A SECOND-ORDER FACTOR STRUCTURE OF THE LEADERSHIP BEHAVIOUR INVENTORY

by

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DECLARATION

I declare that **A SECOND-ORDER FACTOR STRUCTURE OF THE LEADERSHIP BEHAVIOUR INVENTORY** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

_____ _____

Signature **Date**

(Ms ZB Durrheim)

In memory of my mother, Cynthia Elizabeth Durrheim

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ABSTRACT

A need for a South African leadership-unit performance structural model, created from the performance index and second-order factor structure of the Leadership Behaviour Inventory was established. This study focuses on the creation of such a second-order factor structure.

Theron and Spangenberg (2005) identified three plausible models and highlighted two for further analysis. Theoretical scrutiny supported the two proposed models. The two-factor model was created from the multifactor leadership questionnaire's transformational and transactional second-order factors (Avolio, Bass & Jung, 1999) and the three-factor model comprised the general leadership, management behaviour and supervisory leadership second-order factors of House (1995).

Factor analysis, exploratory factor analysis and confirmatory factor analysis were conducted on the proposed models. Results indicated average-fitting models. The five-factor model proposed by Theron and Spangenberg (2005) comparatively has an improved fit and is viewed as the most plausible model for the creation of the leadership-unit performance structural model.

KEYWORDS: leader, leadership, Leadership-Behaviour Inventory, multifactor leadership questionnaire, second-order factor structure, transformational, transactional, management, environmental attentiveness, personal competence, performance

CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION TO THE RESEARCH

1.1 Overview

The current chapter focuses on introducing the research and the background of the research, and touches on areas of motivation, aims and objectives of the research.

The problem formulation is highlighted with the research questions clearly outlined. A synopsis of the research methodology is provided. Finally, the subsequent chapters are delineated in a brief summation.

1.2 Background to and Motivation for the Research

The importance of leadership is palpable. Leadership touches all aspects of business and is the cornerstone of organisational success. It is the pinnacle of managerial capability and the need to measure management's leadership styles and aptitude is important to attain optimal leadership functionality in the workplace (Kossek, Lobel & Brown, 2006). South Africa is a unique country with distinctive differences in business and leadership adeptness. Taking leadership questionnaires from countries such as the United States of America (USA) and utilising them in businesses across South Africa could result in unfairness or partiality of those undergoing the testing. The need for a South African based leadership instrument has become ever-more apparent, according to the Centre for Leadership Studies at the University of Stellenbosch's Graduate School of Business (Spangenberg & Theron, 2002). Spangenberg and Theron (2002) identified this need and created the first South African leadership questionnaire, the Leadership Behaviour Inventory (LBI), that could be utilised by managers and leaders alike. The same authors created a performance index (PI) as they saw the need for a questionnaire that would measure work-unit performance

(Spangenberg & Theron, 2004). Both the LBI and the PI have been a success and are utilised by businesses in South Africa today.

From these two instruments, the authors identified an additional need to create a leadership-unit performance structural model, which would encompass facets of work-unit performance as well as leadership styles. However, before attempting to create such a model, a second-order factor structure for the LBI was required (Theron & Spangenberg, 2005). This second-order factor structure would be necessary as the leadership styles, which would form the foundation of the leadership-unit performance model, would be based on the LBI's second-order structure.

Theron and Spangenberg (2005) identified three plausible hypotheses for the second-order factor structure of the LBI, that is, either the use of the House leadership-style distinctions (1995), the Avolio, Bass and Jung multifactor leadership questionnaire (1999) or the five-factor model, created by the authors themselves. It was ascertained by Theron and Spangenberg (2005) that a suitable fit could be attained for the LBI first-order dimensions with the second-order elements of the House distinctions as well as the Avolio et al. questionnaire to certain degrees. However, the authors decided to use the five-factor model, which they created, to test the LBI second-order structure (Theron & Spangenberg, 2005). It was thought that the five-factor model would produce the best fit for the second-order structure, compared to the other two hypotheses. However, the results only moderately captured the complexity underlying the LBI, and it was recommended that the other two proposed models identified by the authors be tested to ascertain which of the three would provide the most satisfactory second-order fit for the LBI dimensions.

The present study attempts to take the Avolio et al. multifactor leadership questionnaire (MLQ) as well as the House leadership-style distinctions and create a second-order structure. By doing so, an assessment can be made as to

which of the three models, if any, would provide the most plausible and best-fit second-order structure.

The motivation behind the study is to obtain a second-order measurement model that will capture the underlying structures of the LBI. Together with the PI questionnaire created by Spangenberg and Theron (2004), this will form part of the groundwork to create a South African leadership-unit performance structural model.

1.3 Problem Formulation

South Africa is a country that is unique in its own right. Many questionnaires and models of psychology are implemented and/or used across various backdrops. It is imperative for South Africa to start looking inward for its own psychological tools. Although leadership traits can be viewed as universal and as such, the dimensions and factors out of which models are created can be generated from research conducted in other countries, it is important for South African researchers to pinpoint unique aspects, from both an innate as well as environmental level. As Spangenberg and Theron (2002, p.23) point out from a South African perspective, "[i]n the South African context strong emphasis thus needs to fall on leading change and driving transformation".

Of importance to this study is the need to create a unique South African model, namely the leadership-unit performance structural model (Theron & Spangenberg, 2005). This model could be beneficial to South African organisations and could assist in ascertaining criteria of measuring unit performance as well as leaders. In order to reach this goal, it is necessary to obtain the second-order factor structure of the LBI (the second-order factor structure is used primarily because it is less cumbersome than using the first-order dimensions). This will then form part of the ongoing study by Theron and

Spangenberg (2005) to include the LBI's underlying structure with the PI questionnaire to ultimately create the leadership-unit performance model.

In the current study, it is important to determine whether the two instruments' higher-order factor structure used will provide an acceptable second-order factor structure for the LBI. The research questions and hypotheses are outlined below.

1.4 Research Questions

The following research questions are explored:

- Do the House leadership-style distinctions provide an acceptable higher-order fit for the 24 first-order dimensions from the LBI?

- Do the MLQ higher-order factors provide an acceptable higher-order fit for the 24 first-order dimensions from the LBI?

- Can a second-order structure, based on the House leadership-style distinctions, be created in order to obtain a second-order measurement model, which will capture the complex structures underlying the LBI?

- Can a second-order structure, based on the MLQ factors, be created in order to obtain a second-order measurement model, which will capture the complex structures underlying the LBI?

- Does the most plausible model, created in this study, improve on the five-factor model created by Theron and Spangenberg (2005) in their study?

1.5 Research Aims

The aim of this study is to create a second-order factor structure based on the LBI dimensions. This forms part of a larger study in which the second-order factor structure from the LBI, in conjunction with the structures underlying the PI, will assist in the creation of a leadership-unit performance structural model.

1.6 Research Objectives

1.6.1 Specific Literature Objectives

Specific literature objectives are outlined below.

- To explore the underpinning leadership theories with the aim of clarifying the similarities and differences between the various constructs of the models in order to enable the researcher to compare the models with one another.
- To define the House leadership-style distinctions.
- To provide a comprehensive understanding of the MLQ and its second-order factors.
- To provide a clear review of the LBI and the underlying factors.

1.6.2 Specific Empirical Objectives

Specific empirical objectives are outlined below.

- To compare the second-order dimensions of the two instruments to the empirically observed second-order factors derived from the analysis of the LBI dimensions.
- To derive a second-order measurement model from the comparison indicated in the previous point.

- To compare the three second-order models with regard to goodness of fit between the model and the observer's second-order factor structure of the LBI.

1.7 Research Methodology

A brief overview regarding the research methodology of the current study is outlined below. Refer to chapter 5 for an in-depth discussion.

1.7.1 Research Design

The current study emerged from the need for a leadership-unit performance structural model, which required, as part of its foundation, a second-order factor structure for the LBI. The current study focuses on the creation of the second-order factor structure with the development of two theoretical second-order models. In order to develop these models, the research delves into an immense amount of theoretical information related to leadership as well as instruments and models of leadership.

From the theoretical analysis and the proposed models outlined by Theron and Spangenberg (2005), the most plausible second-order factor models were derived for the first-order dimensions of the LBI. These models were then tested empirically utilising modes of factor analyses. Through in-depth discussion and comparisons of the two models created in the current study and the five-factor model created by Theron and Spangenberg (2005), the most plausible model for use in the creation of the leadership-unit performance structural model will be derived.

1.7.2 Sample Strategy

The data used in the current study is the same data set as that used in the initial study conducted by Theron and Spangenberg (2005) and was obtained from the centre for Leadership Studies in Stellenbosch. There was a total of 1 838 completed LBI questionnaires with 252 unusable cases.

The database comprises a series of non-probability samples that had been conducted on unit managers who were selected from various organisations within the financial arena (Theron & Spangenberg, 2005). Due to the sample only taken from the financial sector, the results obtained from this study might not be applicable to other organisations and industries, therefore sampling error might occur. However, the results obtained from this study as well as from Theron and Spangenberg (2005) can be taken and utilised in future studies, utilising different samples.

1.7.3 Reliability

The major issue when focusing on the reliability of the research design was the generalisation of the research. Due to the data set comprising respondents from the financial sector only, care needs to be taken not to generalise the findings to the entire population.

Internal consistency of the data was established by Theron and Spangenberg (2005), who conducted reliability testing on the 24 LBI subscales with results indicating satisfactory item homogeneity (Cronbach alpha values yielded values greater than 0.74 and less than 0.80).

Reliability, when analysing the data, was managed through various testing techniques, including a general factor analysis, and then the models were tested

through exploratory factor analysis and finally, confirmatory factory analysis. These methods ensured that the variables remained stable over time and that they were measuring the same constructs (Graziano & Raulin, 2000).

1.7.4 Validity

In the current research, the research process is outlined methodically and coherently in order to dispel possible design incoherence with design validity maintained through concise and deliberate attempts to keep the research analysis and outcomes on track with the research questions.

Furthermore, the models were validated through random split-sample (72% of the sample underwent exploratory factor analysis and the remaining 28% was tested through confirmatory factor analysis).

1.7.5 Ethical Considerations

The privacy, anonymity and confidentiality of the respondents can be assured due to the author having no contact with them and the data provided to the author by Theron and Spangenberg (2005) being in a secure format.

The research is non-malevolent to any persons involved in the study. It is beneficial due to its relevance and necessity in the creation of a leadership-unit performance model.

1.7.6 Data Preparation

The data was prepared by Theron and Spangenberg (2005) for their study. This process is outlined in detail in chapter 5.

1.7.7 The Research Process

1.7.7.1 Literature Review

The literature review provides an extensive overview of leadership theories and models beneficial for the current study as well as the proposed second-order factor models. Specifically, the following three chapters focus on three pinnacle areas: firstly, chapter 2 is dedicated to the theory of leadership, spanning across time, summarised under the headings of traditional, new and emergent leadership theories. The literature then moves to the creation of a leadership-unit performance structural model and the instruments from which this model would be created, that is, the work-unit performance index as well as the Leadership Behaviour Inventory (chapter 3). The following chapter (chapter 4) focuses on literature pertaining to the creation of the second-order factor structure. There is a brief overview of the instruments whose second-order factors will be utilised in the present study, that is, the multifactor leadership questionnaire and the House leadership-style distinctions. The five-factor model created by Theron and Spangenberg (2005) will also be reviewed. Finally, the chapter moves toward the proposed second-order models for this current research.

1.7.7.2 Empirical Study

The data is analysed to obtain a second-order factor structure. Two proposed second-order factor models are highlighted, with analysis conducted on these two- and three-factor models. The statistical techniques that are utilised to analyse the data consist of factor analysis, exploratory factor analysis and confirmatory factor analysis. Through this process the proposed models are refined and finally compared to ascertain the most plausible model available.

1.7.8 Limitations and Sources of Error

The current research attempts to dispel any sources of error through its methodical analyses. This is done through an in-depth focus on theoretical underpinnings of leadership theory and to examine the most plausible theory on which to base the models. The theoretical models undergo vigorous testing through factor analysis, with the refined models undergoing split-sample testing using exploratory factor analysis and confirmatory factor analysis.

The same data set is used as that of Theron and Spangenberg (2005) to ensure that comparisons across the three models are possible.

1.8 Demarcation of Chapters

Theory plays a vital part in conducting secondary analysis and therefore a large portion of this study is dedicated to the understanding of leadership through theory. Chapters 2, 3 and 4 provide an extensive review of leadership theory. Chapter 2 provides an overview of the leadership-unit performance model, highlighting the instruments which would constitute it, that is, the PI and LBI. Chapter 3 explores leadership theory with the notion of creating a second-order factor structure for the LBI from the most plausible theory. Chapter 4 takes this relevant theory and outlines possible models for the second-order factor structure of the LBI. The five-factor model created by Theron and Spangenberg (2005) is also outlined.

Chapter 5 details the methodology of the current study, with specific focus on the research design and data preparation. Chapters 6, 7 and 8 detail the research analysis of this study. Chapter 6 provides an overview of the proposed theoretical models and provides detail of the initial factor analysis conducted. Chapters 7 and 8 outline the analysis for each model, the three-factor and two-factor models, respectively. The results and a comprehensive discussion of the

findings follow in chapter 9, with specific comparatives of the two-, three- and five-factor models. The most plausible model for the creation of a leadership-unit performance structural model is discussed.

Chapter 10 concludes the study with a presentation of the conclusion, limitations and recommendations, highlighting the implications of this research.

1.9 Conclusion

This chapter has provided a brief but comprehensive overview regarding the current research, the motivation, aims and objective of the study as well as the research design and methodology. There is also a brief discussion regarding research validity and reliability. The chapter concludes with an overview of the chapters to follow in the current study.

CHAPTER 2: DEVELOPMENT OF A LEADERSHIP-UNIT PERFORMANCE STRUCTURAL MODEL

2.1 Overview

This chapter focuses on the development of a leadership-unit performance structural model, with specific focus on the two instruments from which, it is envisaged, it would be created, namely the performance index (PI) and the Leadership Behaviour Inventory (LBI).

2.2 The Creation of a Leadership-unit Performance Structural Model

Instruments measuring leadership behaviour have been created in order to assess potential and current leaders' behaviour within organisations. These assessments are utilised as a method to assist organisations to identify future leaders, or to support current leaders by showing where areas of growth can occur. In South Africa, leadership behaviour instruments are increasingly utilised in organisations today, with one such instrument being the LBI (Spangenberg & Theron, 2002).

Furthermore, aside from leadership measurements, a need for measuring performance in the workplace was realised. A work-unit performance model was created by Spangenberg and Theron (2004) in order to assess unit performance in the workplace. The instrument that is utilised to assess unit performance is known as the performance index.

It has been envisaged by Theron, Spangenberg and Henning (2004) that a leadership-unit performance structural model would be beneficial for South African organisations. The model would be based on the unit performance model, which is measured by the PI and the second-order structure of the LBI. It

is hoped that by capturing the relationship in a leadership-unit performance structural model, it would explain the "...manner in which the various latent leadership dimensions, mediated by influence processes, affect the endogenous unit performance latent variables" (Theron & Spangenberg, 2005, p.35).

To create a leadership-unit performance structural model, the structures underlying the PI, in terms of work-unit performance and the leadership dimensions offered by the LBI, can be viewed as the grounding for the creation of such a model. In order to add the leadership dimension to the work-unit performance it is important to examine the LBI and create a second-order structure. As Henning, Theron and Spangenberg (2004) report, in their study, the strength of the model underlying the PI, combined with the results obtained from the LBI study (Spangenberg & Theron, 2002), will pave the way to create a leadership-unit performance structural model. In order to do so, a second-order factor structure of leadership needs to be created from the first-order leadership dimensions of the LBI (Theron & Spangenberg, 2005).

The reason why the second-order factor structure is utilised and not the first-order factor structure is threefold: The first is that working with the first-order factor structure would be far too cumbersome. If one were to describe leadership with fewer but more extensive latent variables, it would be easier to outline the effects leadership has on work-unit performance. Secondly, correlations were found to exist between the latent leadership dimensions of the LBI and the authors believed that the creation of second-order latent variables could assist in explaining at least some of the correlations (Theron & Spangenberg, 2005). Furthermore, it would be difficult to take the first 24 first-order dimensions and link them with the ten latent variables from the unit performance (Theron & Spangenberg, 2005).

The current research will focus on the second-order factor structure of the LBI, with the aim of creating two theoretical models from the second-order factor structure.

2.3 Work-unit Performance: The Performance Index

The PI was created as a generic questionnaire to measure work-unit performance (Spangenberg & Theron, 2004). It was aimed at private, public and non-profit organisations.

In order to create the PI questionnaire, the authors focused on readily available models and psychometric measures. Two were found, namely the Nicholson and Brenner model (1994) and the unit performance questionnaire (Cockerill, Schroder & Hunt, 1993). The Nicholson and Brenner model consists of four elements. They are wealth, markets, adaptability and climate (Spangenberg & Theron, 2004). The unit performance questionnaire was adapted from the Nicholson and Brenner model and is utilised as a 360-degree performance measure. Neither of the two models satisfied the requirements to fully cover the unit performance field (Spangenberg & Theron, 2004).

To this end, the authors introduced dimensions that met their requirements for the creation of a work-unit performance measurement. They required a measure that could be used across various work units and that would be generic and standardised.

Theoretical considerations, undertaken by the authors, included focusing on literature that was central to the development of the work-unit performance questionnaire. These included organisational effectiveness, a time-dimension model of organisational effectiveness as well as the validity of non-financial performance measures (Henning, Theron & Spangenberg, 2004).

Through critical review of models of organisational effectiveness, the systems approach was the most plausible approach that could measure unit performance effectively. The goal approach was problematic primarily for prohibiting comparative measures of effectiveness between units and its difficulty of measurability in certain organisations. Included in this approach were financial and non-financial performance measures (Henning et al., 2004).

A further literature review by Henning et al. (2004) found a relation between the systems and time effectiveness. For the systems approach to be effective, time is required to be efficient, particularly considering the organisation does not function as a separate unit, but rather as part of a bigger system, that is, the environment. The organisation needs to be sustainable in this environment through the short, medium and long term (Henning et al., 2004). In terms of the validity of non-financial performance measures, studies indicate weak associations between individual non-financial performance measures and the financial performance of the organisation (Henning et al., 2004). Reasons include the influence of intangible assets (Henning et al., 2004).

After the extensive review of relevant literature, the authors created a preliminary model as well as questionnaire. They then tested the questionnaire on a sample of 60 units, comprising 257 respondents (non-probability sample of unit managers) on a 360-degree assessment basis. Analysis included item and dimensionality as well as confirmatory factor analysis. All results indicated a moderately good model fit (Henning et al., 2004).

The PI consists of eight core dimensions that form part of a spectrum of unit performance. The table below outlines the dimensions as well as an explanation of each (Henning et al., 2004, p.36).

Table 2.1: PI unit performance dimensions

Production and efficiency	Refers to quantitative outputs such as meeting goals, quantity, quality and cost-effectiveness, and task performance.
Core people processes	Reflect organisational effectiveness criteria such as goals and work plans, communication, organisational interaction, conflict management, productive clashing of ideas, integrity and uniqueness of the individuals or group, learning through feedback and rewarding performance.
Work unit climate	Refers to psychological environment of the unit, and gives an overall assessment of the integration, commitment and cohesion of the unit. It includes working atmosphere, teamwork, work group cohesion, agreement on core values and consensus regarding the vision, achievement-related attitudes and behaviours and commitment to the unit.
Employee satisfaction	Centres around satisfaction with the task and work context, empowerment, and career progress, as well as with outcomes of leadership, e.g. trust in and respect for the leader and acceptance of the leader's influence.
Adaptability	Reflects the flexibility of the unit's management and administrative systems, core processes and structures, capability to develop new products/services and versatility of the staff and technology. Overall, it reflects the capacity of the unit to appropriately and expeditiously change.
Capacity	Reflects the internal strength of the unit, including financial resources, profits and investment, physical assets and materials supply and quality and diversity of staff.
Market share	Does include market share (if applicable), competitiveness and market-directed diversity of products or services, customer satisfaction and reputation for adding value to the organisation.
Future growth	Serves as an overall index of projected future performance and includes profits and market share (if applicable), capital investment, staff levels and expansion of the unit.

In their study, Henning et al. (2004) established the causal linkages between the various dimensions and the dependency that they had on one another. The

results revealed the "… complex, intricate interplay between the various facets of unit performance" and that to capture this interplay between these facets would be difficult to achieve (Henning et al., 2004, p.35). The authors attempted to test an improved model in their follow-up study (Theron et al., 2004). The initial structural model was retested and then expanded to reveal the dynamic interaction between and across the numerous facets of unit performance. However, to fully capture how the various facets would affect the copious other dimensions, either indirectly or directly, would very be difficult (Theron et al., 2004).

These studies have assisted in furthering the assessment of the internal structure of the PI with the aim of refining and measuring its structural model, creating an instrument to assess work-unit performance and paving the way towards the development of a leadership-unit performance structural model.

2.4 The Leadership Behaviour Inventory (LBI)

As stated, it is pivotal to the creation of the leadership-unit performance structural model to expound the second-order factor structure of the LBI (Henning et al., 2004). As this is the aim of this current study, it is imperative to first focus on the underlying dimensions of the LBI and the theory that encompasses this instrument.

2.4.1 Theoretical Background

Worldwide there are many leadership questionnaires available for companies to assess leadership qualities in terms of transformation and change within organisational frameworks. South Africa had no such model and leadership performance was based on models outside of the South African context (Spangenberg & Theron, 2004).

Studies were conducted in order to review whether the MLQ factor structure could be replicated in South Africa (Ackermann, Schepers, Lessing & Dannhauser, 2000). Although their results confirm the three leadership distinctions of Bass (1985), a uniquely South African instrument was needed (Ackermann et al., 2000). Spangenberg and Theron (2001) developed an instrument that could assess an array of capabilities required by leaders and managers alike for them to implement change as well as to maintain unit performance in the South African framework. The authors felt the most important aim of the questionnaire development, in terms of the South African organisational context, would be that of "leading change" and "ensuring effective unit performance" (Spangenberg & Theron, 2002, p.12). It was imperative to develop an instrument that encompassed the challenges leaders in South Africa faced (Spangenberg & Theron, 2002).

It was also felt that the instrument should meet the following requirements: it should assess stages of leadership and it should measure the full range of behaviours required for change and performance (Spangenberg & Theron, 2002). The authors thought it important for the LBI to be based on theory from the new or neo-charismatic theories of leadership (refer to chapter 3, point 3.2.2). Focusing on aspects of charismatic, transformational and vision behavioural types, the developers explicated relevant behavioural dimensions.

Generic behaviours outlined by House (1995) formed part of the leadership theory found within the neo-charismatic or new leadership paradigm and shaped the theoretical background of the LBI dimensions (Spangenberg & Theron, 2002). These behaviours were expected to "… differentiate outstanding leaders from others in terms of their effects on followers and social systems" (House, 1995, p.416). Below follows an outline of the 11 generic behaviours and definitions, as House prescribed, for each (House, 1995, pp.416-420).

Vision

“Outstanding leaders articulate a vision or serve as a catalyst to facilitate the development of a vision that expresses cherished end values shared by leaders and followers”

Passion and self-sacrifice

“Outstanding leaders make extraordinary self-sacrifices in the interest of their vision, the mission they lead, and the collective”

Confidence, determination and persistence

“Outstanding leaders display a high degree of confidence in themselves and in the attainment of the collective vision”

Selective motive arousal

“Outstanding leaders selectively arouse followers’ motives that are of special relevance to successful accomplishment of the vision and mission”

Risk taking

“[O]utstanding leaders are more prone to take risks than others”

Expectations of and confidence in followers

“Outstanding leaders expect a great deal from their followers: commitment, determination, persistence, self-sacrifice, and performance above and beyond the call of duty”

Developmental orientation

“Leaders express developmental orientation by analysing follower skill and ability levels and providing coaching, training, and developmental experiences. Because developmental efforts stress the importance of follower competence, such leader efforts are likely to arouse follower achievement motivation as well as increase follower competence and self-efficacy”

Role modelling

"Outstanding leaders set a personal example of the beliefs and values inherent in the organisation's vision"

Demonstration of integrity

"Outstanding leaders demonstrate integrity toward their followers both individually and collectively"

Frame alignment

"Outstanding leaders engage in persuasive communications to align follower attitudes, values, and perspectives to their own"

Symbolic behaviour

"Outstanding leaders serve as symbolic figureheads and spokespersons for the collective"

House's distinctions of general, supervisory and management leadership styles were also taken into consideration (refer to chapter 3, point 3.3.2).

Four charismatic models of leadership were reviewed by Spangenberg and Theron (2002). They were the Conger-Kanungo model (1987), and the models developed by Bass (1985), House-Shamir (1993) and Sashkin (1988).

Bass (1985) focused specifically on the transformational leadership behaviour with emphasis on the leader's effect on the follower.

The House-Shamir model (1993) took the path-goal theory as a point of departure (refer to chapter 3, point 3.2.1.1, for a review of path-goal theory) with the self-concept theory forming an extension of this theory. According to this theory, charismatic leaders are believed to motivate followers through arousal

motivation behaviour. These leaders are viewed as having “visionary behaviour”, “image building”, “empowering behaviours”, “risk taking and self-sacrificial behaviour”, “intellectual stimulation”, “supportive leader behaviour” and “adaptive behaviour” (House & Shamir, 1993, pp.97-103).

Sashkin (1988) focused on vision with two imminent personality requirements of a leader: that of the leader’s personality geared toward the acquisition of power in order to empower followers to carry out the vision, with the second characteristic involving the leader's own cognitive skill and capability in order to develop the vision (Sashkin, 1988). Sashkin focused on the content of vision as well as the personal behaviours of visionary leaders. The five leader behaviours are “focusing attention”, “communicating personally”, “demonstrating trustworthiness”, “displaying respect” and “taking risks” (Sashkin, 1988, pp.142-146).

The model that was viewed as most beneficial for the necessary requirements of a South African model was that of Conger-Kanungo (Conger & Kanungo, 1987). The model was founded on the theory of charisma and is renowned in leadership literature today. As discussed in chapter 3, the Conger-Kanungo (C-K) scale focuses on three stages of the leadership process, that is, the environmental assessment stage, the vision formulation stage and the implementation stage. Spangenberg and Theron (2002) utilised this model as a launching pad in the creation of the LBI with key South African facets playing important roles.

In addition to the three stages outlined by the C-K model, it was suggested that an additional leadership role be included in the South African model. Nadler and Tushman (1996, p.696) suggested that “instrumental leadership” be utilised to complement charismatic leadership. Instrumental leadership focuses on shaping current behaviour to support the vision of the charismatic leader (Nadler & Tushman, 1996). Instrumental leaders would aim to “…build competent teams, clarify required behaviours, building measurement, and administer rewards and

punishments" that would assist individuals to attain their goals (Spangenberg & Theron, 2002, p.12). This theory is in line with path-goal theory, which states that leaders create and maintain their working environments with the aim of motivating desired behaviour (House, 1971).

Furthermore, Nadler and Tushman (1996, p.696) pointed out that instrumental leadership (known as leadership of change) requires three specific elements of behaviour: structuring, controlling and rewarding. These are complementary to charismatic leadership, which includes envisioning, energising and enabling (Nadler & Tushman, 1996, p.696). Refer to figure 2.1 for a diagrammatical outline (Nadler & Tushman, 1996, p.696).

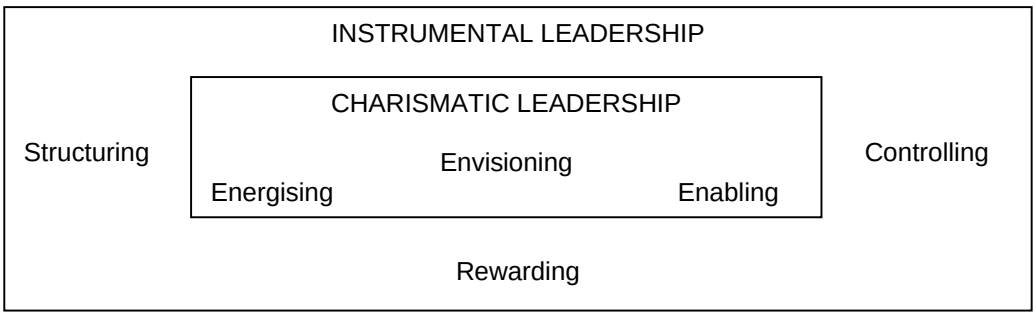

Figure 2.1: Instrumental leadership

However, as the developers of the LBI point out, the success of any leader will be evaluated through unit performance, which is unachievable if consideration is not given to the visionary and motivational aspects of leadership and combined with instrumental leadership (Spangenberg & Theron, 2002).

Taking the theory into consideration, Spangenberg and Theron (2002) created the Leadership Behaviour Inventory. The dimensions with their theoretical underpinnings are outlined below.

2.4.2 The LBI Dimensions

The LBI dimensions were formulated around four broad concepts that are used to assess the leader's skill. The four concepts follow aspects of the C-K stages (1987), that is, assessment, formulation and implementation within the leadership process, as well as Nadler and Tushman's instrumental leadership. The four concepts are the "assessment of the internal and external environment of the unit; development and selling of an environmentally appropriate yet challenging vision for the unit; preparation of the unit for the implementation of the vision and implementation of the vision" (Spangenberg & Theron, 2002, p.22).

When comparing the LBI dimensions with the four charismatic leadership scales of Conger-Kanungo (1987), Bass (1985), House-Shamir (1993) and Sashkin (1988), the authors found there to be comparatively high concurrence (Spangenberg & Theron, 2002). When compared to the 11 generic leadership behaviours outlined by House (1995), they did fit well, except for two, namely symbolic behaviour and selective motive arousal, which were not directly measured (Spangenberg & Theron, 2002).

The end result is that the LBI comprises 24 dimensions with four items under each, which provides a total number of 96 items. Each of these dimensions, with their definitions, is included below as per the LBI manual (Spangenberg & Theron, 2001, p.15).

Table 2.2: First-order latent leadership dimensions measured by the LBI

Assessment of the internal and external environment of the unit (*Environmental Orientation)*
• Awareness external environment (Awex) *Identifies and interprets external developments that may affect unit performance.* *Understands the business and positioning of the organisation.*

• Awareness internal environment (Awin) *Interprets internal dynamics and identifies weaknesses that may affect unit performance.*
Development and selling of an environmentally appropriate yet challenging vision for the unit **(*Vision Formulation and Sharing)***
• Developing challenging vision (Visi) *Develops a vision that gives people a sense of purpose, is customer-focused and advances diversity of people.*
• Building trust (Trus) *Builds confidence in the unit and visibly supports the mission and values of the unit.*
• Articulating vision and enlisting followers (Arti) *Articulates a vision for the future that provides direction, excites followers and that inspires commitment in followers.*
• Conceptualising strategy (Stra) *Builds strategies and plans based on thorough problem analysis and broad-based fact-finding. Considers consequences of decisions.*
Preparation of the unit for the implementation of the vision ***(Preparing the Organisation for Implementing the Vision)***
• Enabling the leader: personal growth (Risk) *Identifies challenging opportunities for self-development and is committed to continuous learning. Risks new ways of doing things.*
• Enabling the leader: self-discovery and -management (Lead) *Has good insight into own capabilities, weaknesses and behaviour and manages him/herself well.*
• Empowering followers (Foll) *Facilitates the personal growth of followers and creates a "hassle"-free environment that provides ownership for work.*
• Optimising structures and systems (Syst) *Adapts structures, processes and procedures to support implementation of strategy in a changing environment.*
• Building culture (Cult) *Develops a culture of openness that facilitates employee diversity and participation and is directed at high performance.*
Implementation of the vision **(*Implementing the Vision)***
• Influencing the external environment (Infl) *Builds the image of the organisation and practices good citizenship.*

• Honesty and integrity (Hono) *Considers ethical implications of decisions, assures agreed upon values are adhered to and deals honestly with all stakeholders.*
• Decisiveness and hardiness (Deci) *Acts decisively and makes tough decisions. Performs effectively under stress and reacts positively to change and uncertainty.*
• Challenging current reality (Valu) *Challenges current thinking, reconsiders current practices and improves work methods.*
• Facilitating learning (Lear) *Encourages followers to express their ideas and feelings and develops full understanding for their problems. Promotes continuous learning.*
• Interpersonal skills (Mana) *Effectively handles interpersonal and group relations.*
• Showing concern for others (Trea) *Shows concern for the aspirations, needs and feelings of others.*
• Inspiring people (Insp) *Raises the aspirations, confidence and motivation of followers. Conveys the message convincingly.*
• Facilitating interdepartmental co-ordination (Coor) *Facilitates interdepartmental co-ordination and helps people to see the big picture.*
• Acting entrepreneurial (Acti) *Develops new ideas, seizes opportunities and initiates projects for the benefit of the unit.*
• Developing and implementing performance plans (Plan) *Ensures that employee and unit goals and plans support organisational strategy and that employees know what is expected of them.*
• Reviewing performance (Revi) *Provides followers with feedback about unit performance as well as with specific feedback about their own performance.*
• Rewarding Performance (Rewa) *Acknowledges positive employee performance and behaviour; celebrates success.*

2.5 Conclusion

This chapter explored the development of a leadership-unit performance structural model, providing a general outline of what this model is envisaged to be, and then focused on the two instruments from which it would be created. The theory of the instrument underlying the unit performance model, that is, the performance index, as well as the instrument measuring leadership behaviour, the Leadership Behaviour Inventory, were examined.

CHAPTER 3: THEORETICAL UNDERPINNINGS OF A SECOND-ORDER FACTOR STRUCTURE FOR THE LBI

3.1 Overview

As previously discussed, following on the development of the LBI and the PI, Theron and Spangenberg (2005) proposed the creation of a leadership-unit performance structural model. As stated by Theron et al. (2004), in order to create a leadership-unit performance structural model, it is necessary to first explicate the second-order factor structure of the LBI. It is preferable to make use of the second-order factor structures as it is far easier to work with these factors than the cumbersome first-order factors, it would assist in explaining why correlations exist between the latent leadership dimensions and it would be easier to link the second-order factors of the LBI to the unit performance dimensions when creating the leadership-unit performance structural model.

This chapter focuses on the theory necessary to create such a second-order factor structure for the LBI.

3.2 Creating a Second-order Factor Structure for the LBI

As stated in chapter 2, the LBI comprises 96 first-order items (24 dimensions with four items under each). The authors found in their study that correlations existed between the latent leadership dimensions (Theron & Spangenberg, 2005). They indicated that the explanation could be found in one or more second-order latent variables. There could be common themes between the first-order dimensions, thus resulting in the correlations amongst them. It was viewed as potentially useful to create second-order factor structures around these commonly themed first-order factor structures. Theron and Spangenberg (2005) indicated that it would be straightforward and enticing to make use of the four headings already

available in describing the first-order latent variables as the second-order factors (refer to chapter 2, table 2.2). However, it would be erroneous to assume that all the factors found under each of these overarching headings should be viewed as having some sort of correlation due to proximity of chronology. The four phases are useful simply to summarise the leadership process (Theron & Spangenberg, 2005). It is therefore necessary to find a more appropriate structure for the first-order dimensions.

It would be beneficial to provide a definition of second-order factor structures at this point. They are broader, general constructs, do not explain all the variances found between the first-order variables and should be interpreted as "...the abstract common theme shared by the abstract common themes in a number of bundles of behaviour, each of which constitutes leadership success, because they each impact on individual and unit performance" (Theron & Spangenberg, 2005, p.38).

Theron and Spangenberg (2005) focused on theoretically justifiable alternatives, creating a unique five-factor model and proposing two models based on theory related to House (1995) and Avolio et al. (1999). According to their arguments, these were viewed as the most plausible theoretical alternatives for the creation of a second-order factor structure for the LBI.

Before outlining the two suggested theoretical models, it is imperative to discuss leadership theory to gain an understanding from whence the suggested theoretical models originate. An immense array of literature can be found on leadership theory, with changing opinions and ideas as to what leadership encompasses and how to characterise it.

Leadership theory began as early as the 1940s and was based on research "…identifying traits, behaviours, and personality patterns that would differentiate leaders from non-leaders" (Fiedler, 1996, p.241). During the 1970s, research

regarding leadership increased and much of the research conducted on leadership is still pertinent to present-day theories.

After an extensive literature review, the author found that the various theories could be classified as traditional (Yukl, 1999), new (House, 1995) and emergent (Zaccaro, Gilbert, Thor & Mumford, 1991) leadership theories. Figure 3.1 provides an outline of this classification of leadership theory, spanning from the initial trait theories, until the so-called emergent theories. This figure was created by the author, as the various theories generally fall under one of the three classifications of leadership theory and it was felt that the figure would provide a supportive overview.

It must be noted that due to the extensive array of theories on leadership, not all of the models and theories of leadership have been included in the figure as well as the text. However, from the author's literature review, these were viewed as the most influential and important theoretical standpoints for the current research.

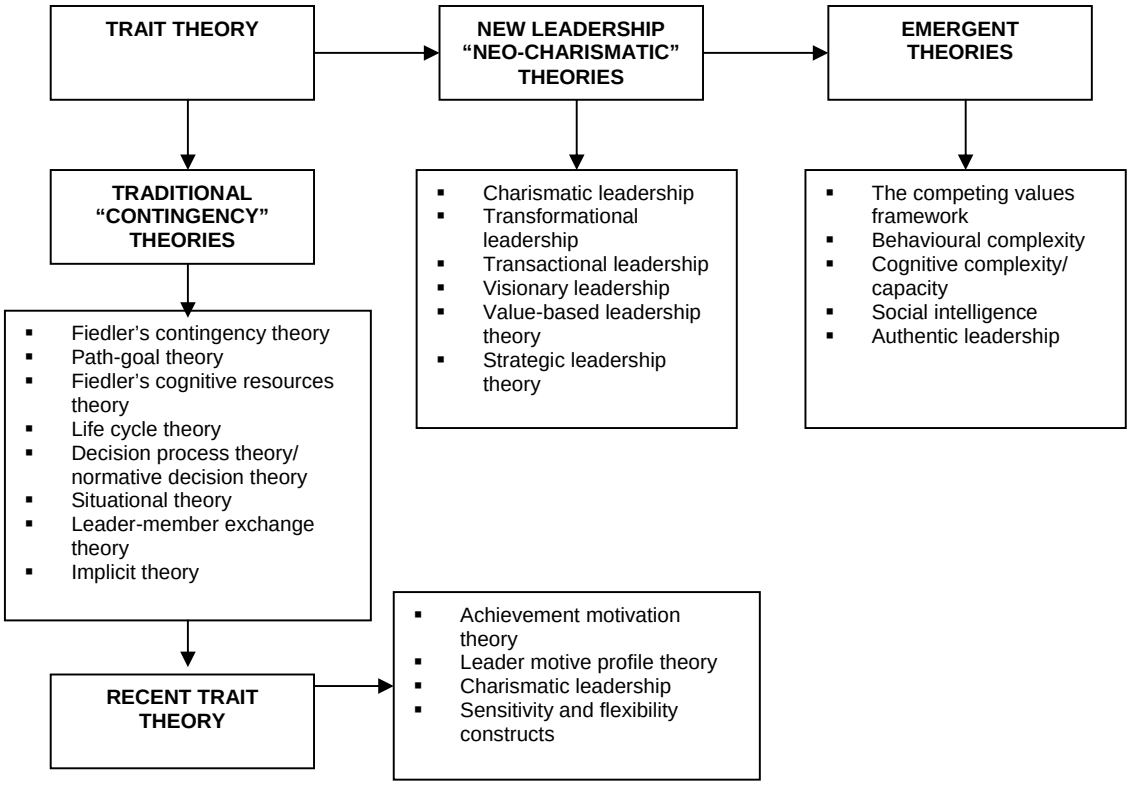

Figure 3.1: Broad-based overview of leadership theory

The following section provides an overview of those theories that have been most influential in shaping the current understanding of leadership and that are important to this current research. Certainly the primary focus for the purposes of this study resides in new leadership theories; however, traditional leadership theories provide an understanding of not only House's perspectives on leadership, but also interesting differences between the traditional and new leadership type theories. Emergent leadership theories are present today and are gaining influence amongst scholars and organisations alike. Since this study focuses on the creation of models to essentially be used by organisations, it is important to examine such theoretical standpoints of leadership.

In order to justifiably make use of the MLQ and House instruments, it was viewed as necessary to understand leadership theory, as a whole, and from whence these models arose.

3.2.1 The Traditional Leadership Theories

Traditional leadership theories were initially developed in the 1970s and arose from the initial trait theories. These theories evolved into the situational contingency theories, referred to as contingency theories (House & Aditya, 1997). These contingency theories include the contingency theory, path-goal theory, situational leadership, life cycle and decision process theory as well as cognitive resources theory (House & Aditya, 1997; Hunt, 1999). These theories emphasise the rational processes involved in leadership (Yukl, 1999).

Although not necessarily part of the traditional theories, leader-member exchange theory and implicit theory have been included in this section as they both arose in this period and have made some in-roads in recent literature.

Path-goal, contingency and cognitive resources theory as well as the leader-member exchange are summarised below.

3.2.1.1 Path-goal Theory

Developed by House (1971), path-goal theory proposes that the leaders' behaviour is viewed as acceptable to subordinates as long as the behaviour is a source of satisfaction to the subordinates, either immediately or in the near future, and that the instrumental driver will be the leader's behaviour (House & Mitchell, 1997). Further defined, the theory specifies "…situational moderators of relationships between task- and person-orientated leadership and their effects" (House & Aditya, 1997, p.420). The leaders who assist the followers to attain

organisationally desired and individually valued outcomes are viewed as effective (Schriesheim & Neider, 1996, p.317).

As stated by Jermier (1996, p.313), "[a]fter nearly 25 years of critical examination, path-goal still stands as the premier theory of dyadic supervision in the field of leadership". According to the theory, it is the situation that plays a primary role in the effect of leader behaviour on the subordinate (Yukl, 1989).

This theory has raised numerous concerns, including the adequacy of validating the theory (House & Aditya, 1997; Steers, Porter & Bigley, 1996; Schriesheim, Castro, Zhou & DeChurch, 2005). In addition, path-goal theory is viewed as denying the leader behaviour in various situations (Jermier, 1996). Despite these criticisms, this theory has provided significant understanding of leadership behaviours and situational variables, still relevant in organisational settings today (Steers, Porter & Bigley, 1996).

Due to the numerous criticisms of the earlier theoretical framework of path-goal theory, House (1971) moved to revise the theory and attempted to link the theory to the charismatic and transformational theories. He labelled this type of leadership as value-based leadership. The revisions made still require further analysis and testing (Schriesheim et al., 2005, p.22).

3.2.1.2 Fiedler's Contingency and Cognitive Resources Theories

Contingency Theory

Fiedler's contingency theory postulated the relationship between the leader's behaviour and personality with situational variables (House & Aditya, 1997). It was the first theoretical work to do so. The theory "…posited a two-way interaction between a measure of leader task-motivation versus relationship

motivation, and a measure of … situational control" (House & Aditya, 1997, p.419).

Leaders, Fiedler (2006) believes, have the ability to be taught to identify their own leadership style as well as the most favourable conditions for their leadership technique. The theory contains three variables, the least preferred co-worker (LPC), situation favourability and outcome criteria of group performance (Steers et al., 1996, p.171).

Although the theory has endured much criticism, including that of conceptual and conflicting empirical findings (House & Aditya, 1997), its core idea that any leaders' ability to make an impact is dependent on situational contingency factors is important for theory of today (Steers et al., 1996, p.173).

Cognitive Resources Theory

Building on the contingency theory, Fiedler developed a cognitive resources theory (CRT). This theory is a "…person-by-situation interaction theory in which the person variables are leader intelligence and experience, and the situational variable is stress experienced by leaders and followers" (House & Aditya, 1997, p.421).

As stated by House and Aditya (1997, p.421), this theory has provided the answer to one of the most important questions regarding leadership, that is, "…when is it more effective to be participative with followers, and when is it more effective to be directive?" Thus, the theory enjoys popularity in leader selection and situational management to this day (House & Aditya, 1997).

3.2.1.3 Leader-Member Exchange Theory

Named by House and Aditya (1997) as a newly established theory, the leader-member exchange (LMX) arose in the traditional period and has gained certain momentum in current studies.

It arose from the vertical dyad linkage (VDL) theory over 25 years ago (House & Aditya, 1997; Graen & Uhl-Bien, 1995). The theory was unlike many others in that it focused specifically on the relationship between the leader and his or her followers, that is, it provided a relationship-based approach towards leadership (Graen & Uhl-Bien, 1995). As stated by House and Aditya (1997, p.427), "LMX theory is the examination of relationships between leaders and followers, as opposed to behaviour or traits of either followers or leaders". It is this that has made the LMX theory unique when compared to other theories.

In essence, the LMX theory contends that valuable leadership processes take place when both the leader and his or her followers are able to build mature leadership interactions that allow for access to a variety of benefits (Graen & Uhl-Bien, 1995). The theory describes the relationship that develops in and between various organisations (Graen & Uhl-Bien, 1995).

The theory has been criticised for not explaining how relationships are initiated or sustained (House & Aditya, 1997, p.428) and what the optimal exchange between leader and follower is in order to attain leader effectiveness (Steers et al., 1996).

3.2.2 New Leadership Theories

House (1995) refers to this new era of leadership as neo-charismatic where there is a move away from the leadership paradigm focused on task, social and participative roles. Bryman (1992, p.91) refers to these theories as "new"

leadership theories and unlike the more "rational" aspects pertaining to the traditional theories, the new theories emphasise emotions as well as values (Yukl, 1999).

Many of the new leadership theories that one observes in literature today have key components, many of which can be traced to the traditional leadership theories. For instance, intellectual stimulation by leaders (part of the transformational theory) can be traced to path-goal theory as well as leader-member exchange theory (Hunt, 1999).

As stated by Boal and Hooijberg (2001), charismatic, transformational and visionary theories are viewed as transposable, or at least overlapping by many theorists including Bryman (1992), House and Aditya (1997) and House and Shamir (1993). However, as Yukl (1999) states, it has been proposed that a leader is able to be charismatic without being transformational and vice versa. Thus, Hunt and Conger (1999) propose that more distinction be utilised between the two leadership theories.

Although not essentially part of the new theories, strategic and transactional leadership have been included under this heading. The work below highlights theories of strategic leadership and charismatic theory, with further emphasis on the theories of transformational and transactional leadership, due to their significance to the current study.

3.2.2.1 Charismatic Leadership

Theory of charismatic leadership was initially developed by Weber in 1947 and refined by House in the 1970s, at approximately the same time as transformational leadership was in its inception (House & Aditya, 1997).

Charisma is viewed either as the highest form of transformational leadership, or an attribute of transformational leadership (Conger, 1999). However, as stated previously, Yukl (1999) argues that transformational and charismatic leadership are not compatible and the concepts should not be used interchangeably.

Yukl (1999, p.294) states that the most useful definition of charisma "…is in terms of attributions of charisma to a leader by followers who identify strongly with the leader". Theories of charisma highlight the personal recognition that followers have with their leader (Boal & Hooijberg, 2001). Charisma is defined as an entirely social process whereby the social structures include more than simply the leadership process (Beyer, 1999). In terms of charismatic leadership, these leaders have the ability to create a form of 'inspirational vision' and a notion that their tasks are extraordinary through their behaviour (Conger, Kanungo, Menon & Mathur, 1997).

Charisma can be viewed in two forms, that is, visionary and crisis responsive (Boal & Hooijberg, 2001; Boal & Bryson, 1988), with vision viewed as fundamental to the entire concept of charisma (Beyer, 1999). Gardner and Avolio (1998, p.33) see charisma from a dramaturgical perspective and introduce two terms, that of "leader identification" and "follower identification", which refer to the interactive process where leaders and followers construct identities in a shared manner. Charismatic leaders' visions and self-systems guide their leadership capabilities. However, identities in the dramaturgical process continuously change and were posited by Gardner and Avolio (1998) in a four-phase model, that of framing, scripting, staging and performing.

As can be viewed from the above, there are many different directions which theorists explored in terms of the conceptual understanding of charisma. Critically, Yukl (1999) points out that there needs to be some clarity and consistency in the definition theorists give to charisma.

House's Charismatic Leadership Theory

House developed a theory of charismatic leadership in the 1970s that was an extension of the initial theory developed by Weber (Steers et al., 1996). House's theory was developed as three propositions: firstly, various traits of charismatic leaders can be identified, secondly, the type of behaviour exhibited can be identified and finally, the manner in which these leaders emerged can be identified (Steers et al., 1996).

Value-based theory of leadership was developed by House as an extension of his initial theory of charismatic leadership (House & Aditya, 1997). It identified the "…[l]eader motive profile and leader's self-confidence and conviction as predictors of charismatic leader behaviors" (House & Aditya, 1997, p.435).

Conger and Kanungo's Charismatic Leadership Theory

Conger and Kanungo (1987) believe charismatic leadership to be an *attribution* of the followers. Subordinates observe leader behaviour and from this ascribe certain charismatic qualities to the leader (Yukl, 1989). They created a scale in order to measure charisma within leaders. The scale, known as the C-K scale, focused on three stages of the leadership process, that is, the environmental assessment stage, the vision formulation stage and the implementation stage (Conger & Kanungo, 1987).

3.2.2.2 Transformational Leadership

Burns (1978) was the 'founder' of this line of theory, proposing both the transformational and transactional leader types in his book *Leadership*. Burns believes that "[t]ransformational leaders seek to raise the consciousness of followers by appealing to higher ideals and moral values" (*in* Yukl, 1989, p.210). Bass (1985) extends the transformational leadership theory. He defines a

transformational leader in terms of the "…leader's effect on followers" (*in* Yukl, 1989, p.211).

Essentially, transformational leadership took its direction from previous theories that believed all managers to be leaders and indicated that this is not always the case. They are not interchangeable concepts. A person can be a manager and not a leader (Hunt, 1999). Moving away from the ideas presented by charismatic leadership theorists, theorists of transformational leadership also include factors such as intellectual stimulation, individual consideration and inspiration (Bass, 1985). These leaders are viewed in terms of the effect they have on followers as well as the behaviours exhibited in order to achieve outcomes from their followers (Yukl, 1999).

Although the term "transformational" has at times been used in a derogatory manner to describe the various activities of managers, it is in fact a term that describes one of the most effective and beneficial leadership types in any organisation (Conger, 1999). Transformational leaders have vision of the future which they are able to bring forward to peers and subordinates alike (Yammarino & Bass, 1990). These types of leaders are practical, focused and are able to create self-worth among subordinates through paying extra attention to individual differences and stimulating them intellectually (Yammarino & Bass, 1990). Transformational leaders are able to look beyond their own interest and to articulate what is important for the organisation and the workforce in order to obtain optimal results (Antonakis, Avolio & Sivasubramaniam, 2003). This they achieve through creating "…collective interests, and help followers achieve extraordinary goals" (Antonakis et al., 2003, p.264).

Defined by Bass and Avolio (2003, p.4), transformational leadership is a

> "…process of influencing in which leaders change their associates' awareness of what is important, and move them to see themselves and the opportunities and challenges of their environment in a new way.

> Transformational leaders are proactive: they seek to optimise individual, group and organisational development and innovation, not just achieve performance 'at expectations'. They convince their associates to strive for higher levels of potential as well as higher levels of moral and ethical standards".

Transformational leaders bring with them long-term commitment and take the time to understand an organisation's culture before moving forward to realign the organisation's culture with a "…new vision and a revision of its shared assumptions, values and norms" (Bass & Avolio, 1994b, p.542). However, transformational leadership has been criticised due to its inclusion of a diverse collection of leader behaviours with no common element amongst them (Yukl, 1999).

This type of transformational leadership is discussed in further detail when reviewing the MLQ created by Bass and Avolio (1990).

3.2.2.3 Transactional Leadership

This type of leadership is quintessentially a description of management, which is viewed separately to leadership (Conger, 1999). It is included amongst the new leadership theories as it is most often utilised as a comparative measure against transformational leadership.

Transactional leadership is viewed as efficient leadership, but not as effective as transformational leadership styles. In terms of this type of leadership, the individual understands the organisational culture and goes along with the said culture, ensuring that goals and targets are met according to the contractual agreement, existing regulations and norms within the organisation (Bass & Avolio, 1994a). The effect is one of a give and take process, whereby rewards

are provided based on the projection of satisfactory behaviour and outcomes from employees (Lowe, Kroeck & Sivasubramaniam, 1996).

In comparison to transformational leaders, these leaders are "…qualitatively different kinds of individuals who construct reality in markedly different ways, thereby viewing themselves and the people they lead in contrasting ways" (Kuhnert & Lewis, 1987, p.649).

The transactional type culture within the organisation is defined by Bass and Avolio (1994b, p.547) as

> "… everything in terms of explicit and implicit contractual relationships. All job assignments are explicitly spelled out along with conditions of employment, disciplinary codes and benefit structures. Employees work as independently as possible from their colleagues. Cooperation depends on negotiations, not problem-solving or a common mission. Commitment is as deep as the organisation's ability to reward members for successful performance."

This type of leadership is outlined in further detail when reviewing the MLQ created by Bass and Avolio (1990).

3.2.2.4 Strategic Leadership Theory

Strategic leadership theory originates from the upper echelon theory, from the work of Dubin in 1979 (Boal & Hooijberg, 2001). Although this theory does not necessarily fit in with the new theories of charisma and transformation, which emphasise interpersonal processes between leader and followers, it does have a place amongst them (Boal & Hooijberg, 2001).

The upper echelon theory states that organisational outcomes made by leaders through their performance and decisions are, in part, predicted by "managerial

background characteristics" (Hambrick & Mason, 1984, p.193). This theory highlights the importance of "…leadership *of* organisations", which is in contrast to earlier theories that emphasised the importance of "…leadership *in* organisations" (Hunt, 1999, p.134).

Waldman and Yammarino (1999) point out that there is a need for the characteristics of a leader to be considered fully for a complete test of upper echelons theory. For this reason, Boal and Hooijberg (2001) attempt to provide claims that new leadership theories (such as charismatic and transformational) and emergent leadership theories (such as behavioural and cognitive complexity) are able to be integrated into what they believe to be the essence of strategic leadership theory. The authors provide a proposition that "…absorptive capacity, capacity to change, and managerial wisdom represent the essence of strategic leadership" (Boal & Hooijberg, 2001, p.539).

Positive effects on strategic leadership are believed to occur with the influences of the said new and emergent theories.

3.2.3 Emergent Leadership Theories

There are many current theories that have arisen from the traditional and new theories. Although a great deal of research is still being conducted utilising the new theories, in particular transformational leadership theory, value has been added to the discipline by providing some additional theoretical standpoints. Such theories include the competing values framework, behavioural complexity, cognitive complexity/capacity and social intelligence. Authentic leadership has also grown in popularity. Such theories have provided much-needed understanding into the 'who' as well as the 'what' of leadership, that is, the personality and the social environment behind the leader. As indicated by Zaccaro, Gilbert, Thor and Mumford (1991), social environments are very

important in reviewing effective leadership in combination with the traits of leaders, such as intelligence, behaviour and cognitive capabilities.

Brief outlines of some of these current theories are included below. There is a distinct common thread which runs through them all, in that the theories focus on innate characteristics of leader and leadership ability.

3.2.3.1 Behavioural Complexity

Recent research has covered an array of leaders' behaviours and their ability to have a broad behavioural range (Boal & Hooijberg, 2001). These are the leaders who are viewed as more successful than their counterparts.

Leaders displaying behavioural complexity can be described as displaying flexibility, which includes varying one's responses depending on what the situation is (Zaccaro et al., 1991). Behavioural complexity postulates three areas of concern in terms of behaviour in leadership:

- The inability to specify leadership roles for *all* situations,
- The assumption that all followers are subordinates,
- The necessity for leaders to meet expectations of not only their followers, but also the stakeholder (Hooijberg & Schneider, 2001, p.108).

Denison, Hooijberg and Quinn (1995) indicate that it might be beneficial to view behavioural complexity at the same time as cognitive complexity, whereby a leader might have preconceived views regarding an event but might behave differently, according to what is necessary in that specific situation. Leaders are viewed as requiring a large behavioural repertoire as well as capabilities in role selection across various situations. "To do so leaders need both cognitive and behavioural complexity and flexibility" (Boal & Hooijberg, 2001, p.530).

Behavioural complexity is linked to effective leadership and concepts of paradox and contradiction (Denison et al., 1995). Instead of attempting to define the necessary behaviour required to be a leader, it is perhaps necessary to look at the situation in which the leader finds himself/herself. As stated by Denison et al. (1995, p.526), "…a more fruitful approach may be to attempt to define the portfolio of roles and behaviours that allow a leader to respond to complex demands, rather than the calculus by which a particular behaviour is applied to a particular situation".

3.2.3.2 Cognitive Complexity/Capacity

The concept of cognitive complexity dates back a few decades, with work related to "cognitive differentiation and integration" going back to the 1950s (Hunt, 1991, p.126).

The underlying assumption of this perspective is that cognitively complex persons utilise more dimensions and categories in order to differentiate commonalities in specific tasks and are therefore able to perform in certain situations better than other individuals (Boal & Hooijberg, 2001).

As indicated in the behavioural complexity section, it might be constructive to view the cognitive complexity of a leader in conjunction with the behavioural complexity of the leader (Denison et al., 1995).

3.2.3.3 Social Intelligence

Theory regarding leadership has continuously identified behavioural and interpersonal skill as important for leader success. However, just as important is the social setting a leader functions in, that is, the importance of social intelligence (Hooijberg & Schneider, 2001). A variety of definitions have been

postulated by theorists, most of which incorporate the need to understand others in a way that will achieve one's goals (Hooijberg & Schneider, 2001).

Social intelligence pinpoints two aspects, "…social understanding and situationally-appropriate behaviour" (Zaccaro et al., 1991, p.324). The theory has been criticised for its lack of a behavioural measure. However, having included this measure, the theory is having more success (Zaccaro et al., 1991).

3.2.3.4 Authentic Leadership

Authentic leadership is a new type of leadership, still in its genesis, which is gaining momentum. Fundamentally, it is developing due to the perceived necessity of leaders to in effect be more positive and authentic (Cooper, Scandura & Schriesheim, 2005). Authentic leadership can be viewed as incorporating both transformational and ethical leadership types (Avolio, Gardner, Walumbwa, Luthans & May, 2004).

Authentic leadership can be defined as "…a root construct that can incorporate transformational and ethical leadership" (Avolio et al., 2004, p.806). However, as Cooper et al. (2005, p.478) state, this definition needs to be refined to include specification of "the nature of the dimension, observer / perspective of the person(s) providing the report", "level(s) of analysis involved", "response category measurement units to be employed" and the "dimension's content domain".

Research on authentic leadership is in its infancy and considerable revision is still to be had. However, future developments of leadership theory will need to take cognisance of this theory as it provides a closer look at what constitutes the person behind the leadership function. Importantly, its development will create and be translated into sustainable performance of leaders (Avolio & Gardner, 2005).

3.3 Plausible Theoretical Considerations to create the Second-order Factor Structure

As can be observed from the literature review in the previous section, leadership theory spans across a vast amount of time and has several differing standpoints. Behaviour, environment and innate capabilities all play a role, depending on the approach of the theorist. Instruments to measure leadership have been created primarily to enhance performance in the workplace. The LBI focuses on leadership competencies and is founded on an in-depth interpretation of the leadership construct (Theron & Spangenberg, 2005). The LBI has as its core elements of charismatic or transformational leadership (Theron & Spangenberg, 2005). House (1995) views charisma and transformational leadership as general leadership. Further elements of the LBI construct include management and supervisory leadership (House, 1995). Due to the fact that the LBI is grounded in the theory of House's three distinctions of leadership as well as transformational and charismatic leadership, it would be important to look at plausible theoretical considerations with these elements already in place. This would result in a more plausible second-order factor structure. The focus is therefore on the House distinctions (1995) and the MLQ (Avolio et al., 1999), with its grounding in transformational leadership theory, as possible second-order factor structures for the LBI dimensions. The House distinctions and the Avolio instrument were named by Theron and Spangenberg (2005) as two of three plausible hypotheses from whence the LBI second-order structure could be derived. The sections below focus on firstly the MLQ (Avolio et al., 1999), explicating its second-order factor structure, and then the three leadership-style distinctions created by House (1995).

It is anticipated that at least one of these instruments should provide an adequate fitting second-order factor structure through firstly theoretical considerations and finally through vigorous empirical assessment.

3.3.1 The Multifactor Leadership Questionnaire (MLQ)

The MLQ was developed from a theoretical background related primarily to transformational and transactional theory, based on the work of Bass (1985). The initial phases for the development of the MLQ began years ago (Bass, 1985) with subsequent revisions taking place over time. The instrument comprises transformational, transactional and passive-avoidant leadership behavioural types.

Criticisms of the MLQ have been lodged, relating to the psychometric properties of the MLQ where it was found that contingent reward was related to transformation leadership (Tejeda, Scandura & Pillai, 2001). Concern was also raised in terms of the factor structure underlying the MLQ, which does not reproduce through exploratory testing and discriminant validity queries (Goethals, Sorenson & Burns, 2004). The latest version of the MLQ was developed by the authors to quell some of the concerns raised about previous versions of the model (Avolio, Bruce & Jung, 1999).

The current model, which this study focuses on, has been named the Form 5X. Various articles have shown the Form 5X best represented by six lower-order factors and three correlated higher-order factors (Avolio & Bruce, 1999), as well as a nine-factor leadership model (Antonakis, Avolio & Sivasubramaniam, 2003). The full range leadership theory (FRLT) was first proposed by Avolio et al. (1999) and now forms part of the MLQ (Form 5X). The FRLT within the MLQ (Form 5X) represents nine single-order factors comprising five transformational leadership factors, three transactional leadership factors and one non-transactional laissez-faire leadership factor (Antonakis et al., 2003). This is the current representation that the authors of the MLQ use (Bass & Avolio, 2003).

The diagrammatical outline below indicates the nine lower-order factors with the three higher-order factors, that is, transformational, transactional and laissez-

faire, that comprise the MLQ, as viewed in the feedback reports on the Mindgarden website (Bass & Avolio, 2003).

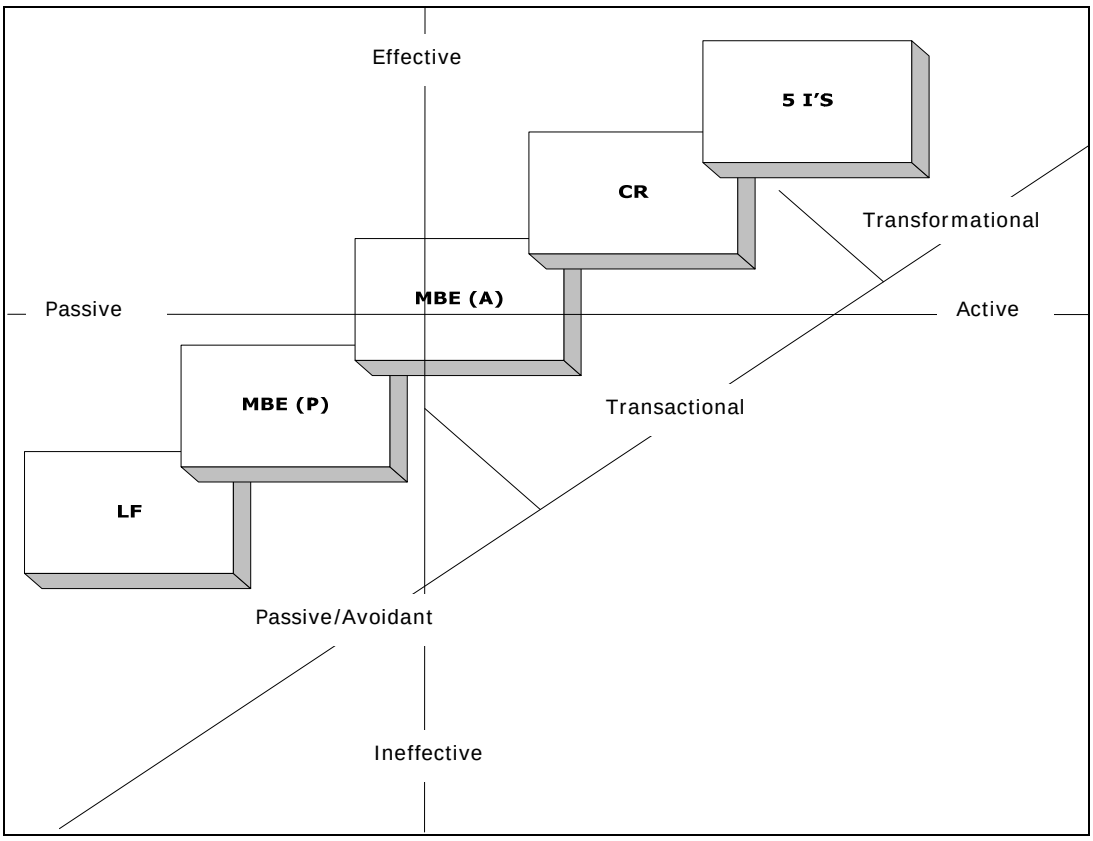

Figure 3.2: Multifactor leadership questionnaire

The diagram outlines the passive and ineffective behaviour, which occurs with passive/avoidant leadership styles, that is, laissez-faire (LF) and management-by-exception passive (MBE (P)). Transactional indicates more effectiveness comprising management-by-exception active (MBE (A)), and contingent reward (CR) showing even more active and proficient leadership. Transformational leadership is the most active and effective, consisting of the 5 I's, that is, idealised influence (attributed), idealised influence (behaviour), inspirational motivation, intellectual stimulation and individualised consideration (Bass & Avolio, 2003).

Further detailed summaries of the dimensions that encompass the MLQ are outlined below.

3.3.1.1 Transformational Leadership

According to the MLQ theory, transformational leadership comprises the following five first-order factors (Antonakis et al., 2003, p.264).

- *Idealised influence (attributed)*
  Socialised charisma of the leaders, whether the leader is perceived as being confident and powerful, and as focusing on higher-order ideals and ethics.

- *Idealised influence (behaviour)*
  Charismatic actions of the leader that are centred on values, beliefs and a sense of mission.

- *Inspirational motivation*
  The ways leaders energise their followers by viewing the future with optimism, stressing ambitious goals, projecting an idealised vision and communicating to followers that the vision is achievable.

- *Intellectual stimulation*
  Leader actions that appeal to followers' sense of logic and analysis by challenging followers to think creatively and find solutions to difficult problems.

- *Individualised consideration*
  Leader behaviour that contributes to follower satisfaction by advising, supporting and paying attention to the individual needs of followers, and thus allowing them to develop and self-actualise.

3.3.1.2 Transactional Leadership

In terms of transactional leadership, the MLQ consists of the following two first-order factors (Antonakis et al., 2003, p.265):

- *Contingent reward leadership*
  Leader behaviours focused on clarifying role and task requirements and providing followers with material or psychological rewards contingent on the fulfilment of contractual obligations.

- *Management-by-exception active*
  The active vigilance of a leader whose goal is to ensure that standards are met.

3.3.1.3 Passive-avoidant Behaviours

Passive-avoidant leaders are the most ineffective of the three types of leadership comprising the MLQ. Passive-avoidant leadership has the least amount of cohesiveness within the organisation and the leader has avoidance behaviour in terms of making decisions and taking responsibility for his or her actions (Antonakis et al., 2003).

In terms of passive-avoidant behaviours, the MLQ consists of the following two first-order factors (Antonakis et al., 2003, p.265):

- *Management-by-exception passive*
  Leaders only intervene after non-compliance has occurred or when mistakes have already happened.

- *Laissez-faire avoidant behaviour*
  Leaders are only viewed as active in terms of their choosing to avoid taking any form of action.

As indicated by Theron and Spangenberg (2005), there is little similarity between the passive-avoidant factors in the MLQ and the first-order factors of the LBI. Based on their proposed second-order hypothesis for the MLQ, this third component of the MLQ will not be evaluated in this study.

3.3.2 The House leadership-style distinctions

House (1995) provides a unique conceptualisation of leadership and has created pertinent distinctions of various styles of leadership. He formulates a distinction between management, supervisory leadership and general leadership.

Figure 3.3 (created by the author, based on House's leadership-style distinctions, 2005) provides a diagrammatical outline of the dimensions that form the diverse leadership styles. Management and supervisory leadership are positions representing formal authority, whereas general leadership may not have formal authority but the leader presents unique personality and attributes, which ensures that they are able to influence willing followers (House, 1995).

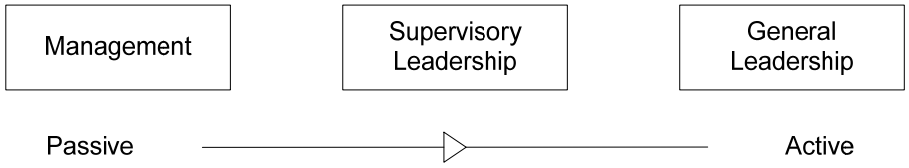

Figure 3.3: Diagrammatical representation of the House model

The three dimensions are outlined in more detail on the following page.

3.3.2.1 Management

According to House (1995, p.413), management encompasses the "…behaviour of a person in a position of formal authority that results in compliance of organisational members with their normal role or position requirements". This type of leadership entails rational-analytical behaviours in order to develop and implement company policies and procedures (Theron & Spangenberg, 2005).

3.3.2.2 Supervisory leadership

Supervisory leadership is defined as the "…behaviour intended to provide guidance, support, and corrective feedback for the day-to-day activities of work unit members" (House, 1995, p.413). Leadership is interactive, although not as interactive as the general leadership style (Theron & Spangenberg, 2005).

3.3.2.3 General leadership

This charismatic type of leadership is one of interaction (Theron & Spangenberg, 2005). General leadership focuses on leadership behaviours where the individual is persuasive in terms of his or her vision and motivates individuals to take on the leader's own ideological values. The followers thus relinquish self-interest and make "…personal sacrifices in the interest of a collective vision" (House, 1995, p.413).

3.4 Conclusion

A need was found to create a second-order factor structure for the LBI. This would assist in paving the way to create a leadership-unit performance structural model. In order to create such a model, it was necessary to consider all leadership theory available. A general overview of theory on leadership from its genesis to the most recent theory was presented.

Leadership theory has been conceptually viewed and criticised for many reasons. However, as Osborn, Hunt and Jauch (2002, p.799) state, “[l]eadership theory is part of a larger series of theoretical perspectives that specify the system, its boundaries, the types of criteria to be examined and the basic causal mechanisms seen to be evoked by the leaders, wherever they may reside in the system”.

From the literature available and suggestions provided by Theron and Spangenberg (2005), the two most plausible theoretical second-order factor structures were identified. The theory surrounding the MLQ as well as the House leadership-style distinctions were reviewed.

CHAPTER 4: SECOND-ORDER FACTOR STRUCTURES FOR THE LBI

4.1 Overview

Theron and Spangenberg (2005) identified three possible second-order factor structures for the LBI. They researched the five-factor model they created and proposed that the House leadership-style distinctions as well as the Avolio et al. instrument could be two plausible models. These proposed second-order models were created through theoretical consideration only.

Below follows an outline of the five-factor model created by Theron and Spangenberg in their attempt to attain a second-order factor structure (2005). The proposed models created from the MLQ and the House leadership-style distinctions are also presented and discussed.

4.2 Second-order Factor Structure: Five-factor Model

Theron and Spangenberg (2005) hypothesised that a multi-level model should be created in order to fully encompass the intricacies of the LBI higher-order dimensions. From their assessment of the literature they considered the following second-order levels to be most plausible: "…organisational/unit, team/interpersonal, and intrapersonal" (Theron & Spangenberg, 2005, p.39). Combining focus of behaviour with the nature of that behaviour would result in a five-factor, second-order behaviour model (Theron & Spangenberg, 2005).

The five-factor model, with the LBI first-order dimensions listed under each of the five higher-order structures, is outlined below (Theron & Spangenberg, 2005, p.39). The abbreviation of each LBI first-order dimension is included.

Table 4.1: Five-factor model for the LBI

1. Organisational/unit: rational-analytical (Unitrat)
1.1 Awareness external environment (Awex)
1.2 Awareness internal environment (Awin)
1.3 Developing a challenging vision (Visi)
1.4 Conceptualising strategy (Stra)
1.5 Optimising structures and systems (Syst)
1.6 Developing and implementing performance plans (Plan)(3/4)
1.7 Reviewing performance (Revi)(1/4)
2. Organisational/unit: affective-interactive (Unitaff)
2.1 Articulating the vision and enlisting followers (Arti)
2.2 Influencing the external environment (Infl)
2.3 Facilitating interdepartmental co-ordination (Coor)
2.4 Building culture (Cult)
3. Team/interpersonal: rational-analytical (Indivrat)
3.1 Challenging current reality (Valu)
3.2 Developing and implementing performance plans (Plan)(1/4)
3.3 Reviewing performance (Revi)(3/4)
3.4 Rewarding performance (Rewa)
4. Team/interpersonal: affective-interactive (Indivaff)
4.1 Building trust (Trus)
4.2 Empowering followers (Foll)
4.3 Facilitating learning (Lear)
4.4 Displaying sound interpersonal skills (Mana)
4.5 Showing concern for others (Trea)
4.6 Inspiring people (Insp)
5. Intrapersonal (Intraper)
5.1 Enabling the leader: self-discovery and self-management (Lead)
5.2 Enabling the leader: personal growth (Risk)
5.3 Acting honestly and with integrity (Hono)

5.4 Demonstrating decisiveness and hardiness (Deci)
5.5 Acting entrepreneurial (Acti)

The five-factor model as outlined above indicates a reasonable fit, but "…fails to satisfactorily capture the true complexity of the processes underlying the LBI" (Theron & Spangenberg, 2005, p.48).

Based on their assessment, it is important to analyse the two alternative models outlined by the authors to view the most plausible and best-fit model in order to arrive at the most credible second-order factor structure.

4.3 Proposed Second-order Factor Structure: MLQ Model

The MLQ, as reviewed in chapter 3, consists of three dimensions, that is, the transactional, transformational and laissez-faire. The last distinction would not be a common theme amongst the first-order latent variables of the LBI (Theron & Spangenberg, 2005) and will thus not be included in the proposed model in the current research. However, the transactional and transformational second-order dimensions might provide input into the correlations that exist between the first-order latent variables of the LBI.

In their article, Theron and Spangenberg (2005) propose that the LBI factors should be divided into a second-order factor structure based on the Avolio et al. MLQ higher-order dimensions. Table 4.2 outlines their proposed model (Theron & Spangenberg, 2005, p.38).

Table 4.2: Proposed second-order factor structure for the LBI based on the MLQ model

Transformational	**Transactional**
Enabling the leader: self-discovery and self-management (Lead)	Developing and implementing performance plans (Plan)
Building trust (Trus)	Empowering followers (Foll)
Decisiveness and hardiness (Deci)	Inspiring people (Insp)
Inspiring people (Insp)	Rewarding performance (Rewa)
Acting entrepreneurial (Acti)	Interpersonal skills (Mana)
Empowering followers (Foll)	Showing concern for others (Trea)
Honesty and integrity (Hono)	Building culture (Cult)
Articulating vision and enlisting followers (Arti)	Facilitating interdepartmental co-ordination (Coor)
Influencing the external environment (Infl)	Facilitating learning (Lear)
Enabling the leader: personal growth (Risk)	Challenging current reality (Valu)
Developing a challenging vision (Visi)	Awareness external environment (Awex)
	Awareness internal environment (Awin)
	Conceptualising strategy (Stra)
	Optimising structures and systems (Syst)
	Reviewing performance (Revi)

From the onset, the proposed second-order factor structure can be reviewed and an assessment made of whether this model has potential. A transformational leader is defined as a leader who has articulated vision, and who is able to obtain follower buy-in through creating feelings of self-worth, appreciation and goal attainment through their proactivity, enthusiasm and conviction (Yammarino & Bass, 1990; Antonakis et al., 2003; Bass & Avolio, 2003). Conversely, transactional leaders are concerned with getting the job done. Followers are rewarded, not through higher rewards of self-worth or possible self-actualisation, but rather rewards are given based on performance. 'Get the job done, and you will be rewarded' is the conceptual idea, with teamwork coming secondary to individual performance requirements. The leader follows the organisational

culture and ensures that goals are met according to the contract signed (Bass & Avolio, 1994b).

By focusing on the definitions provided for the first-order dimensions of the LBI (table 2.2 outlined in chapter 2), an assessment can be made whether they form part of transformational or transactional leadership styles. Transformational leaders are astute in formulating vision and 'selling' the vision to their followers. Thus, the one concept upon which the LBI is based, that is, the **development and selling of an environmentally appropriate yet challenging vision for the unit,** is where many of the transformational leadership skills fall. For this reason, the dimensions of *developing a challenging vision*, *building trust, articulating vision* and *enlisting followers* are part of how a transformational leader functions and should fall under this second-order factor. The fourth dimension under this conceptual heading, that is, *conceptualising strategy*, is not fundamentally visionary as it also requires problem solving and consideration of consequences. This dimension would fit well under the transactional second-order factor.

The second concept upon which the LBI is based*,* **assessment of the internal and external environment of the unit**, includes the dimensions of *awareness external environment* and *awareness internal environment*. Both of these dimensions include in their definition aspects of interpretation and assessing environmental aspects that might affect the unit performance. These are straightforward, task-orientated dimensions and should be included under the transactional second-order factor.

Preparation of the unit for the implementation of the vision includes many transformational-based dimensions. *Enabling the leader: self-discovery and self-management* and *enabling the leader: personal growth* are based on the innate leadership abilities of a transformational leader who is able to articulate the vision by self-enabling and empowering followers. *Optimising structures and systems* and *building culture* are dimensions which, again, are basic requirements of a

leader and which a transactional leader would follow and accomplish. Although the results in readying the work unit for the vision would not be as great as with a transformational leader, the transactional leader will still attempt to build the culture as it currently stands and would be able to ready the existing structures for strategy implementation. *Empowering followers* is an attribute that both transformational and transactional leaders would have, as they would both, in their own unique capabilities, attempt to empower followers, if not through articulated self-vision, then through rewards.

The fourth broad concept, which the LBI is built on, is **implementation of the vision**. Transformational leaders can be viewed as having the attributes of *decisiveness and hardiness*, *honesty and integrity*, *acting entrepreneurial* and *influencing the external environment*. Although this by no means implies that transactional leaders are not honest or decisive, transformational leaders are able to accentuate these attributes to a point where at all times they are able to attain levels of integrity, honesty and hardiness whilst still attempting to implement the vision. The dimensions of *challenging current reality*, *facilitating learning*, *showing concern for others* and *facilitating interdepartmental co-ordination* could fall under the transactional second-order factor as these are basic requirements for implementing a work unit's vision. These leaders can also be *reviewing performance*, *rewarding performance* and *developing and implementing performance plans*. They also have the necessary *interpersonal skills* dimension for implementation of the vision. *Inspiring people* is a dimension that can be attained by both transformational and transactional leaders.

From the preliminary factor analysis in chapter 6, this proposed model outline will be reviewed and revised before further analysis is conducted in order to obtain a good fit in terms of the second-order structural model.

From the onset it is believed that this proposed model could be an improvement on the five-factor model of Theron and Spangenberg (2005), as the current

model has transformational theory has its high-order factor, theory in which the LBI is grounded. The outcomes from the empirical testing should provide the necessary validation.

4.4 Proposed Second-order Factor Structure: House Leadership-style Distinctions

It is plausible to link the three House distinctions, namely general, supervisory and management leadership types, with the LBI first-order dimensions, thereby creating a probable model for the higher-order factors of the LBI (Theron & Spangenberg, 2005). As stated by Theron and Spangenberg (2005, p.39), "[s]crutiny of the dimensions suggested by House (1995) and the LBI model indicates that LBI dimensions could readily be categories under the three elements of House's (1995) model".

In their article, Theron and Spangenberg (2005, p.38) propose that the LBI factors should be divided into the second-order factor structure below based on the House leadership-style distinctions.

Table 4.3: Proposed second-order factor structure for the LBI based on the House leadership-style distinctions

General Leadership	Supervisory Leadership	Management
Developing a challenging vision (Visi)	Developing and implementing performance plans (Plan)	Challenging current reality (Valu)
Building trust (Trus)	Empowering followers (Foll)	Awareness external environment (Awex)
Decisiveness and hardiness (Deci)	Inspiring people (Insp)	Awareness internal environment (Awin)
Inspiring people (Insp)	Rewarding performance (Rewa)	Conceptualising strategy (Stra)
Acting entrepreneurial (Acti)	Interpersonal skills (Mana)	Optimising structures and

General Leadership	Supervisory Leadership	Management
		systems (Syst)
Empowering followers (Foll)	Showing concern for others (Trea)	Developing and implementing performance plans (Plan)
Honesty and integrity (Hono)	Building culture (Cult)	Reviewing performance (Revi)
Articulating vision and enlisting followers (Arti)	Facilitating interdepartmental co-ordination (Coor)	Rewarding performance (Rewa)
Influencing the external environment (Infl)	Facilitating learning (Lear)	
Enabling the leader: personal growth (Risk)		
Enabling the leader: self-discovery and self-management (Lead)		

The second-order factor of general leadership of House (1995) can be viewed as closely linked to charismatic theory. Although at times charismatic leadership is viewed interchangeably with transformational leadership, Yukl (1999) believes they should rather be viewed separately, as transformational leadership also includes aspects of intellectual stimulation, individual consideration and inspiration (Bass, 1985).

For the purposes of this current study, charismatic and transformational leadership types will be viewed as fairly analogous. If this is the case, then the LBI dimensions (for an outline of these dimensions, refer to chapter 2, table 2.2) included under the transformational heading (refer to point 4.3), in the previous model, should be included under the general (charismatic) leadership second-order factor. The definition of general leadership provided by House (1995) indicates that it descriptively depicts behaviour where the leader persuades followers of his/her vision and strives to attain collective buy-in of that vision.

The supervisory leadership second-order factor indicates interaction of the leader with followers, although not to the degree of the general leadership type.

Supervisory leaders hold positions of authority and therefore are often not followed willingly (House, 1995). Management also finds individuals in positions of authority and only attain follower compliance due to requirements of the job (House, 1995). It is the least positive and influential leadership style and rarely attains much visionary actualisation.

The LBI dimensions that are included under the transactional second-order factor (refer to point 4.2) can be viewed as falling within either the supervisory or management second-order factor structure, with some possible overlaps.

Management leadership has both dimensions that fall under the **assessment of the internal and external environment of the unit** category. *Awareness external environment* and *awareness internal environment* dimensions are basic authoritarian requirements that a manager would be able to accomplish. Under the category of **development and selling of an environmentally appropriate yet challenging vision for the unit**, *conceptualising strategy* will fall under management as it is simple problem-solving skills that are required for this dimension.

Supervisory leadership has *empowering followers* and *building culture* dimensions from the **preparation of the unit for the implementation of the vision** category, as it requires more personal growth and openness from the leader in order to prepare the organisation for the vision implementation. *Optimising structures and systems* is a far more supportive role and would fit with the management role.

In terms of **implementation of the vision**, *facilitating learning*, *interpersonal skills*, *showing concern for others*, *inspiring people* and *facilitating interdepartmental co-ordination* can form part of supervisory leadership as it is far more ‘hands-on’ in terms of interacting with followers, dealing with interpersonal issues as well as skills, facilitation capabilities and encouraging followers.

Challenging current reality and *reviewing performance* are able to be viewed under the management second-order factor. *Developing and implementing performance* and *rewarding performance* are dimensions that can be included under both supervisory and management second-order factors as both leader types would perform the role of developing and rewarding performance.

From the preliminary factor analysis in chapter 6, this proposed model outline will be reviewed and revised before further analysis is conducted in order to obtain as good a fit in terms of the second-order structural model.

As with the proposed MLQ (three-factor) model, the House (two-factor) model has a great deal of potential as the LBI is grounded in the House (1995) theory.

4.5 Conclusion

This chapter focused on the model created by Theron and Spangenberg (2005), the five-factor model, with further focus on the two proposed second-order factor structures that have been created for the LBI factors. These are the MLQ model comprising two higher-order factors and the House model with three higher-order factors.

By utilising the MLQ and House second-order factors, it is anticipated that a second-order factor structure can be obtained for the LBI. It is hoped that one of the models created from the MLQ and House instruments will exceed in viability when compared to the five-factor model created by Theron and Spangenberg (2005), and will provide a plausible second-order structure for the LBI.

CHAPTER 5: RESEARCH METHODOLOGY

5.1 Overview

The aim of this chapter is to outline the research design, sample strategy and methodology of the current study.

5.2 Delineation of the Study

The study focuses on creating a second-order factor structure from the Leadership Behaviour Inventory first-order dimensions. As indicated previously, this forms part of a larger study aimed at creating a leadership-unit performance structural model. Two proposed models are outlined in the current study, based on the second-order factors of the House leadership-style distinctions as well as the MLQ. The research questions were derived from the need to create such a second-order model.

As such, the following research questions are assessed in this study:

- Do the House leadership-style distinctions provide an acceptable higher-order fit for the 24 first-order dimensions from the LBI?

- Do the MLQ higher-order factors provide an acceptable higher-order fit for the 24 first-order dimensions from the LBI?

- Can a second-order structure, based on the House leadership-style distinctions, be created in order to obtain a second-order measurement model that will capture the complex structures underlying the LBI?

- Can a second-order structure, based on the MLQ factors, be created in order to obtain a second-order measurement model that will capture the complex structures underlying the LBI?

- Do any of the models created in this study improve on the five-factor model created by Theron and Spangenberg (2005) in their study?

5.3 Research Design

The current research evolved from the need for a leadership-unit performance structural model. In order to create such a model, part of the research required the creation of a second-order factor structure for the LBI. The current study is therefore secondary in nature and takes the form of theory-building/model-building research. It focuses on the development of two theoretical second-order models and thus delves into an immense amount of theoretical information related to leadership as well as instruments and models of leadership. Furthermore, the study unpacks the literature on which the two proposed models are based, that is, the literature focuses on detail surrounding the House (1995) conceptualisation of leadership and the three theoretical underpinnings he created to describe styles of leadership. Literature regarding the Multifactor Leadership Questionnaire, created by Avolio, et al. (1999) is also unpacked in detail. From these descriptions of leadership, two proposed outlines of a second-order factor structure, based on the literature found, as well as the proposed models from Theron and Spangenberg (2005), were created.

This research is positivistic and quantitative in nature. It takes the deductive mode of reasoning (Durrheim, 1999) whereby the two theoretical models that were created from the first-order dimensions of the LBI are tested empirically. The models, created from the twenty-four first-order factors of the LBI, and making use of the second-order factors of the House distinctions and Avolio, et al. instrument, were tested through factor analysis and then the revised models

were each tested through exploratory and finally confirmatory factor analysis. After the vigorous testing, through modes of factor analyses, it is anticipated that the most plausible model for use in the creation of the leadership-unit performance structural model will be derived.

5.4 Sample Strategy

5.4.1 Characteristics of Data

The data used in the current study was obtained from the LBI database of the Centre for Leadership Studies in Stellenbosch.

The same data set is used as that of the previous research conducted by Theron and Spangenberg (2005). In their study they attempted to obtain a second-order factor structure on a five-factor model. In the same study they indicate that "…analyses should preferably be performed on the same data set to facilitate the comparison of model fit" (Theron & Spangenberg, 2005, p.49).

The database consists of a series of non-probability samples that had been conducted on unit managers who were selected from various organisations within the financial arena (Theron & Spangenberg, 2005). These unit leaders were rated by their superiors, peers and subordinates, as per the 360-degree approach of the LBI questionnaire.

5.4.2 Sampling Method

As stated previously, the non-probability sampling method was utilised. This type of sampling provides ease of conducting the research; however, the disadvantage is that this method might present some bias as it might not be representative of the population (Graziano & Raulin, 2000). Due to the sample only being taken from the financial sector in South Africa, the results obtained

from this study might not be applicable to other organisations and industries, therefore sampling error might occur.

However, the results gained from this study as well as from Theron and Spangenberg (2005) can be taken and utilised in future studies, with different samples, in order to validate the model across organisations in different industries.

5.4.3 Sample Size

The unit managers were rated by superiors, peers and subordinates. Theron and Spangenberg (2005) indicate that although the objective was to obtain ratings from two subordinates, two peers and a single superior, the necessity for a larger sample size and the difficulty in obtaining complete questionnaires from high-level individuals, due to its length, necessitated deviation from the ideal in some cases.

A total of 1 838 completed LBI questionnaires were obtained with 252 unusable cases.

5.5 Reliability

When looking at reliability in terms of the research design, one major issue is the generalisation of the research. The research could not be generalised to the entire South African population since it only focused on the financial sector. One would need to be careful not to generalise the findings to the entire population.

Internal consistency of the data was established by Theron and Spangenberg (2005), who conducted reliability testing on the 24 LBI subscales. Utilising SPSS Reliability Procedure, the authors attempted to identify and eliminate items not contributing to internal consistency (SPSS, 1990). “A measure that is internally

consistent measures one construct with several independent observations or items" (Graziano & Raulin, 2000, p.85). Results were found to be generally, although not altogether, satisfactory as high-item homogeneity was found with the Cronbach alpha values yielding values greater than 0.74, but less than 0.80 (Theron & Spangenberg, 2005). It is therefore concluded that identical conclusions should be reached if the research were to be repeated.

Reliability was also focused on when the data was undergoing empirical testing in the current study. Factor analysis was initially conducted that resulted in the proposed models being further refined. The data was then tested utilising exploratory factor analysis and the refined models were tested utilising confirmatory factor analysis.

Repeated empirical testing ensures the stability of the variables over time and that they are measuring the same constructs (Graziano & Raulin, 2000).

5.6 Validity

Validity is important as it gives an indication of whether the measurements conducted in the study are actually measuring what they claim to measure (Graziano & Raulin, 2000). The three empirical analyses focus on testing the proposed models and refining these models. Of importance is attaining a level of design validity and design coherence whilst conducting the research (Durrheim, 1999). In the current study, the research process is outlined methodically and coherently in order to dispel possible design incoherence. Design validity is maintained through concise and deliberate attempts to keep the research analysis and outcomes in line with the research questions.

The models were validated through split-sample. Each model was randomly tested through exploratory factor analysis utilising 72% of the sample. The rest of the sample (28%) was tested through confirmatory factor analysis.

5.7 Ethical Considerations

Due to this study being one of a theoretical and secondary nature, many pertinent ethical issues do not play a pivotal role. The relevant ethical considerations and the professional conduct of the researcher are outlined below in terms of the current study.

Informed consent was obtained from Theron and Spangenberg (2005) in their original research. In order to protect the respondents' identity, the data was provided to the current author in a secure form whereby no reference was made to respondents' information.

Privacy, anonymity and confidentiality of the respondents can thus be assured and guaranteed.

The research is therefore non-malevolent to either the respondents or any other persons. The research is beneficial in that it will assist in further studies and in the creation of a leadership-unit performance structural model. This model will assist South African organisations to identify performance levels, in terms of leadership, in work units.

5.8 Data Preparation

The data was prepared by Theron and Spangenberg (2005) for their study. The current study makes use of the same data and an outline of the data preparation is delineated below.

5.8.1 Missing Data

According to Theron and Spangenberg (2005), if missing values were removed, the number of cases would have been reduced to 969, making the sample size far smaller. Other options, such as the replacement of missing values with item means, pair-wise deletion of the cases or applying the full information maximum likelihood estimation procedure were viewed as undesirable (Theron & Spangenberg, 2005). The multiple imputation procedure was explored. This process involves the substitution of values as obtained from various cases that have similar output patterns over a set of corresponding variables (Jöreskog & Sörbom, 1996, *in* Theron & Spangenberg, 2005). Theron and Spangenberg made use of the PRELIS program to impute missing values.

The table below depicts the number of missing values per item (Theron & Spangenberg, 2005).

Table 5.1: Number of missing values per item[1]

Q001	*Q002*	*Q003*	*Q004*	*Q005*	*Q006*	*Q007*	*Q008*
68	58	38	27*	90	69	111	22*
Q009	*Q010*	*Q011*	*Q012*	*Q013*	*Q014*	*Q015*	*Q016*
163	113	87	30*	70	15*	27*	143
Q017	*Q018*	*Q019*	*Q020*	*Q021*	*Q022*	*Q023*	*Q024*
16*	129	168	58	158	161	187	161
Q025	*Q026*	*Q027*	*Q028*	*Q029*	*Q030*	*Q031*	*Q032*
147	46	120	20*	153	44	94	155
Q033	*Q034*	*Q035*	*Q036*	*Q037*	*Q038*	*Q039*	*Q040*

[1] Total sample size is 1 838.

243	163	87	84	68	28*	31	72
Q041	*Q042*	*Q043*	*Q044*	*Q045*	*Q046*	*Q047*	*Q048*
81	39	244	125	90	112	221	94
Q049	*Q050*	*Q051*	*Q052*	*Q053*	*Q054*	*Q055*	*Q056*
43	43	178	100	187	135	117	93
Q057	*Q058*	*Q059*	*Q060*	*Q061*	*Q062*	*Q063*	*Q064*
142	125	66	102	230	56	58	65
Q065	*Q066*	*Q067*	*Q068*	*Q069*	*Q070*	*Q071*	*Q072*
17*	37	199	88	49	140	223	152
Q073	*Q074*	*Q075*	*Q076*	*Q077*	*Q078*	*Q079*	*Q080*
41	114	80	55	37	52	75	126
Q081	*Q082*	*Q083*	*Q084*	*Q085*	*Q086*	*Q087*	*Q088*
294	221	51	184	31	63	209	154
Q089	*Q090*	*Q091*	*Q092*	*Q093*	*Q094*	*Q095*	*Q096*
144	192	29*	141	59	104	208	145

* Selected as matching variables for imputation

Cases that had missing values after imputation were removed. After cleaning and ensuring that all the cases had observations on all 96 items, the sample size was 1 586. This provides an adequate sample size, which was able to undergo the necessary testing required in the current study.

5.8.2 Factor Analysis Rotation

Theron and Spangenberg (2005) subjected each of the 24 LBI subscales to varimax rotation utilising SPSS (1990). This was necessary due to the one-dimensional items used to reflect variance within the 24 latent variables. The items were meant to function as "...homogeneous stimulus sets to which raters respond with behaviour that is primarily a relatively uncontaminated expression of a specific underlying latent variable" (Theron & Spangenberg, 2005, p.42). The number of items extracted was determined via the eigenvalue-greater-than-

unity rule of thumb method. All 24 latent variables passed the one-dimensionality test (factor loadings varied between 0.618 and 0.898), with most items following a significantly ($p < 0.05$) negative kurtosis. However, due to the absence of negative items and consistent distributional form across items, the emergence of artefact factors did not occur.

5.8.3 Variable Parcelling

The individual LBI items were to be treated as ordinal variables due to the five-point Likert scale utilised in the questionnaire (Theron & Spangenberg, 2005). However, Theron and Spangenberg (2005) maintain that utilising the variables in this manner, when attempting the structural equation modelling they did, would have resulting in a cumbersome number of items. The variables were therefore parcelled, due to the complex undertaking were individual items to have been used as indicator variables when creating the models (Theron & Spangenberg, 2005). This was achieved through the creation of two manifest variables from each subscale by "…calculating the unweighted average of the odd numbered items and the even numbered items of each scale" (Theron & Spangenberg, 2005, p.42). Therefore in the analyses following, two values are found for each dimension, for example Visi1 and Visi2.

5.9 Data Analysis

Analysis in this current study is conducted on the data to obtain a second-order factor structure. The two proposed models undergo vigorous empirical testing. The statistical techniques that are utilised to analyse the data are outlined below.

The two second-order models that were proposed by Theron and Spangenberg (2005) are explored to ascertain their viability. This is done by means of factor analysis, utilising SPSS (2003). The proposed models (outlined in chapter 4) are

then revised, with some changes being made in the placement of the first-order dimensions of the LBI in the two higher-order models.

Once completed, exploratory factor analysis, utilising SPSS (2003), is conducted on 72% of the data, for both models. This provides further refined second-order factor models. Lastly, further analysis utilising confirmatory factor analysis using STATISTICA, SEPATH (StatSoft Inc., 2007) follows. This analysis is conducted on 28% of the sample, for each of the two models.

At each stage of the analysis, the proposed models are tabulated indicating where the first-order dimensions fit with the second-order factors. After the completion of the confirmatory factor analyses, the models are compared to ascertain the best-fit model. Comparisons are extended to the model created by Theron and Spangenberg (2005).

From the analyses, the research questions outlined at the beginning of this chapter will be answered. Areas covered include whether the House leadership-style distinctions and/or the MLQ higher-order factors provide an acceptable fit for the first-order dimensions of the LBI. Furthermore, one would be able to ascertain whether the two models created from the House leadership-style distinctions and the MLQ higher-order factors provide an acceptable second-order structure that captures the complex structures underlying the LBI. Finally, the two models created in this study are compared to the proposed five-factor model of Theron and Spangenberg (2005) to ascertain whether one of the models from the current study provides an improved fit for the LBI first-order dimensions.

5.10 Limitations and Sources of Error

Main sources of error that can occur are that of the assumptions made in specifying the model, the quality of the empirical data against the model as well

as correct use of statistical procedures (Mouton, 2001). Furthermore, one criticism of the theory-building research design is that it is possible for vagueness and inconsistency to occur if claims made are not tested properly or if they are improbable claims on reality (Mouton, 2001).

The current research attempts to dispel these criticisms through its methodical analyses. This is done through an in-depth focus on theoretical underpinnings of leadership theory and to find the most plausible theory on which to base the models. The theoretical models undergo vigorous testing; through factor analysis with the refined models undergoing split-sample testing using exploratory factor analysis and confirmatory factor analysis.

The same data set is used as that of Theron and Spangenberg (2005) to ensure that comparisons across the three models are possible.

5.11 Conclusion

This chapter provided a description of the current study. Areas covered include the research methodology, research design and sample strategy. The validity and reliability of the current study's data preparation were also covered.

The next three chapters focus on the data analysis, with the first chapter providing an overview of the proposed theoretical models and the factor analysis conducted. The final two chapters on the data analysis highlight each of the revised models and outline the exploratory and confirmatory factor analyses conducted for both the proposed models.

The revised and final models are then discussed and compared in chapter 9.

CHAPTER 6: DATA ANALYSIS

6.1 Overview

This chapter is the first of three chapters focusing on the data analysis of the current research. The present chapter focuses on general data preparation and analysis pertaining to the current study. Chapters 7 and 8 focus on each of the two models, both of which undergo in-depth empirical testing.

This chapter begins with a focus on the dimensions comprising the LBI in order to provide a clear understanding of these first-order dimensions. The data preparation conducted by Theron and Spangenberg (2005) is outlined in detail. Factor analysis is then conducted in order to obtain a general overview of how many relevant factors are present.

Through the vigorous empirical testing, it is envisaged that a feasible model will be attained for the LBI.

6.2 LBI Dimensions

The table below indicates the first-order dimensions of the LBI. The corresponding abbreviation, including the number of the item each LBI dimension represents, is also indicated. Refer to the table below for any abbreviation used in this and the next two chapters.

Table 6.1: Dimensions, corresponding abbreviations and items of the LBI[2]

Dimensions	Abbreviation	Items
Developing a challenging vision	Visi	3; 45; 66; 192
Building trust	Trus	67; 119; 167; 201
Inspiring people	Insp	79; 142; 162; 233
Acting entrepreneurial	Acti	39; 114; 129; 217
Empowering followers	Foll	8; 107; 148; 154
Articulating vision and enlisting followers	Arti	5; 47; 134; 223
Influencing the external environment	Infl	11; 32; 192; 222
Enabling the leader: personal growth	Risk	7; 28; 70; 89
Enabling the leader: self-discovery and self-management	Lead	49; 122; 181; 218
Facilitating learning	Lear	35; 56; 198; 228
Challenging current reality	Valu	34; 55; 76; 94
Developing and implementing performance plans	Plan	81; 146; 152; 172
Honesty and integrity	Hono	54; 75; 126; 140
Decisiveness and hardiness	Deci	205; 214; 216; 221
Interpersonal skills	Mana	193; 196; 213; 215
Showing concern for others	Trea	36; 78; 95; 127
Building culture	Cult	31; 73; 139; 232
Facilitating interdepartmental co-ordination	Coor	38; 52; 59; 183
Awareness external environment	Awex	1; 22; 185; 186
Awareness internal environment	Awin	44; 84; 101; 133
Conceptualising strategy	Stra	88; 187; 195; 234
Optimising structures and processes	Syst	30; 51; 108; 124
Reviewing performance	Revi	41; 82; 99; 131
Rewarding performance	Rewa	21; 42; 83; 100

[2] Theron and Spangenberg, 2005, pp.36-37

6.3 Proposed Second-order Factor Structures

It is proposed that the factors be divided into the second-order factor structure for the LBI based on the MLQ (Avolio et al., 1999) and the House leadership-style distinctions (1995), as discussed in chapter 4.

A synopsis of the proposed models is outlined below.

6.3.1 Proposed Three-factor Second-order Structure

The proposed three-factor model is highlighted in table 6.2. It is based on the House leadership-style distinctions and uses these distinctions as the theoretical basis for the second-order factor structure. As discussed in chapter 4, these distinctions are general leadership, supervisory leadership and management. The first-order dimensions of the LBI are included in the model, under the three second-order factors, depending on what they purport to measure.

Table 6.2: Proposed three-factor model

General Leadership	Supervisory Leadership	Management
Developing a challenging vision (Visi)	Developing and implementing performance plans (Plan)	Challenging current reality (Valu)
Building trust (Trus)	Empowering followers (Foll)	Awareness external environment (Awex)
Decisiveness and hardiness (Deci)	Inspiring people (Insp)	Awareness internal environment (Awin)
Inspiring people (Insp)	Rewarding performance (Rewa)	Conceptualising strategy (Stra)
Acting entrepreneurial (Acti)	Interpersonal skills (Mana)	Optimising structures and systems (Syst)
Empowering followers (Foll)	Showing concern for others (Trea)	Developing and implementing performance plans (Plan)

General Leadership	Supervisory Leadership	Management
Honesty and integrity (Hono)	Building culture (Cult)	Reviewing performance (Revi)
Articulating vision and enlisting followers (Arti)	Facilitating interdepartmental co-ordination (Coor)	Rewarding performance (Rewa)
Influencing the external environment (Infl)	Facilitating learning (Lear)	
Enabling the leader: personal growth (Risk)		
Enabling the leader: self-discovery and self-management (Lead)		

6.3.2 Proposed Two-factor Second-order Structure

The second-order factor structure is based on the MLQ higher-order dimensions, the transformational and transactional factors. As discussed in chapter 4, the relevant LBI first-order dimensions are included under the two second-order dimensions, as outlined in table 6.3, depending on the definition of what they purport to measure.

Table 6.3: Proposed two-factor model

Transformational	Transactional
Enabling the leader: self-discovery and self-management (Lead)	Developing and implementing performance plans (Plan)
Building trust (Trus)	Empowering followers (Foll)
Decisiveness and hardiness (Deci)	Inspiring people (Insp)
Inspiring people (Insp)	Rewarding performance (Rewa)
Acting entrepreneurial (Acti)	Interpersonal skills (Mana)
Empowering followers (Foll)	Showing concern for others (Trea)
Honesty and integrity (Hono)	Building culture (Cult)
Articulating vision and enlisting followers (Arti)	Facilitating interdepartmental co-ordination (Coor)
Influencing the external environment (Infl)	Facilitating learning (Lear)
Enabling the leader: personal growth (Risk)	Challenging current reality (Valu)

Transformational	Transactional
Developing a challenging vision (Visi)	Awareness external environment (Awex)
	Awareness internal environment (Awin)
	Conceptualising strategy (Stra)
	Optimising structures and systems (Syst)
	Reviewing performance (Revi)

The creation of these proposed models is based on theory only. In the following section, factor analysis is conducted on the whole sample in order to refine and obtain a clearer model outline for both the models.

6.4 Factor Analysis

The LBI dimensions (outlined in table 6.1) are analysed to identify the underlying factors (Nunnally & Bernstein, 1994).

Principal axis factoring extraction with non-orthogonal rotation (direct oblimin) was conducted on the factors using SPSS (2003). The scree plot indicates the optimal number of factors that could be extracted (Hair, Anderson, Tatham & Black, 1998). From the scree plot (see figure 6.1) there are three qualifying factors.

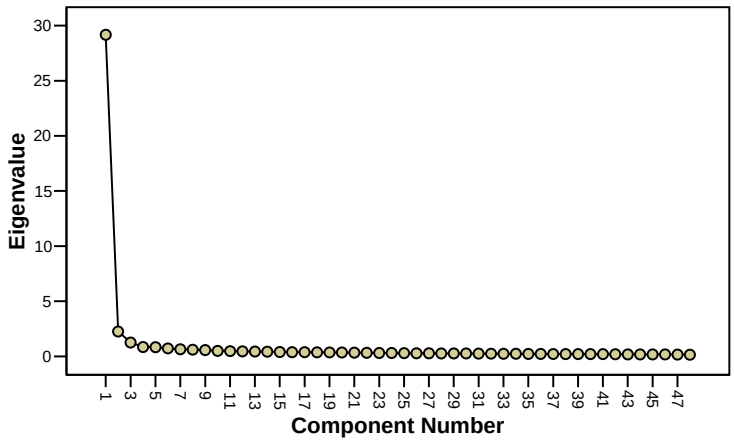

Figure 6.1: Factor analysis: Scree plot

Eigenvalues, otherwise known as latent roots, indicate the optimal number of factors that should be retained. According to Nunnally and Bernstein (1994), an eigenvalue of 1 can be used to identify significant factors. When a factor's eigenvalue drops below 1, it is not considered to contribute meaningfully to the amount of variance explained by the underlying factor structure. This is visually demonstrated in a scree plot where the vertical slope of the line graph tapers off sharply (Nunnally & Bernstein, 1994). Based on these criteria the analysis yielded three significant factors. Factor 1's initial eigenvalue total score is 29.169. Factor 2's is 2.256 and factor 3's is 1.258.

The correlation matrix (see table 6.4 below) indicates the correlations between the factors for oblique rotations. The correlations are relatively strong between the various factors, as indicated in the table below. Factors 1 and 2 load well with each other, whereas factor 3 correlates negatively with factors 1 and 2 although the loading is still of significance.

Table 6.4: Factor correlation matrix[3]

Factor	1	2	3
1	1.000	.710	-.573
2	.710	1.000	-.547
3	-.573	-.547	1.000

A factor pattern matrix was obtained on the scales. This matrix has loadings that "represent the unique contribution of each variable to the factor" (Hair et al., 1998, p.113). It reports the factor loadings, for each variable on the factors, after rotation has occurred. The numbers indicate the partial correlation between the variable and the factor. To look for a common factor amongst the variables, the highest loading for each variable (on the left of the table below) are identified by looking across the three factors. By doing this, it presents the most significant loading for each variable on the represented factors. Table 6.5 indicates the factor loadings with the highest factors underlined. Factor 1 loads the most often in comparison to the other two factors.

Certain variables load very closely on two or more factors. This indicates that these factors are not distinguishable when considering the specific variables. They are cult1, foll1, hono1, lear2, trus1. Factor 3 has the most opposite loadings, in comparison to the other two factors. The following variables load high on more than one factor but negatively on one, indicating contrary factors. They are foll1, insp1 and revi1. These variables have been noted by underlining in table 6.5 below. All loadings of below .3 have been removed from the table, as this research makes use of the variance explained criteria, where a loading of .3 contributes close to 10% of the variance and where parsimony is explained by the remaining 90% (Garson, 2006).

[3] Extraction method: Principal axis factoring. Rotation method: Oblimin with Kaiser normalisation.

Table 6.5: Factor pattern matrix[4]

	Factors		
	1	2	3
acti1	.653		
acti2	.898		
arti1	.663		
arti2	.661		
awex1	.869		
awex2	.924		
awin1	.759		
awin2	.815		
coor1	.650		
coor2	.709		
cult1	.396	.340	
cult2		.702	
deci1	.738		
deci2	.572	.364	
foll1	.314	.318	-.358
foll2	.356		-.343
hono1	.343	.380	
hono2	.237	.618	
infl1	.485	.349	
infl2	.480		
insp1	.388		-.344
insp2	.546		-.321
lead1		.519	
lead2		.698	
lear1		.843	
lear2	.337	.366	
mana1		.886	
mana2		.516	
plan1	.592		

[4] Extraction method: Principal axis factoring. Rotation method: Oblimin with Kaiser normalisation. Rotation converged in 11 iterations.

	Factors		
	1	2	3
plan2	.817		
revi1	.460		-.472
revi2			-.617
rewa1			-.516
rewa2		.346	-.549
risk1	.584		
risk2	.738		
stra1	.774		
stra2	.750		
syst1	.703		
syst2	.561		
trea1		.854	
trea2		.771	
trus1	.381	.378	
trus2	.437	.385	
valu1	.556	.346	
valu2	.651		
visi1	.773		
visi2	.490		

6.5 Conclusion

This chapter outlines the LBI first-order dimensions and the proposed second-order models for these dimensions. The factor analysis was conducted on the data prepared by Theron and Spangenberg (2005) and serves as a preliminary analysis to the analysis conducted in the next two chapters. Refer to chapters 7 and 8 for in-depth analyses on both the three-factor model (House) and two-factor model (MLQ).

CHAPTER 7: ANALYSIS: THREE-FACTOR MODEL

7.1 Overview

This chapter is the second of three chapters focusing on the data analysis of the current research. The current chapter focuses on one of the two models presented in the current study, which undergoes in-depth empirical testing. The model generated from the initial factor analysis is created and compared to the initial model outlined by Theron and Spangenberg (2005). An exploratory factor analysis is conducted, utilising 72% of the sample, whereby the factors are forced into a three-factor model. The refined model is then tested utilising confirmatory factor analysis on the remaining 28% of the sample.

7.2 Proposed Second-order Factor Structures

It is proposed that the factors be divided into the second-order factor structure for the LBI based on the House model (refer to table 6.2 in chapter 6) (Theron & Spangenberg, 2005).

Certain of the variables are repeated in the tables as it is believed they load on more than one factor.

In the following section, factor analysis was conducted on the whole sample in order to refine and obtain a clearer model outline for the House model.

7.3 Factor Analysis

Refer to chapter 6, section 6.4, for an outline of the factor analysis, which was conducted on the entire data set. The scree plot indicated three factors that could be extracted. The question is whether there is some comparison between

the findings of the three factors in the factor analysis and the proposed three-factor model represented in chapter 6, table 6.2.

7.3.1 Naming the Factors

Factor 1 is named *environmental attentiveness* as it includes variables such as awareness external environment, awareness internal environment, enabling the leader: personal growth, decisiveness and hardiness, developing challenging vision and optimising structures and systems and so forth (refer to chapter 6, table 6.5 for all the variables).

Factor 2 is referred to as *personal competence* as the variables include interpersonal skills, building culture, honesty and integrity and so forth.

Lastly, factor 3 is named *performance* as the variables include reviewing performance, rewarding performance and empowering followers.

7.3.2 Revised Second-order Structural Model

Table 6.2 provides a proposed model based on House, with three second-order factors. Considering that three factors were created through factor analysis, promise for this model is already evident. There are some discrepancies between the variables included under the different second-order factors (table 6.2) and the variables from the three factors from the factor analysis. From table 7.1, which indicates the revised second-order structure based on the House leadership-style distinctions, it can be seen that those variables found in environmental attentiveness are placed under general leadership. Personal competence variables are placed under supervisory leadership and performance variables fall under management behaviour.

Table 7.1: Revised second-order structure for the LBI based on House's higher-order dimensions

Environmental Attentiveness [General Leadership]	**Personal Competence [Supervisory Leadership]**	**Performance [Management Behaviour]**
Awareness external environment1&2	Building culture1&2	Inspiring people1
Acting entrepreneurial1&2	Building trust1	Empowering followers1&2
Developing and implementing performance plans1&2	Showing concern for others1&2	Reviewing performance1&2
Awareness internal environment1&2	Facilitating learning1&2	Rewarding performance1&2
Conceptualising strategy1&2	Enabling the leader: self-discovery and self-management1&2	
Developing challenging vision1&2	Honesty and integrity1&2	
Decisiveness and hardiness1&2	Interpersonal skills1&2	
Enabling the leader: personal growth1&2	Empowering followers1	
Facilitating interdepartmental co-ordination1&2		
Optimising structures and systems1&2		
Articulating vision and enlisting followers1&2		
Challenging current reality1&2		
Inspiring people1&2		
Influencing the external environment1&2		
Building trust1&2		
Building culture1		
Empowering followers1&2		
Honesty and integrity1		

Environmental Attentiveness [General Leadership]	**Personal Competence [Supervisory Leadership]**	**Performance [Management Behaviour]**
Facilitating learning2		
Reviewing performance1		

The revised model above, as compared to the proposed theoretical model in chapter 6 (table 6.2), indicates certain differences, in particular with the variables under the higher-order management factor. The following variables were included under general leadership in the revised model (table 7.1), but are not indicated under general leadership in the proposed model (table 6.2): developing and implementing performance plans1&2, awareness internal environment1&2, conceptualising strategy1&2, facilitating interdepartmental co-ordination1&2, optimising structures and systems1&2, challenging current reality1&2, building culture1, facilitating learning2 and reviewing perfomrance1.

The following variables were included under the supervisory leadership in the revised model (table 7.1), but were not indicated in the proposed model (table 6.2): building trust1, enabling the leader: self-discovery and self-management1&2 and honesty and integrity1&2.

The following variables were included as part of management behaviour in table 7.1, but not in table 6.2: inspiring people1 and empowering followers1&2. The proposed model indicated many variables included under management behaviour, but the factor analysis clearly indicates that these variables (that form part of the performance factor) are loaded elsewhere.

Results obtained from the factor analysis provide a clear indication of how many observable factors there are and which variables fall under each. The proposed second-order model was revised according to the factor analysis and paves the way for further exploratory analysis, as outlined in the following section.

7.4 Exploratory Factor Analysis

An exploratory factor analysis was conducted in order to discover the underlying structure of a significant number of variables (Garson, 2006). Factor loadings were used in order to discern the optimal factor structure for the data.

The exploratory factor analysis used the results from the previous section and was tested on a random sample of 72% of the original sample (the current sample was randomly split into a 72% and a 28% group). Modification indices were computed and used to improve the model. The improved model was then tested on the remaining 28% of the sample.

For the exploratory factor analysis on 72% of the sample, principal axis factoring was used as the extraction method, making use of SPSS (2003). The rotation method used was Oblimin with Kaiser normalisation. The Kaiser-Meyer-Olkin (KMO) measure revealed a high sampling adequacy of .989.

Communalities, which indicate the amount of variance a variable has with all the other variables in the analysis (Hair et al., 1998), showed very little variance in the current analysis.

The scree plot (figure 7.1) indicates three optimal factors that could be extracted. There were no significant differences between the scree plot in figure 6.1 and the one in figure 7.1.

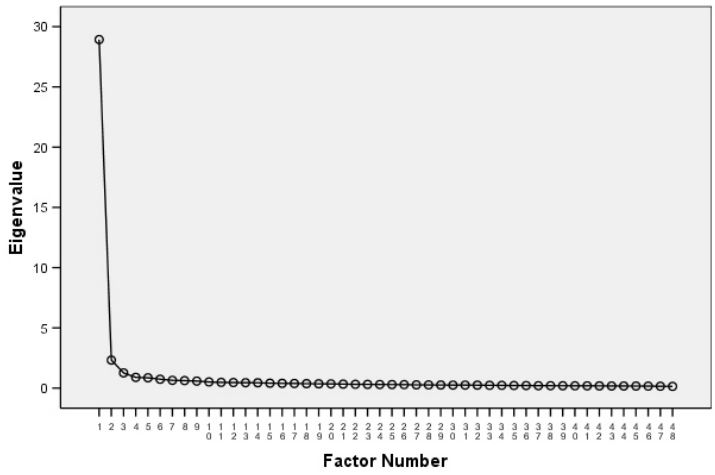

Figure 7.1: Exploratory factor analysis: Scree plot

Eigenvalues confirm the scree plot findings in that there are three factors with eigenvalues/latent roots larger than 1. Factors with latent roots greater than 1 are considered significant (Hair et al., 1998). Factor 1's initial eigenvalue total score is 28.928. Those of factors 2 and 3 are 2.327 and 1.264, respectively.

The factor correlation matrix reveals slight changes to the preliminary factor analysis (refer to table 6.4). Correlations are strong, particularly between factors 1 and 2, with factor 3 showing the weaker correlations with factor 1 and more so with factor 2. However, the loadings were still of significance.

Table 7.2: Factor correlation matrix[5]

Factor	1	2	3
1	1.000	.696	-.605
2	.696	1.000	-.589
3	-.605	-.589	1.000

It is recognised that most individuals report on the factor pattern matrix (Hair et al., 1998). However, in oblique rotation both a factor pattern matrix as well as a factor structure matrix are reported on when attributing a label to a factor (Garson, 2006). This study will therefore report on both the pattern as well as the structure matrix.

The factor pattern matrix has loadings that represent the unique contribution of each variable to the factor (Hair et al., 1998). Generally, the more factors, the lower the pattern coefficients will be as there is a general contribution to explain the variance (Garson, 2006).

The factor structure matrix shows not only the loadings of each variable to the factor, but also the correlations between them (Hair et al., 1998).

In order to assist in the interpretation of results from the factor pattern matrix, and in order to judge whether factor loadings are significant, a method of reporting on practical significance is utilised (Hair et al., 1998). It is simply a rule of thumb method where "...factor loadings greater than approximately .30 are considered to meet the minimal level; loadings of approximately .40 are considered more important; and if the loadings are approximately .50 or greater, they are considered practically significant" (Hair et al., 1998. p.111). It thus stands that .70 loading will account for nearly 50% because 7 x 7 = 49 = 49% of the

[5] Extraction method: Principal axis factoring. Rotation method: Oblimin with Kaiser normalisation.

variance, decreasing as the loadings become smaller (Hair et al., 1998). For this reason and thus to assist in the interpretation of the factor pattern matrix results, loadings below .3 were omitted.

Factor 1 loaded the highest most frequently compared to factors 2 and 3. There were some factor loadings above .80, which are considered extremely high and are normally not typical. This implied that the practical significance method detailed above should be adhered to (Hair et al., 1998).

Trus1 loads on factors 1 and 2 (this can also be seen from the structure matrix where trus1 loads the same for both factors 1 and 2).

Foll2 was another dimension where the structure matrix and the factor matrix indicated strong loadings on factor 1; however, the pattern matrix indicated a higher loading on factor 3. This needed to be taken into consideration and thus a factor 1 and factor 3 loading have both been indicated.

For all other dimensions, even though they might have fairly high loadings on two factors, there is a significant enough difference to only have them load on the one highest factor.

Table 7.3: Factor pattern matrix[6]

Dimension[7]	Factor		
	1	2	3
acti1	.630		
acti2	.902		
arti1	.661		
arti2	.674		

[6] Extraction method: Principal axis factoring. Rotation method: Oblimin with Kaiser normalisation. Rotation converged in 11 iterations.
[7] For a full description of the dimension and the meaning of the abbreviation, refer to table 6.1.

Dimension[7]	Factor		
	1	2	3
awex1	.885		
awex2	.922		
awin1	.728		
awin2	.777		
coor1	.642		
coor2	.705		
cult1	.382	.335	
cult2		.692	
deci1	.691		
deci2	.567	.364	
foll1		.313	-.382
foll2	.344		-.357
hono1	.328	.370	
hono2		.647	
infl1	.462	.314	
infl2	.449		
insp1	.362		-.341
insp2	.538		-.330
lead1		.529	
lead2		.683	
lear1		.842	
lear2	.335	.352	
mana1		.895	
mana2		.496	
plan1	.554		-.329
plan2	.804		
revi1	.418		-.519
revi2			-.673
rewa1			-.562
rewa2			-.593
risk1	.605		
risk2	.722		
stra1	.797		
stra2	.719		

Dimension[7]	Factor		
	1	2	3
syst1	.666		
syst2	.534		
trea1		.836	
trea2		.755	
trus1	.373	.381	
trus2	.430	.378	
valu1	.552	.359	
valu2	.625		
visi1	.788		
visi2	.491		

In terms of the factor pattern matrix in the factor analysis (section 6.4, table 6.5), no significant changes occurred, except with foll2 where it was reported as having a higher factor 1 loading, whereas currently it loads substantially higher on factor 3. However, as previously mentioned, due to the discrepancies found between the pattern and structure matrix, foll2 will be reported on as loading on both factor 1 and factor 3.

In terms of the factor structure matrix, the same pattern emerged as with the factor pattern matrix, where factor 1 loaded significantly higher, most frequently in comparison to factors 2 and 3. Unlike the pattern matrix, the structure matrix had far higher loadings and had far more dimensions loading on more than one factor.

As stated previously, trus1 loaded equally on factors 1 and 2. Lear2 loaded highest on factor 2, but the dimension loaded just as high on factor 1. When looking at the pattern matrix, lear2 did have a fairly high loading on factor 1.

Cult1 and trus2 both loaded highest on factor 1; however, the high loading on factor 2 was significant enough to review. When considering their loadings on

the pattern matrix, the loadings were relatively high on factor 2, although not significant enough to be reported.

Insp1 had high loadings on all three factors. However, the loading on factor 1 was relatively higher than on the other two factors, and since the pattern matrix indicated a high loading on factor 1, it will be left as loading on only factor 1.

Foll1 loaded well on all three factors, very unlike the pattern matrix which only indicated a higher loading on factor 3. Although, in the structure matrix, the loading is the highest on factor 3, factors 1 and 2 load just as well.

Table 7.4: Factor structure matrix[8]

	Factor		
	1	**2**	**3**
acti1	.712	.570	-.428
acti2	.836	.526	-.502
arti1	.831	.644	-.649
arti2	.850	.673	-.641
awex1	.745	.456	-.345
awex2	.763	.442	-.372
awin1	.781	.597	-.461
awin2	.811	.580	-.515
coor1	.800	.646	-.570
coor2	.827	.639	-.578
cult1	.759	.741	-.666
cult2	.634	.827	-.607
deci1	.736	.515	-.509
deci2	.773	.713	-.479
foll1	.736	.738	-.740
foll2	.702	.653	-.685

[8] Extraction method: Principal axis factoring. Rotation method: Oblimin with Kaiser normalisation. Rotation converged in 11 iterations.

	Factor		
	1	**2**	**3**
hono1	.693	.702	-.593
hono2	.635	.766	-.455
infl1	.719	.673	-.527
infl2	.693	.638	-.521
insp1	.772	.745	-.732
insp2	.810	.673	-.717
lead1	.610	.715	-.526
lead2	.615	.773	-.459
lear1	.603	.857	-.518
lear2	.735	.736	-.667
mana1	.554	.840	-.459
mana2	.721	.784	-.619
plan1	.792	.635	-.697
plan2	.828	.547	-.590
revi1	.752	.626	-.789
revi2	.669	.590	-.835
rewa1	.568	.610	-.739
rewa2	.588	.663	-.782
risk1	.668	.510	-.422
risk2	.758	.588	-.410
stra1	.813	.562	-.523
stra2	.809	.638	-.497
syst1	.792	.593	-.596
syst2	.770	.626	-.668
trea1	.587	.853	-.546
trea2	.576	.832	-.632
trus1	.753	.753	-.641
trus2	.754	.737	-.584
valu1	.763	.705	-.481
valu2	.754	.598	-.526
visi1	.847	.587	-.607
visi2	.779	.705	-.626

7.4.1 Naming the Factors

In section 7.3.1, the factors were named according to the pattern matrix. Due to the fact that no major changes were found between this factor pattern matrix and the previous one's results, the names created for the factors will be kept the same, in other words, factor 1 *environmental attentiveness*, factor 2 *personal competence* and factor 3 *performance*.

7.4.2 Revised Second-order Structural Model

The proposed model outlined in chapter 6, table 6.2 and the current chapter, section 7.3.2, table 7.1 will now be refined and assessed whether the factors do indeed fit well under each of the second-order dimensions.

Table 7.5 is a revised outline of the three-factor model as outlined initially in tables 4.3 and 6.2 and then in table 7.1 (after the initial factor analysis). Factor 1, environmental attentiveness (from the pattern matrix) forms general leadership, factor 2 (personal competence) falls under supervisory leadership and factor 3 (performance) falls under management behaviour.

Table 7.5 outlines the model concisely, with very few changes having taken place from the initial factor analysis. Changes that can be viewed are in terms of dimensions that were repeated across the factors.

Table 7.5: Revised second-order structure for the LBI utilising the House second-order dimensions

General Leadership [Environmental Attentiveness]	**Supervisory Leadership [Personal Competence]**	**Management Behaviour [Performance]**
Acting entrepreneurial (acti1 &2)	Building culture (cult1&2)	Empowering followers (foll1&2)
Articulating vision and enlisting followers (arti1&2)	Honesty and integrity (hono1&2)	Reviewing performance (revi1&2)
Awareness external environment (awex1&2)	Enabling the leader: self-discovery and self-management (lead1&2)	Rewarding performance (rewa1&2)
Awareness internal environment (awin1&2)	Facilitating learning (lear1&2)	
Facilitating interdepartmental co-ordination (coor1&2)	Interpersonal skills (mana1&2)	
Building culture (cult1)	Showing concern for others (trea1&2)	
Decisiveness and hardiness (deci1&2)	Building trust (trus1)	
Empowering followers (foll2)	Empowering followers (foll1)	
Influencing the external environment (infl1&2)		
Inspiring people (insp1&2)		
Developing and implementing performance plans (plan1&2)		
Enabling the leader: personal growth (risk1&2)		
Conceptualising strategy (stra1&2)		
Optimising structures and processes (syst1&2)		
Building trust (trus1&2)		

General Leadership [Environmental Attentiveness]	Supervisory Leadership [Personal Competence]	Management Behaviour [Performance]
Challenging current reality (value1&2)		
Developing a challenging vision (visi1&2)		
Facilitating learning (lear2)		
Empowering followers (foll1)		

When comparing the model created after conducting the factor analysis (table 7.1) with the above model, no significant changes were found. Variables loading on more than one factor did decrease, indicating that through vigorous analysis these variables distinguished themselves by only one factor. These factors were empowering followers2, honesty and integrity1, review performance1 and inspiring people1.

There were, however, a few variables that loaded significantly on more than one factor. The variables included building culture1, building trust1, facilitating learning2 and empowering followers1. Empowering followers1 loads significantly on all three factors, indicating that this factor does not distinguish itself.

The third high-order factor, management, has few loadings on it and is fairly indistinguishable.

This model shows promise of a well-fitting second-order factor structure, but further analysis utilising confirmatory factor analysis using STATISTICA, SEPATH (StatSoft Inc., 2007) is required in order to ensure that the model holds up against cross-validation.

7.5 Confirmatory Factor Analysis

The model was tested through confirmatory factor analysis (CFA) on the remaining 28% of the sample. This was a necessary exercise to test whether the model held up against cross-validation. As stated by Stapleton (1997, p.3), confirmatory factor analysis "…seeks to optimally match the observed and theoretical factor structures for a given data set in order to determine the 'goodness of fit' of the predetermined factor model". That is, the goodness of fit needs to be found between the theoretical and observed models.

The following figure diagrammatically outlines the relationship between the exogenous (second-order) and the endogenous (first-order) factors.

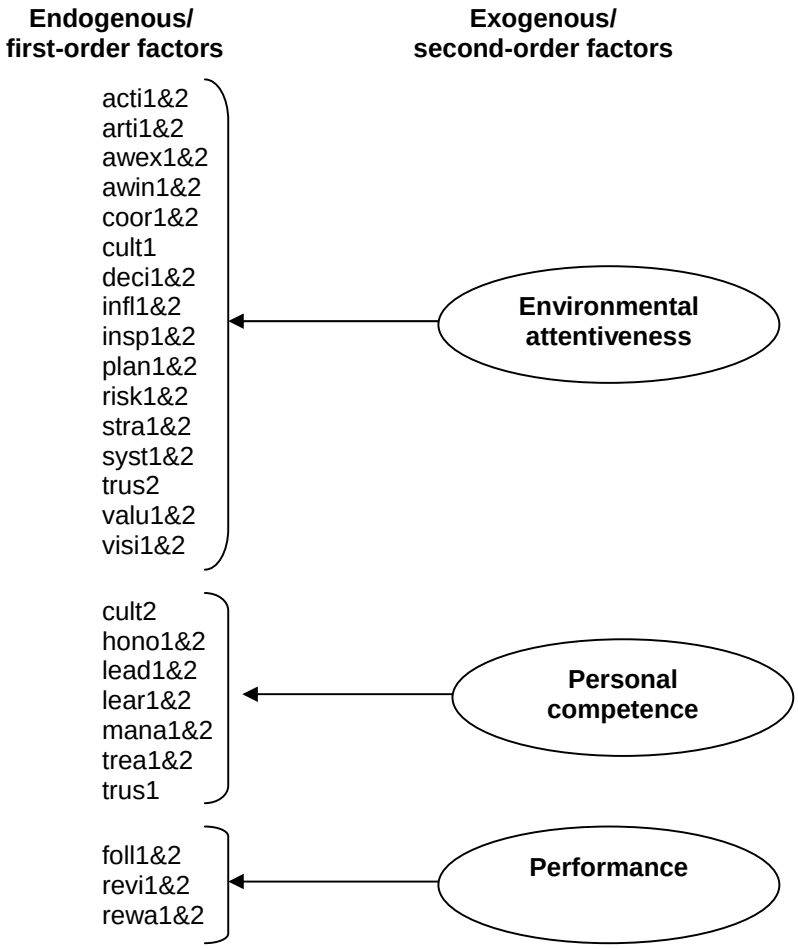

Figure 7.2: Confirmatory factor analysis: Pattern matrix model

Below follows the results from the goodness-of-fit measures conducted using STATISTICA, SEPATH (StatSoft Inc., 2007).

Table 7.6: CFA criterion: Basic summary statistics

	Basic Summary Statistics
	Value
Discrepancy function	7.451
Maximum residual cosine	0.000
Maximum absolute gradient	0.001

	Basic Summary Statistics
	Value
ICSF criterion	0.000
ICS criterion	0.00
ML chi square	3248.577
Degrees of freedom	1064.000
p-level	0.000
RMS standardised residual	0.042

Smaller rather than larger values indicate a good fit, when looking at the chi square. However, the chi-square statistic is very sensitive to sample size (Stapleton, 1997). The chi square should preferably be non-significant but this is almost never achieved, particularly in the case of relatively large sample sizes (Research Consulting, 2002). As stated by Research Consulting (2002), "[b]ecause the chi-square test of absolute model fit is sensitive to sample size and non-normality in the underlying distribution of the input variables, investigators often turn to various descriptive fit statistics to assess the overall fit of a model to the data". Kenny (2003) indicates that for smaller sample sizes this measure of fit works well; for sample sizes of over 200, the chi square is almost always significant. Combined with this is the fact that the chi square is also affected by the size of the correlations. For this reason, further measures of fit have been conducted for a more indicative fit to be made.

The RMS standardised residual index with a value of less than 0.05 indicates a well-fitting model (Byrne, 2001, p.82). In this study the RMS value of 0.042 satisfies this criterion.

Table 7.7: CFA: Non-centrality fit indices

	Non-centrality Fit Indices		
	Lower 90% Conf. Bound	**Point Estimate**	**Upper 90% Conf. Bound**
Population non-centrality parameter	5.559	5.973	6.405
Steiger-Lind RMSEA index	0.072	0.075	0.078
McDonald non-centrality index	0.041	0.050	0.062
Population gamma index	0.789	0.801	0.812
Adjusted population gamma index	0.767	0.780	0.792

The Steiger-Lind root mean square error of approximation (RMSEA) index has a lower value of the 90% confidence level of 0.072 and an upper level of 0.078, which does fall within the acceptable range of 0.08 (ideally, good models have an RMSEA of 0.05 or less, and models whose RMSEA is 0.10 or more have a poor fit) (Kenny, 2003). Byrne (2001) describes RMSEA as one of the most informative criteria in covariance structure modelling. According to Byrne (2001), RMSEA values as high as .08 indicate a reasonable fit. With a point estimate of 0.075, the RMSEA result meets this criterion and is a reasonable fit.

Table 7.8: CFA: Single sample fit indices

	Single Sample Fit Indices
	Value
Joreskog GFI	0.740
Joreskog AGFI	0.713
Akaike information criterion	7.965
Schwarz's Bayesian criterion	9.013
Browne-Cudeck cross-validation index	8.030
Independence model chi square	22787.920
Independence model df	1128.000

	Single Sample Fit Indices
	Value
Bentler-Bonett normed fit index	0.857
Bentler-Bonett non-normed fit index	0.893
Bentler comparative fit index	0.899
James-Mulaik-Brett parsimonious fit index	0.809
Bollen's Rho	0.849
Bollen's Delta	0.899

The absolute fit index, GFI (goodness of fit) of Joreskog "…indexes the relative amount of the observed variances and covariances explained by the model, and varies from zero to 1" (University of Waterloo, 2006, p.3). It is viewed as straightforward due to its similarity to the R-squared reported in multiple-regression analyses. However, a large GFI can simply be indicating an overfit and lack of parsimony (University of Waterloo, 2006). To address this issue, the AGFI (adjusted goodness-of-fit index) test was created to perform parsimony adjustment to the GFI. However, the GFI and AGFI measures could be affected by sample size and hence are at times fairly large for models that are poorly specified (Kenny, 2003). In the current study, the GFI and AGFI both indicate moderate fit as "…the closer the GFI is to 1.00, the better is the fit of the model to the data" (Stapleton, 1997).

The Bentler-Bonett normed fit index (NFI) indicates that a value between 0.90 and 0.95 is acceptable and above 0.95 is good (Kenny, 2003). Thus, the result from this study of 0.857 indicates a moderate fit as it falls just below the 0.90 mark. Kenny (2003) indicates that due to certain disadvantages of this index, the non-normed fit index (NNFI) or comparative fit index (CFI) might provide a better fit.

The NNFI is set at one (Kenny, 2003) and the result of 0.893 indicates a moderate fit.

The Bentler CFI is based on the non-centrality measure. "If the CFI is less than one, then the CFI is always greater than the TLI [NNFI]. CFI pays a penalty of one for every parameter estimated" (Kenny, 2003). Again, the results (0.899) indicate a moderate fit.

It can therefore be stated that the confirmatory factor analysis results indicate a moderate fit across all goodness-of-fit measures.

7.6 Conclusion

The data analysis conducted in this chapter was done to check the viability of the three-factor model via an exploratory and confirmatory factor analysis, conducted on a split-sample. Results indicate a moderate fit.

In order to determine the practicality of using this model for the leadership-unit performance structural model, the analysis must first be conducted on the two-factor model.

Refer to chapter 9 for an in-depth discussion regarding the results.

CHAPTER 8: ANALYSIS: TWO-FACTOR MODEL

8.1 Overview

This is the third and last chapter regarding the data analysis, specifically focusing on the two-factor model based on the second-order dimensions of the MLQ.

8.2 Proposed Second-order Factor Structures

In their article, Theron and Spangenberg (2005) propose that the factors be divided into the second-order factor structure for the LBI based on the Avolio et al. MLQ (refer to table 6.3 in chapter 6). When looking at the table, it can be seen that certain of the variables are repeated in the tables as it is believed they load on more than one factor.

8.3 Factor Analysis

8.3.1 Naming the Factors

The three optimal factors were named in chapter 7, section 7.3.1. The current analysis will focus on two factors. Therefore, factor 1 will be named *environmental attentiveness* as it was previously, but factors 2 and 3 will combined (as was the case in the initial model created by Theron and Spangenberg, 2005) and will be named *personal competence* and *performance*.

Refer to chapter 6, table 6.5 for all the variables within each of these factors.

8.3.2 Revised Second-order Structural Model

Refer to chapter 6 for a comprehensive analysis outline of the factor analysis, which was conducted on the data. The scree plot indicated an optimal number of

factors that could be extracted. Three factors qualified, but because the third factor was so small, it is of interest to use only two factors and review the plausibility of such a model.

Table 8.1 provides a second-order factor structure based on the MLQ model. The model consists of two second-order factors, namely transformational and transactional. When looking at the variables initially included under the two second-order factors and the variable loadings obtained in the factor analysis, considerable divergence can be viewed. Factor 1, environmental attentiveness, and factor 2, personal competence, overlap a great deal in terms of variable comparison between the transformational and transactional second-order factors.

Through careful review of the loadings, it could be ascertained that by combining personal competence and performance, these dimensions could be included under the transformational second-order factor. The factors loading under environmental attentiveness would fall under the transactional second-order factor structure. For an outline of the revised model, refer to table 8.1.

Table 8.1: Revised second-order structure for the LBI based on the second-order dimensions of the MLQ

Transactional [Environmental Attentiveness]	**Transformational [Personal Competence & Performance]**
Awareness external environment1&2	Building culture1&2
Acting entrepreneurial1&2	Building trust1
Developing and implementing performance plans1&2	Showing concern for others1&2
Awareness internal environment1&2	Facilitating learning1&2
Conceptualising strategy1&2	Enabling the leader: self-discovery and self-management1&2
Developing challenging vision1&2	Honesty and integrity1&2
Decisiveness and hardiness1&2	Interpersonal skills1&2

Transactional [Environmental Attentiveness]	**Transformational [Personal Competence & Performance]**
Enabling the leader: personal growth1&2	Inspiring people1
Facilitating interdepartmental co-ordination1&2	Empowering followers1&2
Optimising structures and systems1&2	Reviewing performance1&2
Articulating vision and enlisting followers1&2	Rewarding performance1&2
Challenging current reality1&2	
Inspiring people1&2	
Influencing the external environment1&2	
Building trust1&2	
Building culture1	
Empowering followers1&2	
Honesty and integrity1	
Facilitating learning2	
Reviewing performance1	

This revised model, compared to the proposed model in chapter 6 (table 6.3), indicates vast differences. Due to the factor analysis and the loadings, certain variables loaded differently from what was anticipated in the proposed model. The following variables were included under transformational, in the revised model, but were not indicated under transformational in the proposed model: building culture 1&2, showing concern for others1&2, facilitating learning1&2, interpersonal skills1&2, reviewing performance1&2 as well as rewarding performance1&2.

The following variables were included under the transactional heading in the revised model, but were not indicated under transactional in the proposed model: acting entrepreneurial1&2, developing challenging vision1&2, decisiveness and hardiness1&2, decisiveness and hardiness1&2, enabling the leader: personal growth1&2, articulating vision and enlisting followers1&2, influencing the external environment1&2, building trust1&2 as well as honesty and integrity1.

There were a few variables that loaded significantly on more than one factor. These variables are building culture1, empowering followers1&2, facilitating learning2, inspiring people1&2, honesty and integrity1, reviewing performance1 and building trust1.

8.4 Exploratory Factor Analysis

The model created in table 8.1 was refined and assessed whether the factors did indeed fit correctly under the models created from the MLQ.

Results obtained from the factor analysis were used and tested on 72% of the sample. Once again, principal axis factoring was used as the extraction method with the rotation method used being Oblimin with Kaiser normalisation (SPSS, 2003).

Communalities indicate the general variance amongst variables in a given data set (Hair et al., 1998). In the current analysis, the communalities showed very little variance between the variables, as was the case with the three-factor model.

The scree plot indicates three optimal factors, which could be extracted; therefore no significant changes from the scree plot in chapter 6 were found, with eigenvalues confirming the findings from the scree plot. Eigenvalues remained the same as in the previous analysis with factors 1's initial eigenvalue total score at 28.928 and factor 2, 2.327. Hair et al. (1998) indicate that factors with latent roots greater than 1 are considered significant. Factor 3 had a score of 1.264, which is close to this cut off and thus it would be of interest to view the significance of the current analysis where only the first two factors will be used.

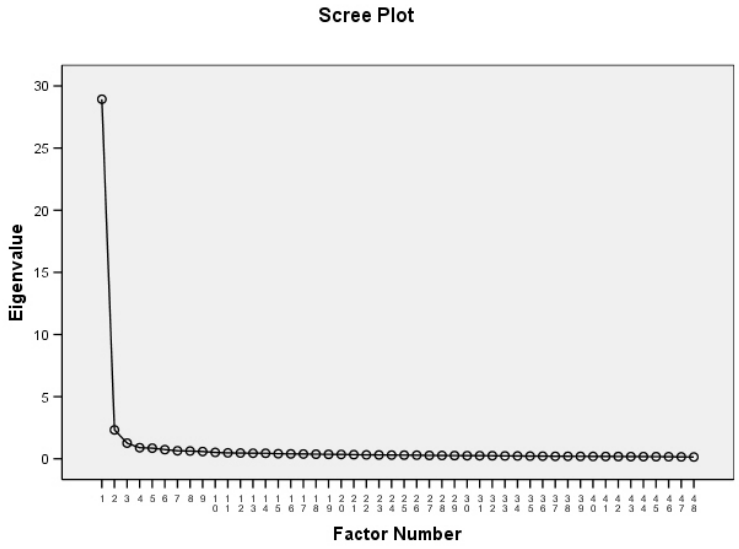

Figure 8.1: Exploratory factor analysis: Scree plot

When looking at the factor correlation matrix, with variables forced into factors 1 and 2, higher loadings can be observed than in the previous analysis with the three factors (chapter 7, section 7.4).

Table 8.2: Factor correlation matrix[9]

Factor	1	2
1	1.000	.741
2	.741	1.000

As indicated in chapter 7, section 7.4, it is common when conducting oblique rotation to report on both the factor pattern and the factor structure matrices (Hair et al., 1998 and Garson, 2006).

[9] Extraction method: Principal axis factoring. Rotation method: Oblimin with Kaiser normalisation.

Looking at the factor pattern matrix, loadings below .3 were omitted. As with the previous analysis, to ensure ease and consistency of interpretation, a method of reporting on practical significance was utilised (Hair et al., 1998) where loadings of approximately .3 were considered to meet minimal requirements, 0.5 or greater was considered practically significant and loadings of 0.7 indicated a very high level of significance.

Inspiring people1 is one of two dimensions where the loadings are very close on factors 1 and 2 when studying the structure matrix. At this stage, the analysis will take the loadings on factors 1 and 2 as relevant. The dimension building culture 1 also has very close loadings for factors 1 and 2. This is true for both the pattern and structure matrix. This dimension will therefore be viewed as loading on both factors 1 and 2 in this analysis.

All other dimension loadings for both the pattern and structure matrix were the same, that is, they loaded similarly on either factor 1 or factor 2.

Table 8.3: Factor pattern matrix[10]

Dimension[11]	**Factor**	
	1	**2**
Awareness external environment1	.873	
Awareness external environment2	.929	
Awareness internal environment1	.733	
Awareness internal environment2	.812	
Developing challenging vision1	.863	
Developing challenging vision2	.543	.334
Building trust1	.419	.471
Building trust2	.454	.416
Articulating vision and enlisting followers1	.739	
Articulating vision and enlisting followers2	.739	

[10] Extraction method: Principal axis factoring. Rotation method: Oblimin with Kaiser normalisation. Rotation converged in 18 iterations.
[11] For a full description of the dimension, refer to chapter 6, table 6.1.

Dimension[11]	Factor	
	1	2
Conceptualising strategy1	.842	
Conceptualising strategy2	.728	
Enabling the leader: personal growth1	.623	
Enabling the leader: personal growth2	.704	
Enabling the leader: self-discovery and self-management1		.585
Enabling the leader: self-discovery and self-management2		.652
Empowering followers1	.387	.510
Empowering followers2	.443	.384
Optimising structures and systems1	.737	
Optimising structures and systems2	.629	
Building culture1	.444	.450
Building culture2		.791
Influencing the external environment1	.480	.329
Influencing the external environment2	.476	.302
Honesty and integrity1	.369	.455
Honesty and integrity2		.605
Decisiveness and hardiness1	.746	
Decisiveness and hardiness2	.547	
Challenging current reality1	.536	
Challenging current reality2	.662	
Facilitating learning1		.853
Facilitating learning2	.400	.480
Interpersonal skills1		.868
Interpersonal skills2	.310	.574
Showing concern for others1		.887
Showing concern for others2		.908
Inspiring people1	.453	.464
Inspiring people2	.639	
Facilitating interdepartmental co-ordination1	.684	
Facilitating interdepartmental co-ordination2	.752	
Acting entrepreneurial1	.630	
Acting entrepreneurial2	.947	
Developing and implementing performance plans1	.657	
Developing and implementing performance plans2	.883	

Dimension[11]	Factor	
	1	2
Reviewing performance1	.568	
Reviewing performance2	.438	.373
Rewarding performance1		.528
Rewarding performance2		.608

Table 8.4: Structure matrix[12]

Dimension	Factor	
	1	2
Awareness external environment1	.728	.451
Awareness external environment2	.749	.446
Awareness internal environment1	.775	.599
Awareness internal environment2	.810	.599
Developing challenging vision1	.856	.630
Developing challenging vision2	.791	.737
Building trust1	.768	.782
Building trust2	.762	.753
Articulating vision and enlisting followers1	.845	.690
Articulating vision and enlisting followers2	.860	.711
Conceptualising strategy1	.814	.586
Conceptualising strategy2	.804	.643
Enabling the leader: personal growth1	.666	.520
Enabling the leader: personal growth2	.746	.578
Enabling the leader: self-discovery and self-management1	.621	.724
Enabling the leader: self-discovery and self-management2	.616	.750
Empowering followers1	.765	.797
Empowering followers2	.727	.712
Optimising structures and systems1	.802	.634
Optimising structures and systems2	.789	.682
Building culture1	.777	.779
Building culture2	.651	.839
Influencing the external environment1	.723	.684

[12] Extraction method: Principal axis factoring. Rotation method: Oblimin with Kaiser normalisation.

Dimension	Factor	
	1	2
Influencing the external environment2	.699	.654
Honesty and integrity1	.707	.729
Honesty and integrity2	.634	.743
Decisiveness and hardiness1	.741	.545
Decisiveness and hardiness2	.767	.702
Challenging current reality1	.757	.696
Challenging current reality2	.758	.620
Facilitating learning1	.611	.837
Facilitating learning2	.755	.776
Interpersonal skills1	.559	.806
Interpersonal skills2	.735	.803
Showing concern for others1	.600	.845
Showing concern for others2	.599	.853
Inspiring people1	.797	.800
Inspiring people2	.832	.734
Facilitating interdepartmental co-ordination1	.806	.671
Facilitating interdepartmental co-ordination2	.832	.665
Acting entrepreneurial1	.707	.570
Acting entrepreneurial2	.833	.549
Developing and implementing performance plans1	.813	.697
Developing and implementing performance plans2	.836	.591
Reviewing performance1	.787	.716
Reviewing performance2	.714	.698
Rewarding performance1	.611	.691
Rewarding performance2	.635	.744

8.4.1 Naming the Factors

In the previous chapter's analyses, the three factors were named according to the dimensions that fell under each. Their relevance can still be found in this analysis and factor 1 will therefore remain as environmental attentiveness and factor 2 will be personal competence and performance.

8.4.2 Revised Second-order Structural Model

From the initial model created (table 8.1) a more refined model is clearly seen after the exploratory factor analysis. The significant changes were that double loadings decreased significantly. The double loadings (i.e. loadings fairly high on more than one factor) decreased significantly from building culture1, empowering followers1&2, honesty & intergrity1, inspiring people1, facilitating learning2, building trust1 and reviewing performance1 to only inspiring people1 and building culture1.

Other differences are that building trust1, empowering followers1, honesty and integrity1 and facilitating learning2 no longer fall under factor 1 (environmental attentiveness) but only under factor 2 (personal competence and performance). Reviewing performance1&2 and empowering followers2 fall under the environmental attentiveness factor.

Table 8.5 indicates the revised model after exploratory factor analysis was conducted.

Table 8.5: Revised second-order structure for the LBI utilising the second-order dimensions of the MLQ instrument

Transactional [Environmental Attentiveness]	**Transformational [Personal Competence & Performance]**
Awareness external environment1&2	Building trust1
Awareness internal environment1&2	Enabling the leader: self-discovery and self-management1&2
Developing challenging vision1&2	Empowering followers1
Building trust2	Building culture1&2
Articulating vision and enlisting followers1&2	Honesty and integrity1&2
Conceptualising strategy1&2	Facilitating learning1&2
Enabling the leader: personal growth1&2	Interpersonal skills1&2

Transactional [Environmental Attentiveness]	**Transformational [Personal Competence & Performance]**
Empowering followers2	Showing concern for others1&2
Optimising structures and systems1&2	Inspiring people1
Building culture1	Rewarding performance1&2
Influencing the external environment1&2	
Decisiveness and hardiness1&2	
Challenging current reality1&2	
Inspiring people1&2	
Facilitating interdepartmental co-ordination1&2	
Acting entrepreneurial1&2	
Developing and implementing performance plans1&2	
Reviewing performance1&2	

8.5 Confirmatory Factor Analysis

The model was tested as a confirmatory factor analysis on the remaining 28% of the sample. The following figure diagrammatically outlines the revised model (as indicated in table 8.5) highlighting the exogenous and endogenous relationship.

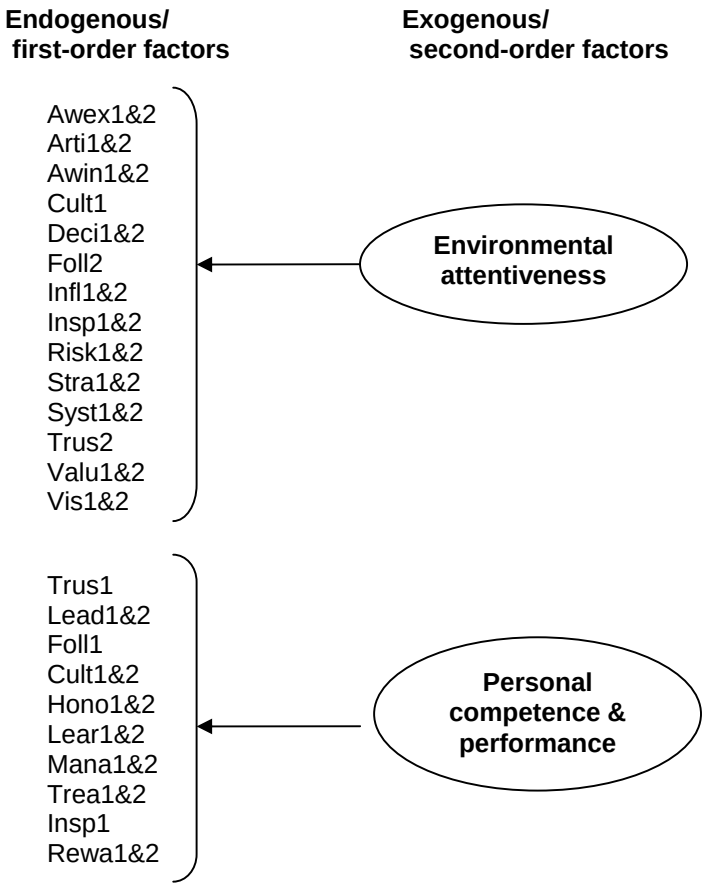

Figure 8.2: Confirmatory factor analysis: Pattern matrix model

Below follow the results from the goodness-of-fit measures, using STATISTICA, SEPATH (StatSoft Inc., 2007).

Table 8.6: CFA criterion: Basic summary statistics

	Basic Summary Statistics
	Value
Discrepancy function	755
P-level	0.000000
Chi square	2382.295968
Number of iterations	9

Smaller rather than larger values indicate a good fit, when looking at the chi square. However, as stated previously, the chi-square statistic is very sensitive to sample size (Stapleton, 1997) and is prone to be sensitive to larger sample sizes, that is sample sizes over 200 (Research Consulting, 2002; Kenny, 2003). The chi square should preferably be non-significant, but with the influence of sample sizes, it is mostly always significant (Research Consulting, 2002). For this reason, further measures of fit have been conducted for a more indicative fit to be made.

Table 8.7: CFA: Non-centrality fit indices

	Non-centrality Fit Indices	
	Lower 90% Conf. Bound	**Point Estimate**
Population non-centrality parameter	4.054	4.407
Steiger-Lind RMSEA index	0.073	0.076
McDonald non-centrality index	0.092	0.110
Population gamma index	0.811	0.823
Adjusted population gamma index	0.784	0.798

The Steiger-Lind RMSEA index has a lower value of the 90% confidence level of 0.073, which does fall within the acceptable range of 0.08.

Table 8.8: CFA: Single sample fit indices

	Single Sample Fit Indices
	Value
Joreskog GFI	0.770
Joreskog AGFI	0.737
Akaike information criterion	5.950
Schwarz's Bayesian criterion	6.942
Browne-Cudeck cross-validation index	6.002

	Single Sample Fit Indices
	Value
Independence model chi square	18990.807
Independence model df	820.000
Bentler-Bonett normed fit index	0.875
Bentler-Bonett non-normed fit index	0.903
Bentler comparative fit index	0.910
James-Mulaik-Brett parsimonious fit index	0.805
Bollen's Rho	0.864
Bollen's Delta	0.911

As stated in the previous chapter, the absolute fit index, GFI of Joreskog indicates the amount of observed variance and covariance explained by the model and varies from zero to 1 (University of Waterloo, 2006). The closer the GFI is to 1.00, the better the fit of the model to the data (Stapleton, 1997). Due to the issues related to the large GFI, the AGFI is also important in order to perform adjustments to the GFI (University of Waterloo, 2006). Both, however, can still be affected by sample size (Kenny, 2003).

In the current analysis, the GFI and AGFI both indicate moderate fit of 0.770 and 0.737, respectively.

The Bentler-Bonett NFI of 0.875 indicates a moderate fit as it falls just below the acceptable range of between 0.90 and 0.95 (Kenny, 2003). As stated previously, due to certain disadvantages of this index, the NNFI or Bentler CFI might provide a better fit (Kenny, 2003).

The NNFI result of 0.903 indicates a moderate fit as the results should be around the 1.0 mark (Kenny, 2003). The CFI result of 0.910 also indicates a moderate fit.

It can be stated that the confirmatory factor analysis results indicate a moderate fit across all goodness-of-fit measures.

8.6 Conclusion

The data analysis done in this chapter was conducted on the proposed two-factor model. Results from the factor analysis (discussed in detail in chapter 6) were reviewed, after which exploratory and confirmatory factor analyses were conducted on a split-sample. Results from the goodness-of-fit measures indicate a moderate fit.

Refer to chapter 9 for an in-depth discussion of the results.

CHAPTER 9: DISCUSSION OF RESULTS

9.1 Three-factor Model Results

A three-factor model, utilising the House leadership-style distinctions proposed by Theron and Spangenberg (2005), seemed a very plausible option, particularly when the initial scree plot from the factor analysis yielded three factors. These were named environmental attentiveness, personal competence and performance, and seemed to correspond with the initial, proposed model.

Generally, most of the first-order LBI factors, which fell under the environmental attentiveness higher-order factor, were those that were initially found in House's *general* leadership second-order factor. Similarly, factors found under personal competence related to those initially included under supervisory leadership and those included under performance were initially found under management behaviour. There were some factors that differed from the proposed model by Theron and Spangenberg (2005) - see chapter 4, table 4.3.

Exploratory factor analysis was conducted on 72% of the sample. The first-order factors were forced into the three higher-order factors. From the factor pattern matrix, many of the factors loaded high on more than one factor when looking at the pattern and structure matrices. The refined model had only minimal changes to the one created after the factor analysis.

Confirmatory factor analysis was conducted on 28% of the sample. All results revealed moderate fit across all goodness-of-fit measures.

9.2 Two-factor Model Results

From the initial factor analysis and the proposed model of Theron and Spangenberg (2005) outlined in chapter 4, table 4.2, two higher-order factor

structures were created. Environmental attentiveness fell under the MLQ's transactional higher-order factor and the factors found in the personal competence and performance higher-order factors were combined to form part of the transformational higher-order dimension.

Exploratory factor analysis was conducted on 72% of the sample. The pattern and structure matrices indicated similar loadings for each of the two factors, with some of the dimensions seemingly loading high on both the factors. The refined model was tabulated in chapter 8, table 8.5, with only few changes.

Confirmatory factor analysis was conducted on the remaining 28% of the sample. Results indicated a moderate fit on all goodness-of-fit measures.

9.3 Comparison of Three Models

The following section focuses on the results obtained from the goodness-of-fit measures for all three models, i.e. the three- and two-factor models from this study and the five-factor model in the Theron and Spangenberg study.

Results for all three models are indicated in the table below. Where available, the five-factor model is included, otherwise only the two models from this study are compared.

An in-depth discussion concerning the results from table 9.1 is given below.

Table 9.1: Comparison of three models

Goodness-of-fit Measure	Levels of Acceptable Fit[13]	Two-factor Model	Three-factor Model	Five-factor Model[14]
Goodness-of-fit measure (GFI)	Higher values (closer to 1.0) indicate better fit, no established thresholds	0.770	0.740	0.74
Adjusted goodness-of-fit measure (AGFI)	Recommended level: 0.90	0.737	0.713	0.71
Akaike information criterion (AIC)	Smaller positive values indicate parsimony, used in comparing alternative models	5.950	7.965	
Schwarz's Bayesian criterion (BIC)	Given any two estimated models, the model with the lower value of BIC is the one to be preferred[15]	6.942	9.013	
Independence model chi square		18990.807	22787.920	
Normed fit index (NFI)	Recommended level: 0.90	0.875	0.857	0.99
Non-normed fit index (NNFI)	Recommended level: 0.90	0.903	0.893	0.99
Comparative fit index (CFI)	Measures between 0 and 1.0 with higher levels indicating better fit	0.910	0.899	0.99
Root mean square error of approximation	Average difference per degree of freedom expected to occur in the population, not	0.076	0.075	0.073

[13] Information regarding levels of acceptable fit obtained from Hair et al. (1998, pp.660-661) unless otherwise specified.
[14] Information regarding the goodness-of-fit measures for the five-factor model obtained from Theron and Spangenberg (2005).
[15] Information obtained from Wikipedia, Free Encyclopaedia (http://www).

Goodness-of-fit Measure	Levels of Acceptable Fit[13]	Two-factor Model	Three-factor Model	Five-factor Model[14]
(RMSEA)	the sample; acceptable values under 0.08			
Adjusted population gamma index	A coefficient of model determination, adjusted for model complexity; values above .90 indicate a good fit; values above .95 indicate an excellent fit[16]	0.798	0.780	
Discrepancy function	Describes how closely a structural model conforms to observed data[17]	755	7.451	
Chi square		2382.295968	3248.577	

Even though there are no established thresholds for the GFI, values close to 1.0 are viewed to have a better fit. Comparably all three models have a moderate fit with the two-factor model, indicating an improved fit compared to the other two models.

When reviewing the AGFI measure, the recommended fit should be close to 0.90. Once again, all three models have a moderate fit with the two-factor model, showing a slightly improved fit over the other two models.

The two-factor model, when considering the Akaike information criterion, is a smaller value when compared to the three-factor model and therefore indicates a higher parsimony.

The Schwarz's Bayesian criterion clearly indicates that the lower value is the preferred model. The two-factor model is therefore the preferred model when considering this criterion.

[16] Information obtained from Griffin and Bartholomew (2003, p.342)
[17] Information obtained from Wikipedia, Free Encyclopaedia (http://www).

The NFI as well as the NNFI indicate a recommended level of 0.90. All three models indicate a good fit, with the five-factor model showing the best fit. The two-factor model has a better fit when compared to the three-factor model.

The CFI has measures between 0 and 1.0, with higher levels indicating better fit. From the results, all three models have a good fit. The five-factor model has the best fit when compared to the other two models.

The root mean square error of approximation should have values below 0.08 in order to be acceptable. All three models meet this criterion.

The adjusted population gamma index has values above 0.90, indicating good fit. The two- and three-factor models both fall short of this value and it can therefore be determined that, albeit not a good fit, they do have a reasonable moderate model fit.

From the above results it can be ascertained that the two- and three-factor models are both moderate-fitting models. They meet the necessary criteria. However, the two-factor model, when considering the goodness-of-fit measures, is a more acceptable fit compared to the three-factor model. It was therefore felt that the two-factor model would be a better model to use for the further research into creating a leadership-unit performance structural model.

However, when comparing the two models to the available results for the five-factor model, the two-factor model seems to underperform. The five-factor model is the preferred model as, although the results from the testing conducted by Theron and Spangenberg (2005) indicated ‘mediocre’ fit, their model outperforms the two models tested in the current study.

9.4 Results regarding the Research Questions

From the findings above, the research questions formulated at the beginning of this study can be answered.

Question 1: Do the House leadership-style distinctions provide an acceptable higher-order fit for the 24 first-order dimensions from the LBI?

The House leadership-style distinctions do provide a reasonable fit for the 24 first-order dimensions from the LBI. The results indicate that this model can be an acceptable fit; however, the other models indicate an improved fit to this model.

Question 2: Do the MLQ higher-order factors provide an acceptable higher-order fit for the 24 first-order dimensions from the LBI?

The MLQ higher-order factors do provide an acceptable higher order fit for the 24 first-order dimensions from the LBI and are a viable option.

Question 3: Can a second-order structure, based on the House leadership-style distinctions, be created in order to obtain a second-order measurement model, which will capture the complex structures underlying the LBI?

The three-factor model created from the House leadership-style distinctions is an adequate model. This model, however, did not fair as well as the two-factor model when focusing on the goodness-of-fit measures.

Question 4: Can a second-order structure, based on the MLQ factors, be created in order to obtain a second-order measurement model, which will capture the complex structures underlying the LBI?

The two-factor model, based on the MLQ higher-order factors, did manage to capture the first-order structures of the LBI in a good-fitting model. This model was an improved model on the three-factor model.

Question 5: Does the most plausible model, created in this study, improve on the five-factor model created by Theron and Spangenberg (2005) in their study?

From the goodness-of-fit measures, it is ascertained that the three-factor model does not improve on the five-factor model. The two-factor model does show acceptable fit; however, the five-factor model, although only showing average results itself (Theron & Spangenberg, 2005), did hold up against the two models created in this study and is still the best model to be used in the creation of a leadership-unit performance structural model.

9.5 Summation of Results

Theron and Spangenberg (2005) identified a need for a leadership-unit structural model, which would be created from the underlying structures of the PI and the second-order factor structure of the LBI. Through a review of leadership literature and suggestions provided by Theron and Spangenberg (2005), two viable options for the creation of the second-order factor structure were presented. The first was the House leadership-style distinctions (1995), general leadership, supervisory leadership and management behaviours. This model was named the three-factor model. The second proposed model was the MLQ (Avolio et al., 1999) with transactional and transformational second-order factors. This model was named the two-factor model.

Initially, it was the three-factor model which held considerable promise. When the factor analysis was conducted, the results from the scree plot indicated three factor loadings. Theron and Spangenberg (2005) suggested that the House model would be the preferred model when compared to the MLQ model (Avolio et al., 1999), due to the definitions afforded to its higher-order factors. However, through the confirmatory factor analysis, the three-factor model underperformed. The two-factor model showed some promise and would be the most plausible option to follow between the two models.

The suggested model for the second-order factor structure, as per the two-factor model, is shown in figure 9.1.

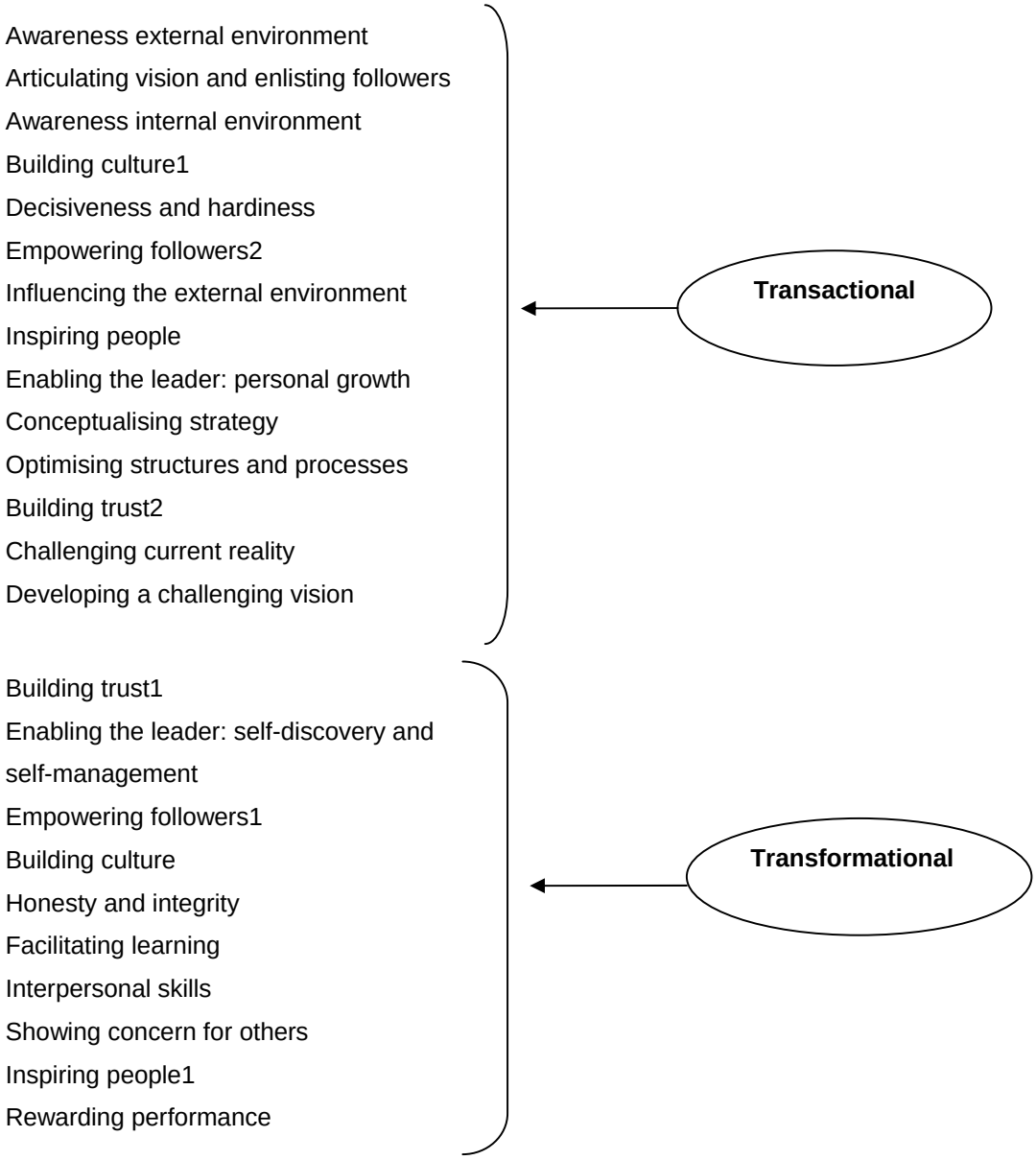

Figure 9.1: LBI second-order factor structure[18]

However, findings indicate that the five-factor model, created by Theron and Spangenberg (2005), would be the preferred option for the second-order factor structure for the LBI. Refer to chapter 4, section 4.2, for an outline of this model. The higher-order factors are "rational-analytical unit-related behaviours, affective-

[18] The first-order dimensions, which have either a 1 or 2 next to them, are indicative of parcelling, as they are split due to their positioning after the empirical testing.

interactive unit-related behaviours, rational-analytical inter-individual-related behaviours, affective-interactive inter-individual-related behaviours and intra-personal behaviour" (Theron & Spangenberg, 2005, p.39).

CHAPTER 10: LIMITATIONS, RECOMMENDATIONS AND CONCLUSIONS

10.1 Overview

The current study arose from the need, identified by Theron and Spangenberg (2005), for a unique South African leadership-unit performance structural model. This model would be beneficial to organisations in terms of providing understanding of the effect of leadership on a given units performance (Theron & Spangenberg, 2005). In order to create such a comprehensive model, it was necessary to analyse the underlying structures of the PI (Theron et al., 2004) and create a second-order factor structure for the LBI (Theron & Spangenberg, 2005). The PI focuses on unit performance and would do the same in the leadership-unit performance model, whilst the second-order factor structure of the LBI would provide the leadership aspect. The leadership dimensions needed to be linked to unit performance (Theron et al., 2004).

Theron and Spangenberg (2005) identified three plausible second-order factor structures for the LBI, focusing on the five-factor model in their study. The other two proposed models needed review and were the subject of the current research. Based on Theron and Spangenberg's suggestions and vigorous literature review, two potential models were proposed, that of the House (1995) leadership-style distinctions and the MLQ (Avolio et al., 1999). These became known as the three- and two-factor models, respectively.

The three-factor model comprises management behaviour, supervisory leadership and general leadership second-order factors (House, 1995) and the two-factor model comprises transformational and transactional second-order factors (Avolio et al., 1999). Empirical testing focused on a general factor analysis, with refined models tested via exploratory factor analysis (72% of the sample) and finally confirmatory factor analysis (28% of the sample). From the goodness-of-fit measures, both models indicated moderate fits, with the two-

factor model showing a slightly improved fit compared to the three-factor model. It is therefore this model (refer to chapter 9, figure 9.1) which would appear to be the proposed model to use, in conjunction with the internal structure of the PI, for the leadership-unit performance structural model. However, when compared to the results of the five-factor model (Theron & Spangenberg, 2005) the two-factor model underperforms and it is recommended that the authors use their five-factor model for the creation of the leadership-unit performance structural model, as opposed to the models created in the current study.

10.2 Limitations

One objective of this study was to find a suitable model for the second-order factor structure of the LBI. Theron and Spangenberg (2005) proposed two viable options, and this study undertook to analyse all relevant theoretical literature pertaining to leadership. It is believed that the two most viable theoretical options were reviewed, that is, the two-factor model (House, 1995) and the three-factor model (Avolio et al., 1999).

All literature objectives, outlined in chapter 1 were met. The leadership theories were reviewed in detail with specific focus on the MLQ and the House leadership-style distinctions. The LBI and its underlying factors as well as the PI and the envisaged leadership-unit performance structural model were also reviewed in detail. One limitation is that there is limited theory regarding the leadership-unit performance structural model, since it is still in the conception phase. Further studies regarding this model and its perceived underlying structures would resolve some of these queries.

A second limitation is that of sample. The data set consisted of respondents from the financial sector only, and therefore generalisation of the findings needs to be done with caution. However, the results obtained from this study as well as from Theron and Spangenberg (2005) can be taken and utilised in future studies,

utilising different samples. It would also be of interest and relevance, in the South African context, to include demographical information, in future studies samples, to ensure a clear reflection pertaining to multi-cultural aspects.

In-depth comparisons were conducted on the second-order dimensions for both the proposed models and the empirically observed second-order factors derived from the analysis of the LBI dimensions. Considerable divergence occurred, particularly in the two-factor model. Comparisons were made between the models and the theoretically proposed models, for the second-order factor structure, in terms of best fit. Results were conclusive and although subjectivity could have skewed results whist creating the proposed models, the vigorous theoretical and empirical analysis dispelled this possibility.

A further limitation was that different methods of analysis were used for the two- and three-factor model (STATISTICA, SEPATH) compared to the five-factor model (LISREL). To an extent, this limited comparisons between the three models. From the goodness-of-fit measures available, it could be ascertained which of the three models had the best fit, but it would have been beneficial to have all three models undergo the same empirical testing, utilising the same statistical program.

The aim of this study, to create a second-order factor structure for the LBI, was met. Although the five-factor model is perceived to be the most viable, the two-factor model would also provide an adequate fit. The three-factor model would too, but to a lesser extent.

10.3 Conclusions and Recommendations

The uniqueness of South Africa presents a clear opportunity for the development of models and instruments conceptually based on the requirements a diverse country, such as South Africa, has. The need to ensure that organisations have

the instruments necessary to ensure that leadership potential is identified, maintained and accentuated has been paramount to the Centre for Leadership Studies at the University of Stellenbosch's Graduate School of Business (Spangenberg & Theron, 2002). Through instruments such as the Leadership Behaviour Inventory (Spangenberg & Theron, 2002) and the performance index (Theron et al., 2004; Henning et al., 2004), this important task of creating South African based instruments is developing.

Theron and Spangenberg (2005) identified a need to develop a model which highlights aspects of both unit performance and leadership dimensions. This model, named the leadership-unit performance structural model, would highlight the "…role of leadership in organisational unit performance" (Spangenberg & Theron, 2005, p.35). In order to do so, Theron and Spangenberg (2005) have recommended that the PI's internal structure of unit performance be used as grounding for the underlying structure in the proposed leadership-unit model along with the second-order factor structure of the LBI.

It is recommended that future studies outline the specific role of the proposed leadership-unit performance structural model with emphasis on the role of the PI's internal structure and the second-order factor structure of the LBI.

The current study focused on attaining a second-order factor structure for the LBI. Three alternatives were provided by Theron and Spangenberg (2005), namely the five-factor model (created by the authors themselves), the House (1995) leadership-style distinctions and the MLQ second-order factors (Avolio et al., 1999). The five-factor model was tested in their study (Theron & Spangenberg, 2005), whilst the other two possibilities were reviewed in the current research. Theoretical considerations indicated that the two proposed models did have potential. From the extensive empirical testing, it was apparent that both the two-factor model (House, 1995) and the three-factor model (Avolio, et al., 1999) showed moderately fitting models, with the two-factor model

showing an improved fit compared to the three-factor model. Comparatively, the five-factor model (Theron & Spangenberg, 2005) is a more plausible option.

However, it might be beneficial to review the three models and conduct analysis on all three, using the same statistical program to ensure uniformity. Based on results from this study, however, it is recommended that the five-factor model be utilised for the creation of the leadership-unit performance structural model.

The path is now laid for the development of a unique South African leadership-unit performance structural model. Future research needs to bring together the research conducted on the PI (Theron, et al., 2004) and the LBI's second-order factor structure (Theron & Spangenberg, 2005; current study) and begin the task of constructing the structural model. This would need to be done by linking the second-order factor structure of the leadership dimensions with the latent variables of the unit performance (Theron et al., 2004). It would be a daunting task, but the final result would be the creation of a unique South African model, which organisations could utilise to strengthen their internal leadership performance in work units.

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