explained the nature and purpose of study and the procedure to be followed when completing

questionnaires both verbally and in writing. The respondents were assured that no harm would befall them for revealing their honest opinions on the questions asked. Respondents were also informed that participation was voluntary.

Permission to conduct the research was sought from and granted by Lafarge Cement, Lichtenburg Plant. The researcher agreed to make available the research results to Lafarge Cement.

Scientific integrity, which by definition is the degree to which a study is methodically and conceptually sound (Burns and Grove 1998:218) was ensured by checking all measuring instruments for reliability and validity. The tests for psychometrics are as detailed in the instrument description already dealt with in the preceding sections.

3.9 Assumption

It is assumed that the sample taken is representative of the total population at the cement factory and respondents are honest. It was also assumed that the respondents understood the questions in making correct conclusions from the questionnaire. However the questionnaires were designed to be easily understood by the participants.

3.10 Method of Data Analysis

The following steps were followed for analysis of data from questionnaire:

- ❖ Scoring of points on the questionnaire was as in Appendix 6.
- ❖ Clean data: This means making sure that the data is correct
- ❖ Produce graphics, example histograms
- ❖ Make graphics that show relationships e.g. scatter plots
- ❖ Calculate coefficients that measure strength of relationship utilising Pearson's constant. The statistical significance must be calculated to validate results of the relationship obtained using Pearson's tests. In statistics a result is called statistically significant if it is unlikely to have occurred by chance. Popular levels of significance are 5%, 1% and 0.1 %. If a test of significance gives a p value lower than the alpha level the null hypothesis is rejected. As an example if someone states there is only one chance in a thousand of an event happening by coincidence a 0.1 % level of statistical significance is implied.

The aim is to find the relationship between Servant leadership related independent variables and performance of subordinates.

Chapter 4

Presentation and analysis of Results

4.0 Chapter overview

In this chapter the following will be presented:

- ❖ Questionnaire response rate and comments
- ❖ Correlation results between the independent variables and the dependent variable
- ❖ Average scores for the whole factory
- ❖ Section average scores
- ❖ Analysis of results

4.1 Questionnaire response rates

Questionnaires were sent to each section of the cement factory as detailed in Table 4.1. A response rate of 100% was achieved in the Kiln 3, Boilershop, and Process Control systems, Human Resources, Purchasing, Environment and Process Departments. Cement Mills, Packing Plant, Machine Shop and Quality response rates were affected by employees who were on annual leave. The electrical department response rate was 62.5 % and a lot of follow up was required. The production department was very slow in responding and the highest number of spoilt responses came from this section. Extra time had to be given to this department as the research would have been incomplete without adequate participation from this important department.

The overall response rate was 77.5%, a fairly encouraging figure. If time was permitting a better response rate could have been achieved. The researcher had to meet set time deadlines.

Table 4.1 Response rates

Section	Questionnaires sent out	Questionnaires received	Percentage of total
Kiln 3 (Maintenance)	7	7	100
Cement Mills (Maintenance)	5	3	60
Packing Plant (Maintenance)	5	3	60
Boiler shop (Maintenance)	5	5	100
Machine Shop (Maintenance/	3	2	66
Electrical (Maintenance)	16	10	62.5
Methods (Maintenance)	14	9	64
Production	22	17	77
Process Control Systems	5	5	100
Quality	5	4	80
Packing Plant (Operations)	5	4	80
Human Resources	4	4	100
Purchasing	5	5	100
Environment	1	1	100
Safety	4	2	50
Process Dept	5	5	100
Total	111	86	77.5

4.2 Pearson correlation tests results

The questionnaire scores were subjected to Pearson correlation tests.

In order to fully understand the statistical results of the correlation between Servant Leadership attributes, Servant leadership culture, the impact of the relationship between followers and servant leaders, the Perception of followers of servant leadership against performance it is necessary to explain the rules for correlation coefficients (Pearson's). The following table explains the rules:

Table 4.11 Interpretation of Pearson correlation coefficients

Pearson's constant (r)	Interpretation
< or = 0.3	Weak relationship
0.31 to 0.4	Mediocre relationship
0.41 to 0.5	Medium relationship
0.51 to 0.6	Substantial relationship
0.61 to 0.70	Strong relationship
0.71 to 1.00	Very strong relationship

Each of the independent variables was tested against performance as follows:

- ❖ Servant leadership v performance
- ❖ Servant Leadership Culture v performance
- ❖ Servant leadership relationship v performance
- ❖ Servant leadership perception by followers v performance

The detailed statistical procedure using Microsoft Excel is given in Appendix 8. Results of the tests are summarised in the table below.

Table 4.9 The relationship between perception and dimensions of servant leadership and unit performance (Using Pearson correlation tests- refer to appendix 8)

	Dependent variable Performance	Statistical Significance
Independent variable	Pearson coefficient	P Value
Perception of the subordinates on existence of servant leadership	0.7782	0.0000
Existing servant leader relationships between leaders and subordinates	0.7788	0.0000
Servant leadership existence	0.7089	0.000000
Servant leadership culture	0.6263	0.00000

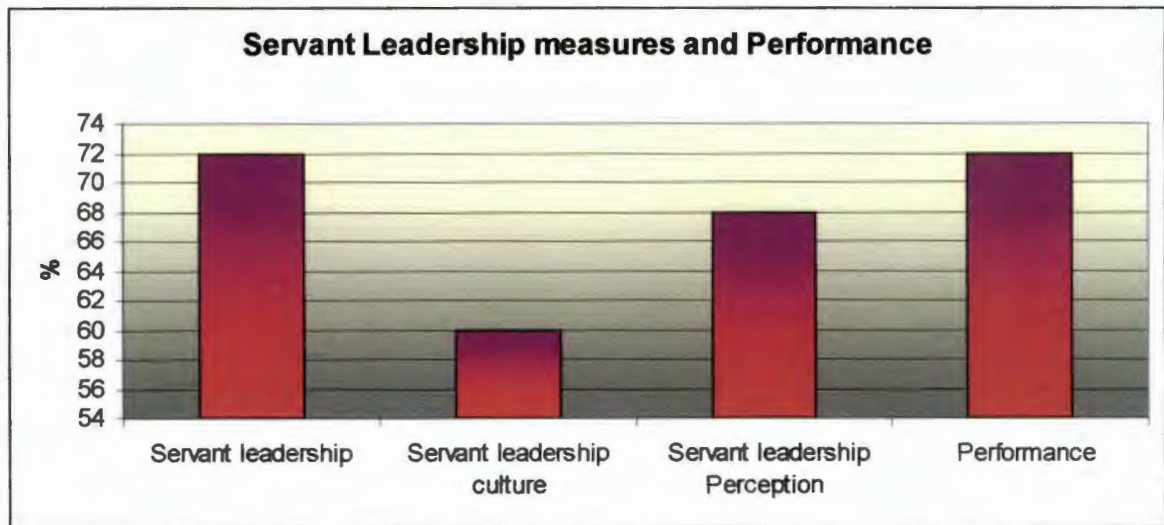
4.3 Average results- whole Factory

Table 4.2 shows the scores for the respondents to the questionnaires.

Table 4.2- Factory average results

	Average score	Possible Score	Percentage
SL(Servant leadership)	90.2	125	72.16
SLC (Servant leadership culture	60	100	60
SLR (Servant leadership relationship)	46.8	65	72
Pc(Servant leadership Perception)	40.95	60	68.25
P (Performance)	72.6	100	72.6

Fig FAR 1



The overall average factory mark for existence of servant leadership was 72.16 %. Engineering Kilns, Engineering Packing Plant, Methods Machine Shop, Process and Human resources sections pushed the average up, each scoring above 80%. Very low marks in Production and Safety sections brought the average mark down. Each scored 47% and 48%.

Generally low marks were obtained for servant leadership culture except in the Engineering Kilns section which scored 82%. Very low marks in Safety and Purchasing sections contributed to the low average culture mark of 60%.

The marks for the relationship that exists between leaders and followers were fairly high except in the Safety and Production sections. All marks were above 65% except for the above mentioned sections.

The perception marks ranged between 46% and 93% with an average of 68%. The lowest two were Engineering Cement Mills and Production. Engineering Cement mills was the only Engineering section scoring a mark below 60% in any of the measures on independent variable.

Overall average performance mark for performance was 72.6%. Most of the sections scored above 60% except Safety, Engineering Cement Mills and Production. Engineering Kilns scored very high – 91%

4.4 Results per department

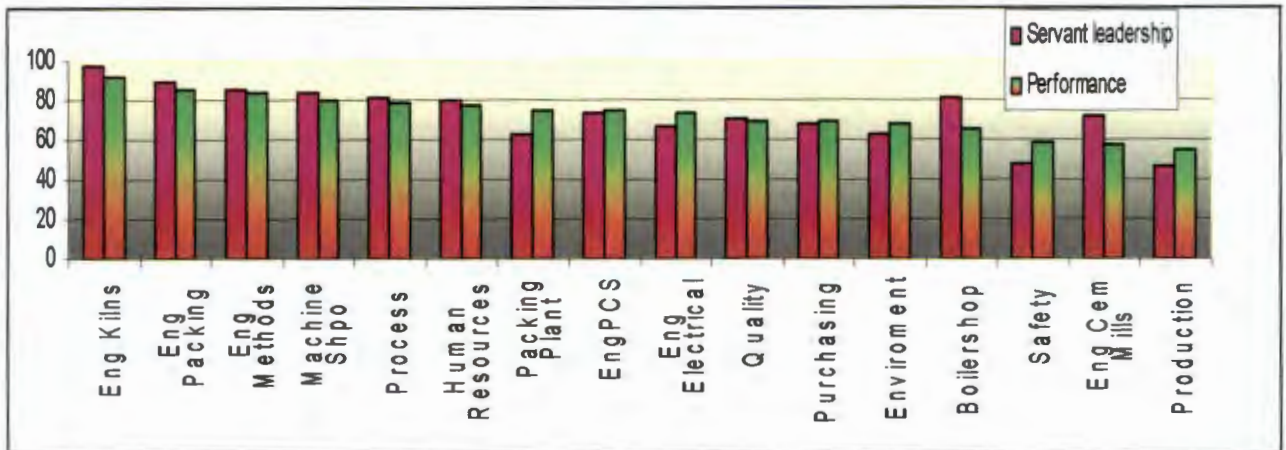
Average per servant leadership measure and performance measure.

Table 4.4

	SL%	SLC%	SLR%	Pc%	Performance%
Engineering Kilns	97	82	96	93	91
Engineering Packing Plant	90	61	92	84	85
Engineering Methods	86	60	90	76	84
Engineering Machine Shop	84	73	85	74	80
Process department	81	71	80	76	79
Human Resources	80	57	84	69	78
Packing Plant	63	55	65	79	75
Engineering PCS	73	69	75	63	74
Engineering Electrical	67	55	67	65	73
Quality	70	56	69	70	70
Purchasing Department	68	48	66	59	69
Environment	62	51	62	68	68
Engineering Boiler shop	81	60	77	78	65
Safety	48	35	53	63	59
Engineering Cement Mills	73	62	70	54	57
Production	47	51	41	46	54

Servant Leadership v Performance

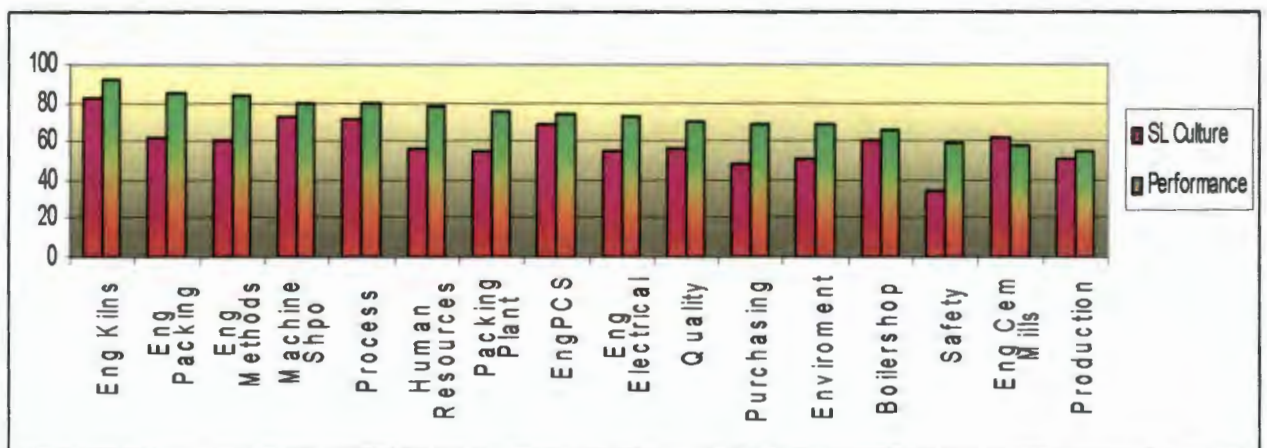
Figure 4.5



Data for performance was sorted in descending order of performance achievement. For each section Servant leadership attributes were compared against performance as shown in figure 4.5. The servant leadership marks also followed the performance trend fairly well.

Servant Leadership culture v Performance

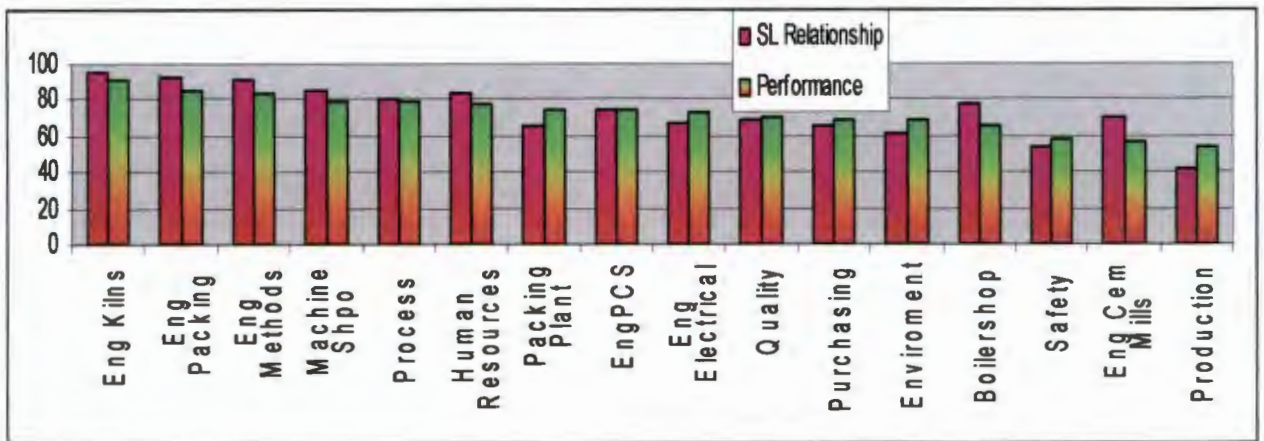
Figure 4.6



Data for performance was sorted in descending order of performance achievement. For each section Servant leadership culture was compared against performance as shown in figure 4.6. Some interesting observations were noted in the Packing Plant, Methods and Safety. The performance mark was much higher than the culture mark.

Relationship between servant leaders and followers v Performance

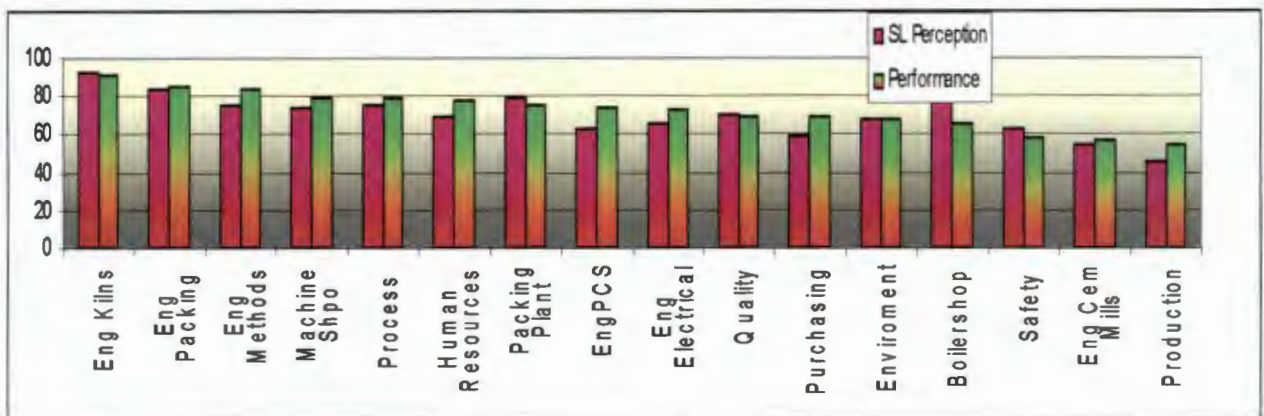
Figure 4.7



Once again Performance data was sorted in descending order and the servant leadership relationship plotted on the side of performance. Performance and relationship followed the same trend as shown in Figure 4.7.

Servant leadership perception of followers v Performance

Figure 4.8



As with the servant leadership dimensions above servant leadership perception by followers was plotted against performance for each section. The results as in figure 4.8 show a good correlation.

4.5 Analysis of results

4.5.1 Correlation results

In terms of the reasoning in table 4.11, it can be seen from table 4.9 that existence of servant leadership attributes correlated very strongly with performance. Pearson's constant (r) of 0.7089 was obtained. The p value of 0.000 indicates that the results are statistically significant. This means that the results are unlikely to have occurred by chance. Detailed computation of the p -value is shown in appendix 9.

Correlation results (refer to table 4.9) showed a Pearson value of 0.7782 when the perception of servant leadership was correlated with performance. This indicates a very strong relationship between perception of servant leadership by followers and performance. The p value of 0.000 again indicates the result is statistically significant as explained above. Refer to appendix 9 for detailed computation of p -value.

Tests on the relationship between servant leaders and their followers and performance obtained a Pearson value of 0.7488. This means that relationship between servant leader and follower correlates very strongly with performance. A p value of 0.0000 was calculated indicating the statistical significance of the results obtained. Details of calculation of p -value are indicated in appendix 9.

Lastly it can also be seen from the results in table 4.9 that culture fostered by servant leaders correlates strongly with performance. A Pearson value of 0.6263 was obtained with a p value of 0.0000, which indicates the results are of statistical significance. For the calculation of p -value refer to appendix 9.

4.5.2 Analysis of the average marks from the Questionnaires

The overall factory results showed a low presence of servant leadership culture. This generally means people do not trust each other. The organisation does not pay enough attention to ethical standards. Diversity strengths are not valued and taken advantage of. In general, people do not get along together well. The atmosphere is also not conducive for people to excel. Teamwork is also not a culture well respected. The Factory scored 60% on the culture measurement.

Factory results on existence of Servant leadership style were 72% which is a fairly good mark. This shows that there is a display of servant leadership amongst some leaders at the factory. The challenge is to influence these leaders to change the culture at the factory. A mark of 72% was obtained for the relationship between leaders and their followers indicating that a positive servant leadership relationship exists between the followers and their leaders. This strength should be taken advantage of to improve the culture.

Lastly, the results indicate that followers think that their leaders are interested in their welfare and growth. A mark of 68% was obtained for follower perception of servant leadership. The fact that the mark is not extremely high correlates with the low culture mark. If the culture improves the perception should follow as well.

The section results showed that the department which scored highest in Servant Leadership style of managing followers also scored high marks for performance. The performance of this Section, as measured by factory key performance indicators also showed that the section is on target for reliability for the year 2008. The Production section scored low in Servant Leadership style and also in performance. This indicates that the leaders do not take the required care and concern for their followers. The rest of the sections correlate fairly well between Servant Leadership style and performance.

Servant leadership culture results for the sections also showed that the highest scoring section also scored high on performance. The Quality and Packing sections scored low in servant leadership culture but had high marks for performance. This means that the performance may not be sustainable in the long term if the culture is not addressed. The low marks in production need to be addressed and this also correlates to the low performance mark.

On the servant leader relationship with followers, the top six in performance are also the top six in good relationship between followers and leaders. It is therefore follows that the better the relationship the better the performance. A similar pattern is also shown for the perception dimension.

Production department scored the lowest marks in all the servant leadership measures carried out. The performance score was also the lowest. The interpretation of the results is that the leadership survives on autocratic methods of getting the job done and very little concern for people is given. In one of the questionnaires there was an additional comment to the effect that the respondent had never seen his leader.

The safety department also generally scored low marks for servant leadership attributes and the performance mark was low. This department has all new employees and the systems are only starting to be put in place and this probably explains why the followers do not have clear direction of the way forward,

Chapter 5

Summary of findings, Recommendations and Conclusions

5.0 Introduction

The research study was designed to answer the following research questions as outlined in Chapter 1:

The main question for this study is:

- ❖ How does leadership influence the performance of subordinates in the cement factory?

The following sub-questions are raised:

- ❖ How is leadership perceived by subordinates in the cement factory?
- ❖ What kind of relationships develop between subordinates and their leaders in a cement factory?
- ❖ In what ways does a leader facilitate a better performance in a cement factory?
- ❖ What kinds of cultures are fostered by successful leaders in a cement factory?

By using questionnaires to probe for servant leadership attributes, servant leadership culture, perception of followers on existence of servant leadership, relation that exists between servant leaders and their followers and performance in

a cement factory, data was gathered to provide statistical answers to the above research questions. Very strong correlation and statistical significance was found between perception of followers on existence of servant leadership and performance. Similar very strong and statistically significant correlation was found between servant leadership style and performance. Strong and statistically significant correlation was established for the relationship between servant leadership culture and performance. Lastly, the correlation between the relationship that exists between servant leaders and their followers was also found to be very strong and statistically significant.

5.1 Summary of findings

5.1.1 Relationship between Servant Leadership and Performance

The relationship between servant leadership and performance was examined using Pearson correlation tests were conducted. Results showed a very strong correlation between servant leadership and performance. From the data on average scores for various sections at a cement factory the section that scored highest in performance also scored highest in servant leadership. The converse was also true, meaning the section that scored lowest in performance was also lowest in servant leadership.

5.1.2 Relationship between Servant Leadership culture and performance

The results of Pearson correlation tests between culture fostered by servant leaders and performance showed that culture fostered by servant leaders and performance are statistically significant and strongly correlated. Section results analysis of average scores also show that those sections with strong servant leadership culture scored high in performance and the converse was found to be true.

5.1.3 Relationship between Servant leader relationship and performance

Servant leader to follower relationship was investigated through Pearson correlation tests. The results showed a very strong positive and statistically significant correlation

between servant leader relationship with the follower and performance. This proves that the way servant leaders relate with their followers have a positive influence on performance of their followers. In the average results for sections, the highest performing section also scored highest in the relationship.

5.1.4 Relationship between follower perception and performance

The relationship between follower perception of servant leadership and performance was explored. Results showed a very strong and significant correlation between follower perception of servant leadership and performance (Pearson coefficient of 0.7782). A statistical significance of 0.000 obtained means that the results are not by chance. Analysis of average scores in sections at the cement factory also show that the higher the score in follower perception the better the performance.

5.2 Discussions of the findings

Kelly and Williamson (2003) conducted a similar study in which they examined the relationship between servant leadership, school climate and student achievement. They found servant leadership to be a significant predictor of student achievement. They also found that the more open the school climate the better the student achievement. The findings in this research are similar. However this study was carried out in an industrial environment as compared to a school environment. For student achievement Kelly and Williamson simply used student results from the department of education. In this study a generic measure of performance was developed which allowed testing of different sections with the same performance instrument. This research can therefore be applied to any environment. Further this study tested servant leadership, relationship between servant leader and follower, perception of follower on servant leadership and servant leader culture as predictors of performance. All four were found to correlate either very strongly or strongly with performance.

The study by Chin and Smith (2006) concluded that prominent historical servant leaders like Mother Theresa, Abraham Lincoln, Dr Martin Luther King, William Booth, Dr Albert Schweitzer and Eleanor Roosevelt proved that servant leadership achieves outstanding changes in the world. The outputs of their servant leadership are the

emancipation of the world from practices of slavery, respect of women's human rights, relief to the world's hungry and poor and racism in America. The current study got similar results in that the leaders exhibiting strong servant leadership at the factory where the study was done also achieved remarkable results. The study by Chin and Smith (2006) did not take into consideration the follower perception of servant leadership and also did not focus on the relationship between followers and servant leaders. The current study explored both the leader and follower aspects of servant leadership and therefore adds to the body of existing knowledge.

The study "Servant leadership in sports- a concept whose time has arrived" by Eastern Washington University concluded : Athletes who identify their coach as having a servant leadership style were more task oriented, they perceived more choice, had more interest and enjoyment and as a result gave more effort. The athletes who identified with servant leadership perceived less tension and pressure as well. On the coaches' side, those with servant leadership style produced athletes who were more motivated, mentally tougher and more satisfied. The above study agrees with the current study which established that the stronger the servant leadership the better the performance of subordinates. From the study it was also found that the stronger the servant leadership culture the better the performance of the subordinates. It was also concluded from this study that the greater the follower perception of servant leadership the better the performance of the followers. This is in agreement with the study by the Eastern Washington University. However the Eastern Washington University investigated servant leadership in the context of sports whereas this study was done in industrial environment.

Irving (1999) examined 200 leaders in churches and non profit making business and found that servant leadership characteristics correlated strongly with team effectiveness. Once again the study by Irving supports the findings of this study which show that servant leadership leads to better performance of subordinates. However the study was done in religious environment where servant leadership would be much easier to apply. Irving (1999) did not use the industry environment but rather confined his study to the churches and non profit making environment limiting the study to an environment which is obvious that servant leadership works. This study proved that servant leadership gets the results outside religious environments.

In the study: Team effectiveness and six essential Servant Leadership themes: Findings and Implications done by Irving (2006) it was concluded that: Leadership which provides support and resources is a significant predictor of team effectiveness and also that leadership that holds people accountable for reaching their work goals is a significant predictor of team effectiveness. The results agree with the findings of this study which concluded that stronger the servant leadership, follower perception, servant leadership culture and relationship between servant leader and follower the better the performance of subordinates. Irving (2006) also confined his study to non profit making organisations. This study was done in an organisation where the bottom line results (making profit) are the main purpose of being in business. The current study therefore shows that servant leadership produces good results in profit making business enterprises.

5.3 Recommendations

5.3.1 Recommendations for the cement factory

The study revealed the lowest overall average mark on servant leadership dimensions was in particular on servant leadership culture. A mark of 60% was obtained.

The servant leadership culture questionnaire enquired whether people trust each other, are non judgemental, have respect for each other, work well together, value differences in cultures, race and ethnicity, care for each other and are aware of the needs of others. The low score may be explained by the past history in South Africa of racial disharmony.

As a way forward it is recommended that diversity training which has already been initiated be intensified. Diversity training focuses on harnessing the strengths of people with different cultural backgrounds. The employees are taught to respect each other, prevent use of stereo-types and work together. Annual refresher courses are further recommended until the culture problem is completely solved. The diversity training can also be complimented by a value based training program extended to all levels of employees to determine a common culture that will value the principles of

servant leadership culture explained above. Value based training programmes start by identifying what the issues hindering performance are and then finding solutions to these issues. The output of a value based program is a code of behaviour and culture that aligns to business objectives.

It is the belief of the researcher that once a solution to the culture issue is found the performance will automatically pick up. This is supported by the fact that in the sections at the same factory where the culture of servant leadership exists the performance is high. Leaders can be moved around so that those with servant leadership skills can impart it on other sections. As an example rotating Section Engineers in Engineering would be an option. Servant Leadership training program can be designed and implemented. The program can focus on care for the people, concern for people growth and being of service to followers.

5.3.2 Suggestions for further studies

While the present study contributes to the study of servant leadership predictors of performance, additional work is required in this field of inquiry. The present study was limited to a cement factory in the North West province of South Africa, similar investigations and analysis should be extended to other industries, government and business enterprises such as mining, transport sectors, education, military and food manufacturing concerns.

5.3.3 Limitations of the study

The study was carried out as a survey and therefore suffers from response rate, mono-method bias and honest in responses. Attempts were however made to limit these influences by asking respondents to rate their superiors and to rate their own level of performance. The questionnaires were also made anonymous to arrest any fears of victimisation on the respondents. Data was also cleaned of very few obvious outliers, for example about three respondents rated strongly disagree in all five questionnaire items.

5.4 Conclusions

Firstly, the study established that the more servant leadership style is visible in an organisation the better the unit performance. This is because servant leaders show real concern for the growth of their followers. They dream for their followers. Evidence from the cement factory shows sections which scored high in servant leadership also scored good marks in performance. These leaders empower their teams so that work is done even better when they are not there.

Secondly, the study also proved that the more prevalent the servant leadership culture is the better the unit performance. Although the overall average mark for the factory was low, those sections in which the servant leadership culture exists, performance naturally follows.

The third dimension of servant leadership that was tested was the relationship that exists between the servant leader and the follower as a predictor of performance. It was established that the stronger this relationship the better the performance. The leader cares for his people and looks for hidden talents in his team. He finds great satisfaction in bringing out the best in others.

Lastly the follower perception was tested as a predictor of performance. The conclusion from the tests was that the better the perception of servant leadership the better the performance of employees in a unit.

In conclusion, servant leadership and performance are very strongly correlated. Organisations in South Africa that want sustainable performance are encouraged to embrace the principles of servant leadership. The more servant leadership penetrates into an organisation the better the performance. It may sound profoundly complicated to understand the paradoxical servant leadership philosophy but those organisations that effectively implement servant leadership will improve their bottom line.

These findings emphasise the role servant leadership can play in today's organisations. I humbly end with the following quotes: "Servant –oriented leadership

matters. The command and control styles of leadership which traditionally may have been associated with results in hierarchical organisations are giving in to more dispersed structures that enable and empower others to excel and perform" (Irving, 2004:10). Walz (2001; ii) states " We live in a world crying out for leadership that is not concerned with self- aggrandizement but with selfless sacrifice to witness dreams and visions fulfilled in the lives of those being led."

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APPENDICES

Appendix 1

Questionnaire – Perception of followers on servant leadership

From the literature review, OLA and CFMSL the following questionnaire was developed. It measures employee perception of the organisation's servant leadership readiness level.

	Please give your honest opinion in response to the following questions. The questionnaire is anonymous and is for purpose of academic research.	1	2	3	4	5
	Key: 5= strongly agree: 4= Agree; 3= Undecided: 2= disagree 1= strongly disagree.					
1	I feel appreciated by my superior for what I contribute					
2	I am working at high level of productivity					
3	I am listened to by those above me in the organisation					
4	I feel good about my contribution to the organisation					
5	I receive encouragement and affirmation from those above me in the organisation					
6	My job is important to the success of the organisation					
7	I trust the leadership of this organisation					
8	I enjoy working for this organisation					
9	I am respected by those above me in the organisation					
10	I am able to be creative in my job					

11	In this organisation a person's work is valued more than his title					
12	I am able to use my talents and ability in my job					

Appendix 2

Questionnaire – Relationship between followers and leaders

Relationship between subordinates will be investigated through a questionnaire developed from the literature review in Chapter 2, OLA and CFMSL. The questionnaire aims to find how the leader relates to others. It seeks to answer the following: leader concern for the developing human resources, leadership relation with people, caring for others, empowering others.

Please give your honest opinion in response to the following questions. The questionnaire is anonymous and is for purpose of academic research. Key: 5= strongly agree: 4= Agree; 3= Undecided: 2= disagree 1= strongly disagree.		1	2	3	4	5
1	My leader genuinely cares for the welfare of us					
2	My leader helps our team without pampering or spoiling us					
3	We approach our leader with problems and he listens with empathy					
4	My leader is available to the team					
5	My leader listens to me and to the views of the team					
6	My leader consistently encourages me and the team to take initiative					
7	My leader grants all workers a fair amount of responsibility and latitude in carrying out their tasks					
8	My leader continuously appreciates, recognizes and encourage the work of our team					
9	My leader looks for hidden talents in team members					

10	My leader has great satisfaction in bringing out the best in others					
11	My leader is forgiving when we make a mistake and helps us learn from the mistake					
12	My leader invest time and energy in us					
13	My leader contributes to the employees' personal growth					

Appendix 3

Questionnaire – Ways in which servant leader facilitates performance

The following questionnaire was developed from literature review on servant leadership, OLA and CFMSL. The questionnaire will extract what the leader does to facilitate performance? It is concerned with achieving productivity and success, focuses on leader's servant leadership skills: Visioning, Goal setting, Leading, Modelling, Team building, shared decision making

	Please give your honest opinion in response to the following questions. The questionnaire is anonymous and is for purpose of academic research. Key: 5= strongly agree: 4= Agree; 3= Undecided: 2= disagree 1= strongly disagree.	1	2	3	4	5
1	My leader communicates a clear vision of the future of the organisation					
2	My leader is open to learning from those below him					
3	My leader allows workers to determine where the organisation is going					
4	My leader works alongside with workers instead of separate from them					
5	My leader uses persuasion to influence others instead of coercion or force					

6	My leader promotes open communication and sharing of information						
7	My leader gives workers the power to make important decisions						
8	My leader provides the support and resources required to meet goals						
9	My leader creates an environment that encourages learning						
10	My leader is open to receiving criticism and challenge from others						
11	My leader allows people to explain what they mean and mean what they say						
12	My leader encourages each person to exercise leadership						
13	My leader facilitates team building						
14	My leader leads by example						
15	My leader uses his power and authority to benefit workers						
16	My leader takes appropriate action when needed						
17	My leader builds people through encouragement and affirmation						
18	My leader encourages workers to work together rather than competing						
19	My leader is humble and does not promote himself						
20	My leader provides mentorship to grow people						
21	My leader is a good listener						
22	My leader puts the needs of the workers ahead of his own						
23	My leader is more concerned with getting the job done than protecting territory						
24	My leader does not ask others to do what he himself is unwilling to do						
25	My leader finds creative and constructive ways to resolve conflicts						

Appendix 4

Questionnaire – Servant leadership Culture which fosters performance

A questionnaire based on literature review on servant leadership culture that fosters performance, OLA and CFMSL was developed. The questionnaire seeks to establish what servant leadership culture exists in the organisation which fosters performance.

Please give your honest opinion in response to the following questions for the organisation you are working for. The questionnaire is anonymous and is for purpose of academic research. Key: 5= strongly agree: 4= Agree; 3= Undecided: 2= disagree 1= strongly disagree.		1	2	3	4	5
1	People trust each other					
2	People are non judgemental- they keep an open mind					
3	People respect each other					
4	People maintain high ethical standards					
5	People work well together					
6	People value differences in culture, race and ethnicity					
7	People are caring and compassionate towards each other					
8	People demonstrate high integrity and honesty					
9	People are trustworthy					

10	People relate well with each other						
11	People attempt to work with others than working on their own						
12	People are held accountable for reaching their goals						
13	People are aware of the needs of others						
14	People allow for individuality of style and expression						
15	People are encouraged by their supervisors to share in decision making						
16	People work to maintain positive working relationship						
17	People accept others as they are						
18	People view conflict as an opportunity to learn and grow						
19	People know ho to get along together						
20	People are clear on the key goals of the organisation						

Appendix 5

Performance Questionnaire

Please give your honest opinion in response to the following questions. The questionnaire is anonymous and is for purpose of academic research.		1	2	3	4	5
Key: 5= strongly agree: 4= Agree; 3= Undecided: 2= disagree 1= strongly disagree.						
1	We give quality work to other departments.					
2	Service or preparation for service on equipment is done on time					
3	I am satisfied with the competency in the my team					
4	Our team is flexible and can change plans to meet plant priorities					
5	Our team has potential for improvement					
6	Our team operate as a cohesive group (teamwork is evident)					
7	Our team is committed to meeting company goals					
8	Our team is willing to learn from customer feedback					
9	Our team's vision is visible					
10	In general achievement related attitude exist in our team					
11	Our team responds promptly to requests					
12	People in my team are accountable for reaching their goals					
13	Our team generates new ways of solving problems					

14	Our team addresses most of the problems we encounter					
15	Our team is cost conscious					
16	In our team people work to maintain positive working relationship					
17	The reputation of adding value exists in our team					
18	Our team views conflict as an opportunity to learn and grow					
19	Our team knows how to get along together					
20	Our team is clear on the key goals of the organisation					

Appendix 6

Questionnaire Scoring Procedure

Bradberry and Greaves (2007), the founders of Talent Smart developed the following scoring of questionnaires. Talent Smart is a leading provider of emotional intelligence tests, products and training, and consulting. An example of the scoring procedure is given below.

	Please give your honest opinion in response to the following questions. The questionnaire is anonymous and is for purpose of academic research.	1	2	3	4	5
	Key: 5= strongly agree: 4= Agree; 3= Undecided: 2= disagree 1= strongly disagree.					
1	We give quality work to other departments.					x
2	Service or preparation for service on equipment is done on time				x	
3	I am satisfied with the competency in the my team			x		

4	Our team is flexible and can change plans to meet plant priorities					x
5	Our team has potential for improvement		x			
6	Our team operate as a cohesive group (teamwork is evident)					x
7	Our team is committed to meeting company goals	x				
8	Our team is willing to learn from customer feedback	x				
9	Our team's vision is visible			x		
10	In general achievement related attitude exist in our team					x
11	Our team responds promptly to requests	x				
12	People in my team are accountable for reaching their goals				x	
13	Our team generates new ways of solving problems		x			
14	Our team addresses most of the problems we encounter					x
15	Our team is cost conscious			x		
16	In our team people work to maintain positive working relationship		x			
17	The reputation of adding value exists in our team			x		
18	Our team views conflict as an opportunity to learn and grow		x			
19	Our team knows how to get along together	x				
20	Our team is clear on the key goals of the organisation	x				
	Total	5	4	4	2	5

Step 1

Add up the number of checks in each column

Step 2

Transfer the above information into table QS1 column A

Step 3

Multiply each row of column A by the number directly next to it

Step 4

Write the answer for each row in column C

Step 5

Add up all the numbers in Column C

Step 6

Enter the total next to Total column C and this gives the score for each respondent

	Column A	Column B	Column C
Strongly Agree	5	5	25
Agree	2	4	8
Undecided	4	3	12
Disagree	4	2	8
Strongly disagree	5	1	5
Total Score			58

Appendix 7

The data below excludes obvious outliers, example in production 5 questionnaires were answered with the same score in all questionnaires. These were considered as spoiled questionnaires.

Questionnaire Score sheet

	Respondent	SL	SLC	SLR	PS	Performance
1	PR2	48	56	19	23	54
2	PR4	45	47	30	21	57
3	PR5	42	39	17	30	72
4	PR6	89	61	44	35	64
5	PR7	83	82	39	26	73
6	PR10	62	38	29	30	50
7	PR11	80	66	44	43	63
8	PR12	86	56	42	37	74
9	PR13	30	76	13	30	63
10	PR14	40	27	16	18	26
11	PR15	66	37	13	24	26
12	PR17	32	27	17	12	28
13	EK3-1	125	100	63	60	98
14	EK3-2	121	79	59	50	92
15	EK3-3	125	97	65	60	99
16	EK3-4	125	65	64	54	78
17	EK3-5	125	91	65	59	99
18	EK3-6	104	63	58	48	78
19	EK3-7	123	80	62	59	96
20	ECM1	84	64	42	39	62
21	ECM2	120	57	58	17	36
22	ECM3	68	65	36	42	74
23	EP1	99	69	50	44	80
24	EP2	121	56	65	58	95
25	EP3	116	59	64	50	80
26	EMS 1	106	71	54	44	80
27	EMS 2	104	75	57	45	79
28	EBS 1	125	71	65	49	78
29	EBS 2	75	60	39	36	60
30	EBS 3	91	51	39	48	48
31	EBS 5	114	58	58	53	75
32	EPCS 1	88	51	49	41	75
33	EPCS 2	125	100	61	43	98
34	EPCS 3	103	65	54	28	81
35	EPCS 4	53	62	32	32	42
36	EPCS 5	88	67	47	46	76
37	EE 1	86	66	52	31	76
38	EE 2	89	59	47	46	77
39	EE 3	114	60	56	53	100
40	EE 4	70	39	33	25	65
41	EE 5	88	54	52	47	61
42	EE6	70	40	31	33	66
43	EE7	95	72	53	46	75

44	EE8	71	54	36	40	76
45	EE9	63	54	30	30	65
46	EE10	86	50	46	38	69
47	EM 1	89	59	48	42	79
48	EM 2	114	78	61	56	99
49	EM 3	101	78	52	49	80
50	EM 4	97	52	59	49	82
51	EM 5	120	80	61	51	97
52	EM 6	98	54	56	49	76
53	EM 7	120	42	64	41	83
54	EM 8	110	37	65	29	78
55	EM 9	114	57	63	43	78
56	PROC 1	87	64	40	33	55
57	PROC 2	91	60	49	42	76
58	PROC 3	117	69	61	54	94
59	PROC 4	107	89	57	46	86
60	PROC 5	105	73	54	52	83
61	PUR1	84	50	45	34	64
62	PUR 2	77	43	43	29	70
63	PUR 3	83	42	35	27	53
64	PUR 4	92	44	45	36	77
65	PUR 5	87	62	45	51	80
66	SAF 1	78	67	40	37	67
67	SAF 2	42	40	29	38	50
68	PP1	77	63	41	53	71
69	PP2	92	69	50	45	74
70	PP3	68	40	36	46	80
71	PP4	79	48	42	46	76
72	ENV 01	78	51	40	41	68
73	QUA 1	86	50	41	47	71
74	QUA 2	81	58	51	53	86
75	QUA 3	77	50	36	34	59
76	QUA 4	107	65	52	34	63
77	HR1	111	63	60	45	95
78	HR2	88	44	45	32	61
79	HR3	81	56	50	38	59
80	HR4	121	64	64	51	97

Appendix 8

Computation of Pearson correlation coefficients

Servant Leadership v Performance

Microsoft Excel - Data analysis Final.xls

File Edit View Insert Format Tools Data Window Help

Type a question for help

PEARSON =PEARSON(C2:D81,D2:D81)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1		Respondent	SL	Performance	SLC	Performance	SLR	Performance	Pc	Performance								
2	1	PR2	48	54	56	54	19	54	23	54	Attribute	Pearson's relationship	Pvalue for significance	Pvalue rounded off				
3	2	PR4	45	57	47	57	30	57	21	57	SL	=PEARSON(C2:D81,D2:D81)	2.39422E-07	0.00000				
4	3	PR6	42	72	39	72	17	72	30	72	SLC		1.86306E-06	0.00000				
5	4	PR6	89	64	61	64	44	64	35	64	SLR		2.58936E-20	0.00000				
6	5	PR7	83	73	82	73	39	73	26	73	Pc		6.49601E-30	0.00000				
7	6	PR10	62	50	38	50	29	50	30	50								
8	7	PR11	80	63	66	63	44	63	43	63								
9	8	PR12	86	74	56	74	42	74	37	74								
10	9	PR13	30	63	76	63	13	63	30	63								
11	10	PR14	40	26	27	26	16	26	18	26								
12	11	PR15	66	26	37	26	13	26	24	26								
13	12	PR17	32	28	27	28	17	28	12	28								
14	13	EG-1	125	98	100	98	63	98	60	98								
15	14	EG-2	121	92	79	92	59	92	50	92								
16	15	EG-3	125	99	97	99	65	99	60	99								
17	16	EG-4	125	78	65	78	64	78	54	78								
18	17	EG-5	125	99	91	99	65	99	59	99								
19	18	EG-6	104	78	63	78	58	78	48	78								
20	19	EG-7	123	96	80	96	62	96	59	96								
21	20	ECM1	84	62	64	62	42	62	39	62								
22	21	ECM2	120	36	57	36	58	36	17	36								
23	22	ECM3	68	74	65	74	36	74	42	74								
24	23	EP1	99	80	69	80	50	80	44	80								
25	24	EP2	121	95	56	95	65	95	58	95								
26	25	EP3	116	80	59	80	64	80	50	80								
27	26	EMS1	106	80	71	80	54	80	44	80								
28	27	EMS2	104	79	75	79	57	79	45	79								
29	28	EBS1	125	78	71	78	65	78	49	78								
30	29	EBS2	75	60	60	60	39	60	36	60								
31	30	EBS3	91	48	51	48	39	48	48	48								
32	31	EBS5	114	75	58	75	58	75	53	75								
33	32	EPCS1	88	75	51	75	49	75	41	75								

Function Arguments

PEARSON

Array1: C2:C81 = {48;45;42;89;83;62;80;86;30;40;66;32;125;121;125;125;125;104;123;84;120;68;99;121;116;106;104;125;75;91;114;88}

Array2: D2:D81 = {54;57;72;64;73;50;63;74;26;27;26;28;98;92;99;78;99;78;96;62;62;36;74;80;95;80;106;79;125;60;48;75;75}

= 0.708932417

Returns the Pearson product moment correlation coefficient, r.

Array2 is a set of dependent values.

Formula result = 0.708932417

Help on this function

OK Cancel

Sheet1 Scoresheet ANOVA Statistical analysis

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Servant Leadership Culture v Performance

Microsoft Excel - Data analysis Final.xls

File Edit View Insert Format Tools Data Window Help

Type a question for help

PEARSON $\text{=PEARSON}(E2:E81,F2:F81)$

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1		Respondent	SL Performance	SLC Performance	SLR Performance	Pc Performance												
2	1	PR2	48	54	56	54	19	54	23	54	Attribute	Pearson's relationship	Pvalue for significance	Pvalue rounded off				
3	2	PR4	45	57	47	57	30	57	21	57	SL	0.708932417	2.39422E-07	0.00000				
4	3	PR5	42	72	39	72	17	72	30	72	SLC	$\text{=PEARSON}(E2:E81,F2:F81)$	1.86306E-06	0.00000				
5	4	PR6	89	64	51	64	44	64	35	64	SLR		2.58936E-20	0.00000				
6	5	PR7	83	73	82	73	39	73	26	73	Pc		6.49601E-30	0.00000				
7	6	PR10	62	50	38	50	29	50	30	50								
8	7	PR11	80	63	66	63	44	63	43	63								
9	8	PR12	86	74	56	74	42	74	37	74								
10	9	PR13	30	63	76	63	13	63	30	63								
11	10	PR14	40	26	27	26	16	26	18	26								
12	11	PR15	66	26	37	26	13	26	24	26								
13	12	PR17	32	28	27	28	17	28	12	28								
14	13	EK3-1	125	98	100	98	63	98	60	98								
15	14	EK3-2	121	92	79	92	59	92	50	92								
16	15	EK3-3	125	99	97	99	65	99	60	99								
17	16	EK3-4	125	78	65	78	64	78	54	78								
18	17	EK3-5	125	99	91	99	65	99	59	99								
19	18	EK3-6	104	78	63	78	58	78	48	78								
20	19	EK3-7	123	96	80	96	62	96	59	96								
21	20	ECM1	84	62	64	62	42	62	39	62								
22	21	ECM2	120	36	57	36	58	36	17	36								
23	22	ECM3	68	74	65	74	36	74	42	74								
24	23	EP1	99	80	69	80	50	80	44	80								
25	24	EP2	121	95	56	95	65	95	58	95								
26	25	EP3	116	80	59	80	64	80	50	80								
27	26	EWS 1	106	80	71	80	54	80	44	80								
28	27	EWS 2	104	79	75	79	57	79	45	79								
29	28	EBS 1	125	78	71	78	65	78	49	78								
30	29	EBS 2	75	60	60	60	39	60	36	60								
31	30	EBS 3	91	48	51	48	39	48	48	48								
32	31	EBS 5	114	75	58	75	58	75	53	75								
33	32	EPCS 1	88	75	51	75	49	75	41	75								

Function Arguments

PEARSON

Array1: E2:E81 $\text{=}{56;47;39;64;82;38}$

Array2: F2:F81 $\text{=}{54;57;72;64;73;50}$

=0.626275604

Returns the Pearson product moment correlation coefficient, r.

Array2 is a set of dependent values.

Formula result = 0.626275604

Help on this function

OK Cancel

Sheet1 | ScoreSheet | ANOVA | Statistical analysis

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Servant Leadership Relationship v Performance

Microsoft Excel - Data analysis Final.xls

File Edit View Insert Format Tools Data Window Help

Type a question for help

PEARSON =PEARSON(G2:H81,H2:H81)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1		Respondent	SL	Performance	SLC	Performance	SLR	Performance	Pc	Performance								
3	2	PR4	45	57	47	57	30	57	21	57	SL		0.708932417	2.39422E-07	0.00000			
4	3	PR5	42	72	39	72	17	72	30	72	SLC		0.626275604	1.88306E-06	0.00000			
5	4	PR6	89	64	61	64	44	64	35	64	SLR		2.681,H2:H81	2.58936E-20	0.00000			
6	5	PR7	83	73	82	73	39	73	26	73	Pc			6.49601E-30	0.00000			
7	6	PR10	62	50	38	50	29	50	30	50								
8	7	PR11	80	63	66	63	44	63	43	63								
9	8	PR12	86	74	56	74	42	74	37	74								
10	9	PR13	30	63	76	63	13	63	30	63								
11	10	PR14	40	26	27	26	16	26	18	26								
12	11	PR15	66	26	37	26	13	26	24	26								
13	12	PR17	32	28	27	28	17	28	12	28								
14	13	EK3-1	125	98	100	98	63	98	60	98								
15	14	EK3-2	121	92	79	92	59	92	50	92								
16	15	EK3-3	125	98	97	98	65	98	60	98								
17	16	EK3-4	125	78	66	78	64	78	54	78								
18	17	EK3-5	125	99	91	99	65	99	59	99								
19	18	EK3-6	104	78	63	78	58	78	48	78								
20	19	EK3-7	123	96	80	96	62	96	59	96								
21	20	ECM1	84	62	64	62	42	62	39	62								
22	21	ECM2	120	36	57	36	58	36	17	36								
23	22	ECM3	68	74	66	74	36	74	42	74								
24	23	EP1	99	80	89	80	50	80	44	80								
25	24	EP2	121	95	96	95	65	95	58	95								
26	25	EP3	116	80	59	80	64	80	50	80								
27	26	EMS 1	106	80	71	80	54	80	44	80								
28	27	EMS 2	104	79	75	79	57	79	45	79								
29	28	EBS 1	125	78	71	78	65	78	49	78								
30	29	EBS 2	75	60	60	60	39	60	36	60								
31	30	EBS 3	91	48	51	48	39	48	48	48								
32	31	EBS 5	114	75	58	75	58	75	53	75								
33	32	EPCS 1	88	75	51	75	49	75	41	75								
34	33	EPCS 2	125	98	100	98	61	98	43	98								

Function Arguments

PEARSON

Array1: G2:G81 = {19;30;17;44;39;29;...}

Array2: H2:H81 = {54;57;72;64;73;50;...}

Returns the Pearson product moment correlation coefficient, r.

Formula result = 0.74880214

Help on this function

OK Cancel

Sheet1 Scoresheet ANOVA Statistical analysis

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Follower Perception of Servant Leadership v Performance

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PEARSON $\text{=PEARSON}(I2:I81,J2:J81)$

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1		Respondent	SL	Performance	SLC	Performance	SLR	Performance	Pc	Performance								
6		5 PR7	83	73	82	73	39	73	26	73		Pc	$\text{=PEARSON}(I2:I81,J2:J81)$	6.49601E-30	0.00000			
7		6 PR10	62	50	38	50	29	50	30	50								
8		7 PR11	80	63	66	63	44	63	43	63								
9		8 PR12	86	74	56	74	42	74	37	74								
10		9 PR13	30	63	76	63	13	63	30	63								
11		10 PR14	40	26	27	26	16	26	18	26								
12		11 PR15	66	26	37	26	13	26	24	26								
13		12 PR17	32	28	27	28	17	28	12	28								
14		13 EK3-1	125	98	100	98	63	98	60	98								
15		14 EK3-2	121	92	79	92	58	92	50	92								
16		15 EK3-3	125	99	97	99	65	99	60	99								
17		16 EK3-4	125	78	65	78	64	78	54	78								
18		17 EK3-5	125	99	91	99	65	99	59	99								
19		18 EK3-6	104	78	63	78	58	78	48	78								
20		19 EK3-7	123	96	80	96	62	96	59	96								
21		20 ECM1	84	62	64	62	42	62	39	62								
22		21 ECM2	120	36	57	36	58	36	17	36								
23		22 ECM3	68	74	65	74	36	74	42	74								
24		23 EP1	99	80	69	80	50	80	44	80								
25		24 EP2	121	95	56	95	65	95	58	95								
26		25 EP3	116	80	59	80	64	80	50	80								
27		26 EMS 1	106	80	71	80	54	80	44	80								
28		27 EMS 2	104	79	75	79	57	79	45	79								
29		28 EBS 1	125	78	71	78	65	78	49	78								
30		29 EBS 2	75	60	60	60	39	60	36	60								
31		30 EBS 3	91	48	51	48	39	48	48	48								
32		31 EBS 5	114	75	58	75	58	75	53	75								
33		32 EPCS 1	88	75	51	75	49	75	41	75								
34		33 EPCS 2	125	98	100	98	61	98	43	98								
35		34 EPCS 3	103	81	65	81	54	81	28	81								
36		35 EPCS 4	53	42	62	42	32	42	32	42								
37		36 EPCS 5	88	76	67	76	47	76	46	76								

Sheet1 | ScoreSheet | ANOVA | Statistical analysis

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Function Arguments

PEARSON

Array1: I2:I81 = {23;21;30;35;26;30}

Array2: J2:J81 = {54;57;72;64;73;50}

= 0.778169413

Returns the Pearson product moment correlation coefficient, r.

Array2 is a set of dependent values.

Formula result = 0.778169413

[Help on this function](#)

OK Cancel

Appendix 9

ANOVA Results

SL

Anova: Single Factor

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	80	7222	90.275	577.9487
Column 2	80	5806	72.575	281.2601

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	12531.6	1	12531.6	29.17009	2.39E-07	3.900989
Within Groups	67877.5	158	429.6044			
Total	80409.1	159				

SLC

Anova: Single Factor

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	80	4797	59.9625	238.0366
Column 2	80	5806	72.575	281.2601

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	6363.006	1	6363.006	24.50625	1.88E-06	3.900989
Within Groups	41024.44	158	259.6483			
Total	47387.44	159				

SLR

Anova: Single Factor

SUMMARY				
Groups	Count	Sum	Average	Variance
Column 1	80	3745	46.8125	186.534
Column 2	80	5806	72.575	281.2601

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	26548.26	1	26548.26	113.504	2.59E-20	3.900989
Within Groups	36955.74	158	233.8971			
Total	63503.99	159				

Pc

Anova: Single
Factor

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Column 1	80	3276	40.95	117.7443
Column 2	80	5806	72.575	281.2601

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	40005.62	1	40005.62	200.5272	6.5E-30	3.900989
Within Groups	31521.35	158	199.5022			
Total	71526.97	159				



24 February 2009

Mr K Brits
Lafarge Industries South Africa
Cement
LICHTENBURG

Dear Konrad,

STUDY ASSISTANCE APPLICATION FOR KONRAD

We thank you for your application and regret to advise that we were unable to grant you assistance for your child as you did not include his previous studies results.

Please refer to the Study Assistance Policy and Procedure.

The Lafarge Management and Study Assistance Committee wish you and your dependants a successful 2009.

Yours sincerely,

**MAKI MOFOLO
FOR AND ON BEHALF OF THE
STUDY ASSISTANCE COMMITTEE**

