The Impact of Leadership Behaviours and Organisational Culture on Knowledge Management Practices in Small and Medium Enterprises

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Declaration

This works has not been previously submitted for a degree or diploma in any university. To the best of my knowledge and belief, this thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

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List of Publications

The following papers were produced to disseminate some concepts and results from the work undertaken by the author during the course of this Ph.D. research study.

Journal Publications

1. **Nguyen, H. N.** and Mohamed, S. "Leadership behaviours, organisational culture and knowledge management practices: An empirical investigation", Journal of Management Development (under review).

Conference Papers

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Abstract

An increasing number of organisations are turning to knowledge management (KM) as a key to leverage their distinctive core competencies in their pursuit of competitive advantage. Organisations are interested in KM to boost the efficiency of their processes, increase their productivity and quality of their services, and to achieve innovative solutions and products for their customers. Consequently, the contributions of KM to the overall success of an organisation have been widely acknowledged.

Prior research studies have demonstrated that both organisational culture and leadership behaviours are widely held to be major barriers to creating and leveraging knowledge. The literature suggests that for KM implementation to be effective there is a need to diagnose the fit between an organisation and its KM objectives. Thus, it is essential to articulate how organisational culture and leadership styles affect the organisation's ability to create and apply knowledge. It is only then that appropriate strategies can be designed to either adapt the organisational culture or reshape it to support KM objectives.

A critical evaluation of research studies in the fields of leadership, organisational culture, and knowledge management indicated that, while some evidence exists supporting the links between leadership and KM and between organisational culture and KM, the combined study of all three of these concepts has been hitherto lacking. This study, therefore, examines this research gap. More specifically, the study investigates the relationship between leadership behaviours and KM practices, and the moderating effects of organisational culture on that relationship.

To investigate such a relationship, a conceptual model comprising four constructs, namely transformational leadership, transactional leadership, organisational culture, and KM practices, was developed. The model and its related four hypotheses were empirically examined using a questionnaire-based survey targeting Australian small and medium-sized enterprises (SMEs). The rationale for selecting SMEs was two-fold. First, one of the main characteristics of SMEs is that management structures are often minimal, and decision

making is centralised at the owner/manager level. Hence, the leader's personality and behaviours would be expected to have a significant influence on supporting organisational KM practices. Second, individual SMEs are more likely to have a single organisational culture. Thus, culture and cultural fit are more profound in SMEs than in large organisations where several cultures may be present.

Data related to the four constructs of the study were collected from 157 SMEs using three previously validated instruments. For the measurement of leadership behaviours, the study used the Multifactor Leadership Questionnaire (MLQ-5X), which is one of the most widely tested measures of transformational and transactional leadership. For the construct of KM practices, a 17-item assessment questionnaire developed by Becerra-Fernandez and Sabherwal (2001) was used to allow participants to indicate how frequently each of the identified KM processes and tools is currently being used within their respective organisations. Finally, Denison's Organisational Cultural Survey (DOCS), adapted from Fey & Denison (2003), was selected to measure the dimensions of organisational culture. Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA) and Regression Analysis (RA) were employed to examine the relationships among the research constructs. The results shed light on how leadership behaviours and organisational culture influence KM practices.

First, both transformational and transactional leadership behaviours appear to be positively related to KM practices. More specifically, charismatic leadership (focusing on envisioning, empathy, and empowerment) and contingent reward leadership behaviours (focusing on transactions, rewards, and punishment) have a greater impact on facilitating knowledge socialisation and exchange within organisations.

Second, the results of moderated regression analyses reveal that the effectiveness of leadership behaviours is contingent upon the type of organisational culture. To illustrate, cultures with strong emphasis on hierarchy (i.e. highly centralised and formalised) and/or mission (i.e. being competitive and goal-oriented) would attenuate the contribution of transactional leadership behaviours to KM. These findings, hence, suggest that the most

effective leaders for successful KM implementation are those who are best able to display and use both transformational and transactional leadership behaviours upon different organisational contexts and cultures. For example, transactional leadership might work better in reinforcing existing norms, values and procedures, whereas transformational leadership behaviours would allow the adaptation of organisational culture to and its realignment with, a new vision when needed.

Third, and perhaps of most interest, the evidence provided by the study indicated that leadership behaviours (in their own right) are significant contributors to organisational culture, and that leaders can influence KM practices either directly or indirectly through organisational culture. These findings confirm the crucial role of leadership in building and maintaining a supportive organisational culture for KM, thus providing further evidence for the need to develop a comprehensive investigation into the potential role that organisational culture could play as an effective mechanism by which leaders could enact KM within their organisations.

Finally, although the use of well-tested questionnaires indicated a strong conceptualisation of the transactional leadership model, this could not be extended to the transformational leadership and organisational constructs where a relatively moderate representation was obtained for these two constructs. While this finding is somewhat disappointing, it enhances the existing body of knowledge by suggesting that perceptions of transformational leadership and organisational culture might be contingent upon other contextual conditions such as national culture, organisational history and performance – all of which are outside the scope of this research study.

In conclusion, this study provides empirical evidence on the connection among leadership behaviours, organisational culture, and knowledge management, thereby addressing the need for research that incorporates cultural context in leadership and KM studies. Furthermore, it provides practical implications for managers/leaders by identifying the leadership behaviours and organisational mechanism required to enhance KM practices.

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List of Abbreviations

AD	Adaptability
AGFI	Adjusted-Goodness-of-Fit Index
ANOVA	Analysis of Variance
CFA	Confirmatory Factor Analysis
CFI	Comparative-Fit Index
CH	Charisma Attributed
CO	Consistency
COM	Knowledge Combination
CR	Contingent Reward
df	Degree of Freedom
DOCS	Denison Organisational Culture Survey
EFA	Exploratory Factor Analysis
EX	Knowledge Externalisation
GFI	Goodness-of-Fit Index
GLS	Generalized Least Square
HI	Hierarchy
IFI	Incremental-Fit Index
IC	Individual Consideration
IIA	Idealised Influence Attributed
IIB	Idealised Influence Behaviours
IM	Inspirational Motivation
IMS	Information Management System
IN	Knowledge Internalisation
INV	Involvement
IS	Intellectual Stimulation
IT	Information Technology
KM	Knowledge Management

KMO	Kaiser-Meyer-Olkin Measure of Sampling Adequacy
LD	Leadership
LF	Laissez-faire
MBEA	Management-by-exception Active
MBEP	Management-by-exception Passive
MI	Mission
ML	Maximum Likelihood
MLQ	Multifactor Leadership Questionnaire
NFI	Normed-Fit Index
OC	Organisational Culture for Innovation
OLS	Ordinary Least Square
PCA	Principal Component Analysis
RMSEA	Root Mean Square Error of Approximation
SD	Standard Deviation
SE	Standard Errors of the Mean
SO	Knowledge Socialisation
SRMR	Standardised Root Mean Square Residual
TA	Transactional Leadership Behaviours
TF	Transformational Leadership Behaviours
TLI	Tucker-Lewis Index
WLS	Weighted Least Square

CHAPTER 1

Introduction

This thesis introduces a PhD research investigation that aims to study the leadership behaviours and organisational culture which affects knowledge management (KM) practices within small and medium organisations operating in Australia. The key objective of this investigation is to explore the connection between transformational and transactional leadership behaviours and KM practices in different organisational culture. This first chapter of the thesis specifies the rationale for the study, describes its significance, and presents an overview of the methodology used.

1.1. Rationale for the Study

Nowadays, the utilisation of knowledge management in business practices is widely recognised as providing a competitive advantage, and an increasing number of organisations are incorporating a knowledge management strategy (Davenport & Volpel, 2001). Many firms have reached the conclusion that effective knowledge management is the only way to lever their core competencies to achieve competitive advantage (Arora, 2002; Bhatt, 2001; Demarest, 1997; Hlupic, Pouloudi, & Rzevski, 2002). Organisations are interested in knowledge management to boost the efficiency, increase the productivity and quality of their services, and to achieve innovative solutions to, and products for, their customers. On the other hand, within the research community, knowledge management is considered as a catalyst for understanding the role of knowledge in an organisation (Moffett, McAdam, & Parkinson, 2003a).

The continual development in the field of knowledge management has led to a number of critical factors being highlighted in the literature, including organisational culture, leadership, information technology, processes and activities, and human resources management (Davenport, De Long, & Beers, 1998; Holsapple & Joshi, 2000; Horak, 2001). At the beginning, knowledge management was placed mostly in the information

technology domain, and the emphasis was on knowledge-based systems, tools, and techniques (Andreu & Ciborra, 1996; Bansler & Havn, 2003; Koch, 2003). For this reason, Egbu (2004) concluded that the KM literature highlighted an overwhelming emphasis on information technology. Furthermore, Hlupic et al. (2002) argued that these IT-based knowledge management systems are, in essence, limited to handling data rather than knowledge because they are usually designed to deal with structured data, whereas 'information' is directly entered into fields or can be categorised in some manner.

Practitioners and researchers are now realising the importance of the 'soft' aspects of knowledge management (Guzman & Wilson, 2005; Hlupic, et al., 2002). It is widely acknowledged that effective knowledge management depends not merely on information technology platforms, but more broadly on the social ecology of an organisation, and that technology is simply a facilitator and not the KM system (Carrillo, Robinson, Al-Ghassani, & Anumba, 2004). Knowledge management is more than just about the storage and manipulation of information, it is a process that requires commitment to create and disseminate knowledge through organisations (Ardichvili, Maurer, Li, Wentling, & Stuedemann, 2006; Li, 2006; Nonaka & Konno, 1998). Effective knowledge management requires that attention be paid to the human and cultural aspects of business, particularly the experiences and tacit knowledge of employees. It is the organisational structures and processes that harness and combine intellectual and human capital for learning, innovation, and problem solving (Hlupic, et al., 2002). Accordingly, numerous studies reveal that organisational culture and leadership are the major barriers to creating, sharing, and leveraging knowledge assets (Carrillo, et al., 2004; DeTienne, Dyer, Hoopes, & Harris, 2004; Lakshman, 2005; Park, Ribiere, & William D. Schulte, 2004).

Leaders have an enormous impact on knowledge management practices within their organisations. A leader creates conditions that allow participants to readily exercise and cultivate their knowledge manipulation skills, contribute their own individual knowledge resources to the organisation's pool of knowledge, and have easy access to relevant knowledge (Crawford, 2005; De Long & Fahey, 2000; Ribiere & Sitar, 2003). Without effective leaders, who set appropriate examples, employees will not be motivated to

participate in the KM programs (DeTienne, et al., 2004). Accordingly, the speed that a culture will change to one supportive of organisational learning and knowledge management largely depends on the leadership in the organisation (Ribiere & Sitar, 2003). Crawford (2005) and Horak (2001) inferred that leaders also play a crucial role in building and maintaining an organisational culture of learning, and implementing KM in the organisation. Leaders must attach a high value to knowledge, encourage questioning and experimentation through empowerment, build trust, and facilitate experiential learning of tacit knowledge.

A question has emerged about what types of leadership behaviour would meet the above requirements for successful KM implementation. A review of the literature suggests that the answer could be found in transformational and transactional leadership behaviours. Examining the relationship between self-management, transformational/transactional leadership, and various knowledge management attributes, Politis (2001) found that self-management, transformational and transactional leadership styles are related to knowledge acquisitions. According to the theoretical and empirical findings of several authors (Crawford, 2005; Paul, Costley, Howell, & Dorfman, 2002; Politis, 2001; Popper & Lipshitz, 2000), one of the most appropriate leadership styles for knowledge organisation is the transformational leadership style. Transformational leaders are willing to sacrifice their individual interests for the good of the organisation and its goals; they motivate co-workers by inspiring a vision of the organisation's future. This type of leadership motivates followers to exceed their own self-interest for the good of the organisation. Vera and Crossan (2004) found that transactional leaders stimulate the flow of learning from organisation to individuals and groups by assigning a strong value to organisational rules, procedures and past experiences. They also provide organisational members with formal systems and training programs that disseminate existing learning to guide future actions and decisions.

The major gap in the literature, however, is the lack of attention to the impact of organisational culture on such relationships between leadership behaviours and KM, especially in SMEs environment. Most of the reported research has focused on the

behaviour or decision style of leadership with very little understanding of the values, needs, and motives that reflect an organisation's culture (Block, 2002; Brown, 1992; Fairholm, 1994; Ogbonna & Harris, 2000). Fairholm (1994) contends that unless the culture is supportive of its leaders, leadership based on common values is impossible. Culture determines a large part of what leaders do and how they do it (Fairholm, 1994). It is also suggested that numerous aspects of organisational literature allude to the role of leaders in creating and maintaining particular types of organisational culture (Kavanagh & Ashkanasy, 2006; Schein, 2004).

More importantly, according to Bass (1985), transactional leaders work within their organisational cultures and maintain consistent rules, procedures and norms. On the other hand, transformational leaders frequently change their organisational culture with a new vision and revision of its shared assumptions, values, and norms (Bass, 1985). In a transformational culture, there is generally a sense of purpose and a feeling of family. Assumptions, values, and norms do not preclude individuals from pursuing their own goals and rewards. Superiors feel a personal obligation to help new members assimilate into the culture. Leaders and followers share mutual interests and a sense of shared fates and interdependence (Bass & Avolio, 1993). It is, hence, essential to articulate how leadership behaviours affect KM activities in various types of organisational culture. Appropriate strategies can then be designed to either adapt the organisational culture, or try to reshape it to support KM objectives.

1.2. Aims of the Research

Despite the aforesaid implicit and explicit linking of leadership and organisational culture in many parts of organisational theory, little critical research has been devoted to understanding the link between the two concepts and the impact that such an association might have on KM. To address this gap, the following was investigated:

- the relationship between transformational leadership behaviours and KM practices,
- the relationship between transactional leadership behaviour and KM practices, and
- the moderating effect of organisational culture on the impact of leadership behaviours on KM practices.

Additionally, the study was conducted within the confines of the following scopes:

- The study limited to the context of small and medium-sized enterprises (SMEs) in Australia (the term 'enterprise' and 'organisation' are used interchangeably throughout the thesis);
- The study emphasised the examination of internal organisational factors; therefore, it did not take into account any effects from the external environmental factors; and
- Although it is possible that at least certain aspects of leadership, organisational culture, and KM practices involve some kind of time lag, the research approach taken was cross-sectional rather than an idealistic longitudinal study.

1.3. Methodology Overview

The primary objective of this study was to explore the relationship between leadership and KM practices, and to determine if organisational cultures moderate such relationships between leadership and KM. Therefore, the research design of this study follows a deductive approach, beginning with abstract, logical relationships among constructs in the theoretical framework, and proceeding toward concrete, empirical evidence. Using a deductive approach, quantitative data analysis seeks to establish facts, make predictions, and test the hypotheses.

A questionnaire survey was administered to a sample of SMEs operating in Australia. It sought to investigate the perceptions of managers regarding leadership behaviours, organisational culture, and KM practices within their organisations. Data collection involved distributing a questionnaire to a total sample of 1,000 SMEs in Australia.

Multivariate statistics were employed to quantitatively analyse the data collected from the questionnaire survey. These techniques were considered suitable for the present study as they provided an analysis of the complicated data set and used multiple independent and dependent variables (Tabachnick & Fidell, 2007). First, the reliability and the validity of the measurement scale was assessed using factor analysis including two sequential techniques, Confirmatory Factor Analysis (CFA) and Exploratory Factor Analysis (EFA). Second, multiple regression analysis was employed to test the proposed hypotheses to

answer the research questions concerning the relationship among leadership behaviours, organisational culture, and KM. Additionally, moderated regression analyses were performed to test the moderating effects of organisational culture on the association between leadership behaviours and knowledge management practices.

1.4. Significance of the Study

The greatest challenge in KM is the ability of leaders to effectively establish, maintain, and link KM and human capital to organisational culture. The present study makes contributions as it differed from the previous studies. The investigation does not simply match leadership with KM practices as previous study (Crawford, 2005; Jung, Chow, & Wu, 2003; Politis, 2001). The study offered insight into the effectiveness of different types of leadership behaviours to KM. Importantly, the present study discussed the cultural conditions under which leadership behaviours play a role in KM. Very few studies in the literature have incorporated cultural context into leadership and KM studies.

Regarding the managerial practices, this study is significant in that the results of the present study provides managers and leaders with insights into how knowledge is managed in their organisation. Furthermore, this study helps leaders identify the specific leadership characteristics and behaviours that are related to knowledge management efforts in different types of organisational cultures. Using one of these leadership styles, leaders, through their behaviour, make knowledge activities become totally integrated with work. They reward and recognise desired behaviours by paying tribute to knowledge champions, offering bonuses, letters of appreciation, promotions, attractive assignments, allocation of resources, etc. Additionally, leaders clearly state what activities will be rewarded, and ensure that they contribute to the creation or leverage of knowledge.

Schein (1990) contends that leaders must have a deep understanding of the identity and impact of organisational culture in order to communicate and implement new visions, and to inspire follower commitment to the vision. Shaping a culture conductive to their vision for their organisation is the quintessential leadership task; it is a transforming task aimed at ensuring that the cultural surroundings are continually responsive to the organisation's

vision and the needs of a changing, evolving follower core. In this regard, understanding the influence of various organisational cultures may provide clues for managers and leaders in shaping the culture to meet changing needs.

1.5. Thesis Layout

This thesis consists of seven chapters. This chapter introduces the rationale for the research, research aims and scope, and the significance of the study, as well as providing an overview of the research method and an outline of the thesis layout.

Chapter 2 provides an extensive review of literature pertinent to the field of knowledge management, leadership, and organisational culture. This chapter includes a critical review of numerous publications covering KM concepts and factors influencing KM. The concepts and theories of leadership and organisational culture were also reviewed. This chapter aims to identify the issues that have not been adequately explored by the previous researchers to define the most important variables that influence the research problem.

Chapter 3 presents the development of a research conceptual framework and hypotheses based on the knowledge acquired from the literature review. The Chapter also delineates the research questions formulated as a response to the identified research gaps. This is followed by the details of the research method, which addresses the key issues relating to the research approach, research design, and the relevant analytical techniques adopted in this study.

Chapter 4 presents the results of the descriptive analysis based on the data collected from the questionnaire survey of Australian SMEs. This chapter begins by presenting the profiles of the survey respondents, followed by the screening of the survey data to ensure that it is suitable for the subsequent multivariate statistical analysis. The preliminary findings interpreted from the survey are then presented.

Chapter 5 provides the details and results of the measurement scale assessment based on the descriptive data analysis. The analysis results of scale reliability are presented to assess

the internal consistency of the measurement scales utilised in the survey questionnaire. Next, the confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) techniques are detailed and the results presented. The main purpose of CFA is to confirm whether or not the collected data fit the theoretical constructs; the EFA was conducted to refine and uncover the appropriate factor structures to establish the best possible dimensionality, reliability, and validity of these scales.

Once the reliability and validity of the measurement scales were established, multiple regression analysis was employed to test the proposed hypotheses to answer the research questions concerning the relationship among leadership behaviours, organisational culture, and KM. According to Tabachnick & Fidell (2007), multiple regression analysis is by far the most widely used in business and social sciences to explore all types of dependence relationships. Multiple regression analysis is a powerful analytical tool used to determine which specific independent variables predicts the variance of dependent variables selected by the research (Hair, Black, Babin, Anderson, & Tatham, 2006). Additionally, moderated regression analyses were performed to test the moderating effect of organisational culture on the association between leadership behaviours and knowledge management practices. Further details and results of regression analyses are presented in Chapter 6.

Chapter 6 illustrates the process of identifying the relationships between the constructs of the research conceptual framework, thus testing the proposed research hypotheses. The exploratory approaches, such as correlation and multiple regression analyses, revealed the strength of the relationships between the constructs. Additionally, moderated regression analyses were also conducted to examine the moderating effects of organisational culture.

Finally, Chapter 7 discusses and summarises the key research findings, highlights the contributions made by the study to the existing body of knowledge, and the implications for managerial practices. It also addresses the limitations of the study, and presents recommendations for the future research. Following the reference list, supplementary information (e.g. the disseminated questionnaire) is provided in the Appendices.

CHAPTER 2

Literature Review

The purpose of this study was to investigate how leadership behaviours relate to knowledge management practices, and to determine if organisational culture moderates the relationship between leadership and knowledge management. A literature review on these concepts is presented. Specifically, this chapter provides: (a) the definitions and theory of knowledge management, (b) an historical overview of leadership definitions and theories, (c) a review of literature on transformational and transactional leadership behaviours, (d) a review of literature on organisational culture, (e) an analysis of research on the relationship between leadership and knowledge management, and (f) an analysis of the research into the impact of organisational culture on leadership.

2.1. Knowledge Management

2.1.1. The Nature of Knowledge

The theory of knowledge and learning is very broad, with roots in philosophy, cognition, psychology, and organisational theory. Before discussing knowledge management, it is important to ground the discussion in knowledge.

The concept of knowledge is taken as having developed chronologically over time (Nonaka & Takeuchi, 1995). Various writers (Beckman, 1999; Bhatt, 2001; Davenport & Prusak, 1998; Nonaka & Takeuchi, 1995; Probst, Raub, & Romhardt, 2000; Wiig, 1999) have described the term *knowledge* differently, with the various definitions seen as having one thing in common: that knowledge is related to a process, often thought to involve human action. Table 2-1 presents some definitions of knowledge revealed in the literature. Awad and Ghaziri (2004, p. 33) view knowledge as "understanding gained through experience or study", while Nonaka and Takeuchi (1995, p. 58) see knowledge as a dynamic human process of justifying personal belief toward the truth created by the flow of information anchored in the belief and commitments of its holder. Knowledge has its

active and subjective nature represented by such terms as *commitments* and *belief* that are deeply rooted in individuals; thus emphasising that knowledge is essentially related to human actions.

Table 2-1 Definitions of Knowledge

Source	Definition
Wiig (1999, pp. 3-2)	Knowledge consists of truth and beliefs, perspectives, concepts, judgments, expectations, methodologies and "know-how".
Bhatt (2001, p. 70)	Knowledge is an organised combination of data assimilated with a set of rules, procedures, and operations learnt through experiences and practices.
Davenport & Prusak (1998, p. 5)	Knowledge is a fluid mix of framed experiences, values, contextual information, and expert insights that provide a framework for evaluating and incorporating new experiences and information. It originates and is applied by the middle of knowers. In organisations, it is often becomes embedded not only in documents or repositories but also in organisational routines, processes, practices and norms.
Nonaka & Takeuchi (1995, p. 58)	Knowledge is "justified true belief". It is a dynamic human process of justifying personal belief toward the "truth"
Beckman (1999, pp. 1-3)	Knowledge is reasoning about information and data to actively enable performance, problem solving, decision making, learning and teaching
Probst, Raub, & Romhardt (2000, p. 24)	Knowledge is the whole body of cognitions and skills which individuals use to solve problems. It includes both theories and practical, everyday rules and instructions for action. Knowledge is based on data and information, but unlike these, it is always bound to person. It is constructed by individuals, and represents their beliefs about causal relationships.
Davenport, De Long, & Beers (1998, p. 43)	Knowledge is information combined with experience, context, interpretation, and reflection.
Awad & Ghaziri (2004, p. 33)	Knowledge as "understanding gained through experience or study"
Sowa (1984)	Knowledge encompasses the implicit and explicit restrictions placed upon objects (entities), operations, relationships, general and specific heuristic as well as inference procedures involved in the modeled.

Davenport and Prusak (1998) offer a definition that illustrates the value of knowledge and highlights the difficulty of defining knowledge in a neat and simple way. They defined knowledge as "a fluid mix of frame experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences" (p. 5), and further, that it originates and is applied in the minds of the knower. In the organisation, it often becomes embedded, not only in the documents or repositories but also in organisational routines, practices, and norms. Knowledge, therefore, is a mixture of various elements; it is fluid as well as structured; it involves experience, truth, judgment, and rules of thumbs (Davenport & Prusak, 1998).

In order to think productively about the problems of managing knowledge, the distinction between data, information, and knowledge also needs to be distinguished (Beckman, 1999; Bhatt, 2001; Davenport, et al., 1998; Davenport & Prusak, 1998; De Long & Fahey, 2000; Prusak, 1997). Although these three terms are usually used interchangeably in practice, data are merely raw, objective facts, whereas information is considered as structured and organised data, knowledge, on the other hand, is described as an organised combination of data assimilated with a set of rules, procedures, and operations learnt through experiences and practices (Bhatt, 2001). Furthermore, knowledge is information combined with experience, context, interpretation, and reflection; knowledge production adds value to the information (Davenport, et al., 1998).

Although most scholars agree that knowledge is above data and information, few academics or business leaders agree on the exact meaning of knowledge (Butler, 2003; Hlupic, et al., 2002). The meaning of knowledge thus depends on the users' perspective. Information represents a flow of messages but knowledge is created and organised from it, anchored by the commitments and beliefs of concerned individuals (Davis, Subrahmanian, & Westerberg, 2005). Knowledge is meaning of the mind and without meaning, knowledge is information or data (Bhatt, 2001). Knowledge, therefore, is context dependent (Bhatt, 2001).

It is apparent that no definition of knowledge encompasses all disciplines, professional levels, and organisations; almost every discipline has its own definition of knowledge (Bhatt, 2001; Von Krogh, Nonaka, & Aben, 2001). However, two common characteristics of knowledge can be drawn from these definitions. First, knowledge is humanistic because it is essentially related to human action; knowledge is a dynamic human process of justifying personal beliefs toward the truth (Nonaka & Takeuchi, 1995). This perspective acknowledges the importance of subjective factors such as beliefs and their link to actions, as well as the relatively tacit dimension of knowledge. Second, knowledge is context specific as it depends on a particular time and space. Without context it is information, not knowledge. In other words, it is contended that knowledge does not exist independently of human experience; instead, it develops through social creation of meanings and concepts (Sabherwal & Becerra-Fernandez, 2003). The subjective and context-sensitive nature of knowledge implies that its categories and meanings depend on individual perceptions

(Davenport & Prusak, 1998).

For the purpose of this study, the adopted definition of knowledge is given by Probst and his colleagues (2000, p. 24):

"*Knowledge is the whole body of cognitions and skills which individuals use to solve problems. It includes both theories and practical, everyday rules and instructions for action. Knowledge is based on data and information, but unlike these, it is always bound to person. It is constructed by individuals, and represents their beliefs about causal relationships"*

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Such a definition has been adopted as it more or less embraces the definition of knowledge given by various scholars (Beckman, 1999; Bhatt, 2001; Davenport & Prusak, 1998; Nonaka & Takeuchi, 1995; Wiig, 1999). Hence it represents a commonly accepted term in the field of knowledge. Based on this definition, this study posits that new knowledge always begins with the individuals, and that an individual's personal knowledge is transformed into organisational knowledge valuable to the company as a whole.

2.1.2. Organisational Knowledge

One of the basic questions of epistemology concerns the notion of knowledge. Many philosophers have tried to define knowledge; however, there is still no universally accepted definition of knowledge that cuts across disciplines, professional levels, and organisations. Likewise, although many organisational theorists and psychologists attempt to define organisational knowledge by establishing a bridge between individual knowledge and collective knowledge, organisational knowledge is still not well understood because it is not a simple exercise of collating individual knowledge (Bhatt, 2001). More specifically, definitions of organisational knowledge range from "complex, accumulated expertise that resides individuals and is partly or largely inexpressible" to "much more structured and explicit content" (Davenport & Prusak, 1998, p. 70).

The types of organisational knowledge are reflected in several classification schemes. According to Kogut and Zander (1997), organisational knowledge is categorised into information and know-how. *Knowledge as information* implies "knowing what something

means"; know-how is a description of knowing how to do something, which implies that know-how must be learnt and acquired. They also identify the parallel distinction between declarative knowledge (facts) and procedural knowledge (how to minimise the inventory). Furthermore, Kogut and Zander (1997) argue that know-how, like procedural knowledge, which consists of statements that describe a process, is the description of what defines current practice inside a firm. These practices may consist of how to establish divisional and functional lines authority and accountability. Know-how is the understanding of how to organise a firm along these formal (and informal) lines. It is in the regularity of the structuring of work, and of the interactions of employees conforming to explicit and implicit recipes, that one finds the content of the firm's know-how (Kogut & Zander, 1997).

Nonaka and Takeuchi (1995) make the distinction between two types of knowledge in any organisation: explicit knowledge and tacit knowledge. Discussions of this concept are abundant in the knowledge management literature (Beckman, 1999; Beijerse, 1999; Boiral, 2002; Bollinger & Smith, 2001; Davenport & Prusak, 1998; Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995). Explicit knowledge is defined as structured and codified knowledge. It is formal and systematic and is easily expressed in production specifications, scientific formulas, or computer programs (Nonaka & Konno, 1998); thus it can be easily communicated and shared. Tacit knowledge, by contrast, is unconsciously understood and applied, difficult to articulate, and developed directly from experience and action (Zack, 1999). Tacit knowledge is highly personal, hard to formalise, and difficult to communicate or share with others.

Based on this distinction between explicit knowledge and tacit knowledge, Nonaka and Takeuchi (1995) point out four basic patterns for creating and transforming knowledge from a tacit to an explicit form in any organisation: sharing languages, experiences and models through socialisation (from tacit to tacit); externalisation (from tacit to explicit) of tacitly held knowledge through the use of appropriate metaphors and other triggering devices; reconfiguring existing knowledge through sorting, categorising, and adding explicit knowledge through combination (from explicit to explicit); and re-contextualising knowledge through internalisation (from explicit to tacit). Illustrating the movement between these two types of knowledge, Nonaka and Takeuchi (1995) argue that

organisational knowledge creation can be understood as a process of making tacit knowledge explicit. Additionally, they point out that organisational knowledge can be viewed as the collective competencies and capabilities of an organisation, something larger than the total of its individual skills and knowledge. Such collective competencies and capabilities are unique to the firm; thus, its competitive advantage is not replicable in the marketplace.

Although the distinction between explicit knowledge and tacit knowledge is the dominant conceptualisation in the literature, a common assumption in the literature on knowledge management is that articulate knowledge is easily shared as it can be codified (Weiss, 1999). However, Weiss (1999) argues that the ability to articulate knowledge cannot be equated with its availability for use by others. Weiss (1999), therefore, has further classified knowledge in professional service firms into two types of knowledge, namely rationalised knowledge and embedded knowledge. According to Weiss (1999)'s definition, rationalised knowledge is "general, context-dependent, standardised, widely applicable, public, official, and depersonalized" (p. 66); embedded knowledge is "specific, context-dependent, unstandardised, narrowly applicable, private, personalized, unofficial, and may be personally or professionally sensitive" (p. 66). An example of rationalised knowledge would be methodologies for conducting projects, standard operating procedures, and legal references. On the other hand, embedded knowledge is linked to its original resources and can be seen as the successful experience of knowledge workers.

Other organisational experts, such as Lief Edvinsson of Skandia, divide organisational knowledge into individual, organisational, and structural knowledge (O'Dell, Grayson, & Essaides, 1998). Individual knowledge is solely in the minds of employees. Organisational knowledge is the learning that occurs on a group or division level. Structural knowledge, on the other hand, can be understood as processes, manuals, and codes of ethics in the organisation. At any one of these three states, knowledge can be either tacit or explicit.

Quinn, Anderson, and Finkelstein (1996) propose that individual knowledge in an organisation consists of four different types of knowledge: "Know-what", also called cognitive knowledge, is the basic knowledge that an individual can achieve through extensive training and certification.; "Know-how" is the ability to apply know-what

knowledge to complex, real-world problems; ”Know-why”, also called systems understanding, is deep knowledge of cause-and-effect relationships; and “Self-motivated creativity” is the highest level of knowledge, consisting of will, motivation, and adaptability. Quinn et al. (1996) argue that the value of organisational knowledge can increase markedly as an organisation helps its employees develop self-motivated creativity, and to leverage this type of knowledge throughout the organisation. Organisations that nurture self-motivated creativity in their people can simultaneously thrive in the face of today’s rapid changes and renew their cognitive knowledge, advanced skills, and systems understanding in order to compete.

Although these definitions and theories of organisational knowledge are somewhat arbitrary, this study, following Boland and Tenkasi (1995), views knowledge as subjective rather than objective. This perspective contends that knowledge does not exist independent of human experience; instead it develops through the social creation of meanings and concepts. Complete organisational knowledge is achieved only when individuals keep modifying their knowledge through interactions with other organisational members (Bhatt, 2001). Organisational knowledge can also be seen as knowledge that is shared among organisational members; thus it is distributed, created, and managed by individuals who act autonomously within a decision domain (Gupta & Govindarajan, 2000; Moffett, McAdam, & Parkinson, 2003b; Yahya & Goh, 2002). Consequently, organisational knowledge involves both people and context; its realisation depends on people who interpret, organise, plan, develop, execute, and use those templates (Guzman & Wilson, 2005). These conflicting characteristics make organisational knowledge management more difficult because the chances of success in culture change are low, especially when the purpose of the culture change is not understood or accepted by employees (Park, et al., 2004). Therefore, it has been posited that the challenge for KM practitioners is to understand and be able to address the particular organisational culture and leadership in their organisation so as to align the knowledge management systems with their organisational climate.

2.1.3. Defining Knowledge Management

Knowledge management is now widely recognised as a competitive advantage, and an increasing number of organisations are incorporating the knowledge management strategy (Davenport & Volpel, 2001). Many firms have reached the conclusion that effective

knowledge management is the only way to lever their core competencies and achieve competitive advantage (Arora, 2002; Bhatt, 2001; Demarest, 1997; Hlupic, et al., 2002). Thus, organisations are interested in knowledge management to boost the efficiency of their organisation, increase productivity and quality of their services, and acheive innovative solutions and products for their customers. Managers are concerned with developing knowledge management strategies for taming the knowledge of people associated with the organisations. Within the research community, however, knowledge management is considered as a catalyst for understanding the role of knowledge in an organisation (Moffett, et al., 2003a). The meaning of the term knowledge management, therefore, has been debated, defined and redefined repeatedly.

Knowledge management is often viewed as multidimensional and multidisciplinary, which may sometimes lead to a fragmented dialogue on the topic. According to Tiwana (2000), knowledge management, in the simplest terms, means "management of knowledge". It can be extended to management of organisational knowledge for creating business value and generating competitive advantage. "Knowledge management enables the creation, communication, and application of knowledge of all kinds to achieve business goals" (Tiwana, 2000, p. 5). Wiig (1999), the likely founder of knowledge management, defined it as "the systematic and explicit management of knowledge-related activities, practices, programs, and policies within the enterprise" (p. 3). Quintas, Lefrere, and Jones (1997) hold that knowledge management is "the process of continually managing knowledge of all kinds to meet existing and emerging needs, to identify and exploit existing and acquired knowledge assets and to develop new opportunities" (p. 387). Martinez (1998) considers knowledge management as encouraging individuals to communicate their knowledge by creating environments and systems for capturing, organising, and sharing knowledge throughout the company. Various other definitions abound in the literature (Al-Ghassani, Kamara, Anumba, & Carrillo, 2004; Bassi, 1997; Beijerse, 1999; Bhatt, 2001; Darroch, 2003; Davenport & Prusak, 1998; C. Davidson & Voss, 2002; Demarest, 1997; Horwitch & Armacost, 2002; Jones, 2006; Koch, 2003; O'Dell, et al., 1998) as shown in Table 2-2.

Table 2-2 Definitions of Knowledge Management

Source	Definition
O'Dell et al. (1998, p. 6)	Knowledge management is a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organisational performance.
Quintas, Lefrere, & Jones (1997, p. 387)	Knowledge management is the process of continually managing knowledge of all kinds to meet existing and emerging needs, to identify and exploit existing and acquired knowledge assets and to develop new opportunities.
Bhatt (2001, p. 71)	Knowledge is process of knowledge creation, validation, presentation, distribution and application.
Blake (1998, p. 12)	Knowledge management is the process of capturing a company's collective expertise wherever it resides, and distributing it wherever it can help produce the biggest payoff.
Martinez (1998, p. 89)	Knowledge management is about encouraging individuals to communicate their knowledge by creating environments and systems for capturing, organising and sharing knowledge throughout the company.
Horwitch & Armacost (2002, p. 28)	Knowledge management is the practice of creating, capturing, transferring and accessing the right knowledge and information when needed, to make better decisions, take actions, and delivery results in support of underlying business strategies.
Jones (2006, p. 117)	Knowledge management is a process of acquiring knowledge from the organisation or other sources and turning it into explicit information that employees can use to transform into their own knowledge, allowing them to create and increase organisational knowledge.
Beijerse (1999, p. 102)	Knowledge management is achieving organisational goals through strategy-driven motivation and the facilitation of knowledge workers to develop, enhance and use their capability to interpret data and information (by using available sources of information, experience, skills, culture, characters, personality, feeling, etc.) through a process of giving meaning to these data and information.
Wiig (1999, p. 3)	Knowledge management is the systematic and explicit management of knowledge-related activities, practices, programs, and policies within the enterprise.
Rastogi (2000, p. 40)	Knowledge management is a systematic and integrative process of co-coordinating organisation-wide activities of acquiring, creating, storing, diffusing, developing and deploying knowledge by individuals and groups in pursuit of major organisational goals.

It is evident that the wide range of definitions reflects that people who work in the field of knowledge management come from a wide range of disciplines, such as management science, organisational science, production engineering, and so on (McAdam & McCreedy, 1999). For example, management information systems researchers and practitioners tend to define knowledge as an object that can be recognised and controlled in a computer-based information system (Bassi, 1997; Bennett & Gabriel, 1999; Fowler, 2000; Ruggles, 1998); management theory researchers, on the other hand, address knowledge as being processes

based on individual and organisational competencies, such as skills and know-how (Davenport & Prusak, 1998; Kogut & Zander, 1997; Nonaka & Takeuchi, 1995; Quinn, et al., 1996; Wiig, 1997). Knowledge management, therefore, is considered to be the management of people, which does not necessarily accommodate the capabilities of information systems.

There have, however, been conscious efforts to develop a more inclusive, multi-discipline approach to understanding and researching the field of knowledge management (Davenport, et al., 1998). It has been posited that knowledge management is not just a technology, a set of explicit and rigidly systematic activities, nor a patent method to increase the economic value of enterprise (Hlupic, et al., 2002). In an attempt to understand knowledge management, Thomas, Kellogg, and Erickson (2001) argue that the simple picture of KM, merely getting the right information to the right people at the right time, is wrong. KM is not simply a matter of managing information and managing people. Knowledge management is essentially a deeply social process that must take into account human and social factors (Thomas, et al., 2001); hence, a successful KM system is one that includes the knowledge community, where people can interact in the discovery, use, and manipulation of knowledge. Fundamental to the notion of community in KM is the understanding that community involves identifying the social practices and relationships that are operating in a particular context. For most organisations, this will require a significant change in organisational culture and management; from one that values explicit information to one that values their employees' knowledge and provides incentives for them to share their knowledge. This represents a formidable challenge for most managers (Davenport & Prusak, 1998).

Knowledge management can be viewed from two main perspectives: the process perspective, and the outcome perspective (Al-Ghassani, et al., 2004). The process perspective definition tends to promote the development of processes to capture and measure organisational knowledge. These processes do not necessarily need to involve the use of information technology. For example, Davenport et al. (1998) view knowledge management as a process of collection, distribution, and the efficient use of the knowledge resource; the outcome perspective, on the other hand, focuses on the benefits and competitive advantage that an organisation gets from managing its knowledge. An output

perspective definition considers knowledge management as a conscious strategy of getting the right knowledge to the right people at the right time, and helping people share and use their information in ways that strive to improve organisational performance (O'Dell, et al., 1998). This study, however, posits that KM must be considered by both its process and outcome perspectives. From a process perspective, organisational aspects, such as technology, organisational culture, organisational leadership, availability of resources, and management support, will act as moderating factors that will determine how knowledge management should be implemented. For example, information technology, or supportive organisational culture, can facilitate the storage, manipulation, and sharing of knowledge. From the outcome perspective, knowledge management must be coherent with business focus, organisational strategy, and the nature of products and services.

Knowledge management, hence, is broadly treated as a process of leveraging knowledge as a means of achieving innovation in process and products/services, effective decision making, and organisational adaptation to the market (Yahya & Goh, 2002). To achieve these goals, it is not surprising that firms have begun to engage in a wide range of strategies to create, store, and apply knowledge within their organisational context. These strategies generally fall into one of two categories, codification or personalisation (Hansen, Nohria, & Tierney, 2005), that reflect a reliance upon explicit and tacit knowledge. The former refers to the approach in which knowledge is codified using a "people-to-documents"; it is extracted from the person who developed it, made independent of that person, and reused for various purposes (Hansen, et al., 2005). This strategy can also be seen as a way to withdraw knowledge from the person who possesses it, so that it remains in an organisation. The codification strategy is intended to collect, codify, and disseminate information, which relies heavily on information technology (IT) to manage explicit knowledge.

By contrast, a personalisation strategy focuses on sharing knowledge via person-to-person contact and dialogue. Knowledge remains inside the mind of an individual and human interaction is exploited to acquire it. A different taxonomy of strategies was also suggested by O'Dell, Wiig, and Odem (1999); they included business strategies, transfer of knowledge and best practices, customer-focused knowledge, personal responsibility for knowledge, intellectual asset management, innovation, and knowledge creation based on

their benchmarking study. The key point here, however, is that numerous approaches to KM, with various emphases, are developing, and that each of them is valid in its own context.

In general, defining the concept of KM is difficult, as definitions usually depend upon the researchers, their experience, background, and interest. Different perspectives of knowledge management can yield different dimensions and meaning (Lopez, Peon, & Ordas, 2004). In an attempt to move the research forward, and after a thorough review of the literature, this study suggests that KM can be understood as a formalised and active approach to manage and optimise knowledge resources in an organisation (Wong & Aspinwall, 2006), and that the goal of knowledge management is to effectively apply an organisation's knowledge to create new knowledge in order to achieve and maintain competitive advantage (Mason & Pauleen, 2003). Thus, a successful KM system is one that includes knowledge community, where people can interact in the discovery, use, and manipulation of knowledge (Thomas, et al., 2001). Fundamental to the notion of community in KM is the understanding that community involves identifying the social practices and relationships that are operating in a particular context.

In addition, organisations vary by the nature of their knowledge ownership and their vehicle of accumulation. Despite being incapable of creating knowledge without individuals, organisations support creative individuals or provide a context for such individuals to create knowledge; social interactions between individuals, groups, and organisations are fundamental to organisational knowledge creation (Nonaka, 1994). The organisational culture and structure, therefore, play a major role in the individual's propensity to create the knowledge and then share it with others in the literature (Demaid & Quintas, 2006; Du Plessis, 2006; Egbu, 2004; Goodale, 2001; Merx-Chermin & Nijhof, 2005; Nonaka, 1994; Politis, 2001). This approach to KM, relying predominantly on culture and structure, is known as the personalisation strategy (Hansen, et al., 2005). In order to understand the influence of organisational culture and leadership on KM, the author, therefore, focuses this study on the personalisation, rather than codification, of knowledge management practices.

2.1.4. Knowledge Management Processes

The literature shows that a number of studies have addressed the knowledge management process. Some examples include: Demarest's (1997) process model of knowledge construction, dissemination, use, and embodiment; Darroch's (2003) three-stage model of knowledge acquisition, knowledge dissemination, and the use or responsiveness to knowledge; and Bhatt's (2001) five processes, knowledge creation, validation, presentation, distribution, and application. These processes, while often concurrent, are not always in a linear sequence (Beckman, 1999; Lee & Choi, 2003).

Furthermore, as previously described, this study views knowledge as being subjective rather than objective. This perspective contends that knowledge does not exist independent of human experience; instead, it develops through the social creation of meanings and concepts; therefore, losing a universal objective character (Von Krogh & Roos, 1995). The organisation, hence, serves as a knowledge-integrating institution, incorporating the knowledge of many different individuals and groups in the process of producing goods and services (Holtshouse, 1998; Kogut & Zander, 1997; Soo, Devinney, Midgley, & Deering, 2002). Knowledge integration may occur in organisations through organisational routines, directions, or processes involving the sharing of explicit or tacit knowledge (Nonaka & Takeuchi, 1995; Zack, 2003). The focus of this study is on the last aspect, that knowledge management processes facilitate the sharing of explicit or tacit knowledge in organisations.

Explicit knowledge can be shared through various communications media, which is not possible in the case of tacit knowledge. Tacit knowledge is highly personal, hard to formalise, and difficult to communicate or share with others (Nonaka & Takeuchi, 1995). It can sometimes be communicated through the establishment of shared understanding between individuals (Takeuchi, 2001; Takeuchi & Nonaka, 2004). In some circumstances, tacit knowledge needs to be converted into an explicit form. By illustrating the movement between these two types of knowledge, Nonaka and Takeuchi (1995) argue that organisational knowledge management can be understood as a process of making tacit knowledge explicit.

To explore the knowledge management processes, this study draws upon Nonaka's (1994) four knowledge management processes: internalisation, externalisation, socialisation, and

combination. This model views organisational knowledge management as involving a continual interplay between the tacit and explicit dimension of knowledge and a growing spiral flow as knowledge moves through individuals, groups, and organisational levels.

Socialisation

According to Nonaka (1994), socialisation mode refers to the conversion of tacit knowledge into new tacit knowledge through social interaction and shared experience among organisational members. It helps exchange knowledge through joint activities, such as being together, spending time, living in the same environment, rather than through written or verbal instructions (Nonaka, 1994; Nonaka & Konno, 1998). Knowledge is produced in a group setting, not only through the mere acquisition of individuals, but also through the sharing of common understanding, which helps synergise the individual knowledge (Fiol, 1994). Individuals may learn and gain the sense of competence by observing behaviours modeled by others in the organisations. In practice, socialisation typically occurs in a traditional apprenticeship, where apprentices learn the tacit knowledge needed in their craft through hands-on experience, rather than from written manuals or textbooks. Socialisation may also occur in informal meetings outside of the workplace, where tacit knowledge such as world views, mental models, and mutual trust, can be created and shared; socialisation also occurs beyond organisational boundaries, as firms may acquire and take advantage of the tacit knowledge embedded in customers or suppliers when interacting with them. Thus, socialisation involves capturing and disseminating knowledge (Nonaka & Konno, 1998).

Externalisation

In KM, externalisation is the process of articulating tacit knowledge into explicit knowledge. Externalisation requires the expression of tacit knowledge and its translation into comprehensive forms that can be understood by others (Nonaka, 1994). In practice, externalisation is supported by two key factors. First, the articulation of tacit knowledge – that is, the conversion of tacit into explicit knowledge – involves techniques that help to express one's ideas or images as words, concepts, visuals, or figurative languages. Dialogue, "listening and contributing to the benefits of all participants", strongly supports externalisation (Nonaka & Takeuchi, 1995). The second factor involves translating the tacit knowledge of experts into readily understandable forms. This may require deductive/inductive reasoning or creative inference (Nonaka, 1994; Nonaka & Konno,

1998; Nonaka & Takeuchi, 1995).

Combination

Combination is the process of converting explicit knowledge into more complex and systematic sets of explicit knowledge (Nonaka, 1994). Explicit knowledge is collected from outside or inside an organisation; it is then combined, edited, and processed to form new knowledge. With a focus on communication, diffusion, integration, and systemisation of knowledge, combination contributes to knowledge at the group level as well as at the organisational level (Nonaka & Takeuchi, 1995). While combination helps integrate knowledge of group members, the new knowledge generated through combination often transcends the group (Nonaka & Konno, 1998). Thus innovative organisations seek to develop new concepts; these are created, justified, and modelled at the organisational, and sometimes inter-organisational, level. Moreover, complex organisational processes require the cooperation of various groups within the organisation; combination supports these processes by aggregating the technologies and knowledge (Nonaka, 1994).

Internalisation

Internalisation is the process of converting explicit knowledge into the organisation's tacit knowledge. This requires the individual to identify the knowledge relevant to one's self within the organisation's explicit knowledge. In the internalisation process, the explicit knowledge has to be embodied in action and practice so that the individuals acquiring the knowledge can re-experience what others go through. Thus the process of internalising explicit knowledge actualises concepts or methods about strategy, tactics, innovation, or improvement (Nonaka & Konno, 1998). Alternatively, individuals could acquire tacit knowledge in virtual situations, either vicariously by reading or listening to the stories of others, or experientially through simulations or experiments. Learning-by-doing, training by observation, face-to-face meetings, and exercises are some of the internalisation processes through which individuals can access the knowledge realm of the group and the entire organisation, thus acquiring knowledge (Nonaka, 1994; Nonaka & Konno, 1998).

These four knowledge management modes (socialisation, externalisation, combination, and internalisation) are not pure, they are highly interdependent and intertwined (Alavi & Leidner, 2001); that is, each mode relies on, contributes to, and benefits from the other modes. For example, socialisation can result in the creation of knowledge when an

individual obtains a new insight triggered by an interaction with another. On the other hand, the socialisation mode may involve transferring existing tacit knowledge from one member to another through the discussion of ideas. New organisational knowledge may not be created, but may be new knowledge to the recipient. The combination mode in most cases involves an intermediate step, that of an individual drawing insight from explicit source (i.e. internalisation) and then coding the new knowledge into an explicit form (externalisation). Finally, internalisation may consist of the simple conversion of existing explicit knowledge to an individual's tacit knowledge, as well as the creation of new organisational knowledge when the explicit source triggers a new insight.

2.1.5. Knowledge management in SMEs

The literature review on KM reveals that the most part of research in this field is focused on large companies. The understanding of the organizational theory and practice considerations of KM has mainly been derived from large company experiences (Evangelista, Esposito, Lauro, & Raffa, 2010; McAdam & Reid, 2001; Wong, 2005). This situation has prevailed because large organizations generally have more knowledge assets and intangibles to be managed and hence, a predominant focus on them seems appropriate. Consequently, the potential of KM seems not fully exploited by small firms and this is reflected in a literature void where little research contributions on this topic have been published. However, research on KM in SMEs highlights some relevant different features.

As asserted by Frey (2001), although major corporations have led the way in introducing and implementing KM, it is increasingly important for SMEs to manage their collective intellectual assets. In KM practices, issues that small businesses will face will not simply a scaled down replica of large-company experiences (Sparrow, 2001). Desouza and Awazu (2006) discuss five key peculiarities that differentiate knowledge management practices in SMEs and large companies:

- In SMEs there is lack of explicit knowledge repositories. Instead, each manager/leader acts as the knowledge repository.
- Common knowledge possessed by members of the SMEs is deep and broad.
- SMEs by their nature and due to deliberate mechanism are skilled at avoiding pitfall of knowledge loss. The close social ties between member of the SME act as

a deference against employees leaving the business.

- SMEs have a knack for exploiting foreign sources of knowledge since they are resource constrained and cannot efforts to create knowledge; they look outside the organization for knowledge.
- SMEs knowingly or unknowingly, manage knowledge – humanistic way. The use of technology in SMEs is mostly limited to acts of automation and at times for informative purposes.

McAdam and Reid (2001) compared KM in both large organizations and SMEs. The main finding from their study indicated that while KM understanding and implementation was developing in large organizations, SMEs suffered from certain drawbacks. They appeared to have a more mechanistic view and a limited vocabulary of knowledge, less systematic approaches for embodying and sharing knowledge and their perceived benefit of KM were targeted toward the market rather than towards the improvement of internal efficiency.

Additionally, the findings of a qualitative study to explore the KM features of SMEs were reported by (Sparrow, 2001) highlighted the need to recognise the different mentor models of individuals and to share their personal understanding in the development of KM practices. The author also stated that the development of a knowledge-based system in smaller business should be based on the fundamental understanding of its role and basic principles, and that work related to KM should recognise the holistic nature of SMEs management.

Another stream of KM research regards factors that can influence the success of KM implementation (Davenport, et al., 1998). Also in this area, most of researches are heavily focused on large companies as early adopter and superior performers of KM were large and multinational corporations. As such, existing factors are mainly large companies oriented, thereby reflecting their situation and needs. Integrating these commons factors and introducing some new ones based on the characteristics of SMEs and their specific conditions, Wong and Aspinwall (2005) proposed 11 important factors for KM adoption in SMEs including management leadership, culture, IT, strategy and purpose, measurement, organizational infrastructure, processes and activities, motivational aids and resources. In comparison to large organisations, the characteristic for SMEs in areas in which can have a

direct bearing on knowledge management implementation are primarily focused on the following:

Management and leadership: Management leadership plays a key role in influencing the success of KM (Horak, 2001; Ribiere & Sitar, 2003). Leaders are important in acting as role models to exemplify the desired behaviour for KM. In SMEs, the leaders are in many cases the owners who oversee every aspect of their operation and business. Decision-making is generally centralized and the ultimate power of control lies in their hands. There are also few layer of management and decision makers in small firms, implying that the decision making chain is often shorter (Ghobadian & Gallear, 1997). This means that the owner-manager themselves can actually be the main engine for change in the organizations, assuming of course they appreciate the importance of knowledge management.

Additionally, SMEs have an advantage over large enterprises in respect of their structures in implementing knowledge management. They have a simpler, flatter and less complex structure, which will facilitate a change indicative across the organization since functional integration both horizontally and vertically is easier to achieve and fewer complications will be encountered (Handzic, 2006). Such conditions provide leader/managers in SMEs with a better opportunity of becoming role models and to set good example by showing the desired values and behaviours needed for creating, sharing and applying knowledge.

However, most owner-managers of micro and small firms lack of managerial skills and competence as they normally have little formal management training (Morrison, 2003). There is little wonder that most owner-managers of small firms do not understand the true concepts of KM (Frey, 2001; McAdam & Reid, 2001). This may hinder them from understanding what is required for implementing KM and how to accomplish it. Since they have inadequate skills some of them may also curtail growth efforts so that they comfortable in their ability to manage their company (Collinson & Quinn, 2002).

Culture and behaviours: Knowledge management is linked within the culture of organizations. Organisations are a collection of people who share information and knowledge as part of their daily routine. The biggest challenge in most knowledge

management efforts, hence, lies in changing people's work habit and getting people to articulate and share knowledge face to face (Davenport & Prusak, 1998). The set up of communities of practices are essential in allowing individuals to exchange knowledge, which contributes to the development of social capital (Nonaka, 2005). Studies have shown that whereas large organizations have a bureaucratic culture, making them slower and less flexible in creating new schemes, SMEs tend to have a more organic and fluid culture (Ghobadian & Gallear, 1997). As such a unified culture can provide small firms with a strong foundation for implementing KM. Arguably, with an organic and fluid culture, it will be easier to create a knowledge sharing culture in smaller organisations than in large ones.

Despites these advantages, culture in small firms is strongly shaped and affected by the personality and outlook of the owner-managers since they have a strong dominance in the firm (Wong & Aspinwall, 2005). An owner-manager who is both dictatorial and not committed can be problematic when implementing new initiatives (Achanga, Shehab, Roy, & Nelder, 2006). On the other hand, one with a personality that hoards knowledge, control every aspect of his/her business, discredits trust and punishes mistakes may impede the building of a knowledge sharing culture. Thus, the owner-manager can also become the main obstacle in the accomplishment of KM.

Human resources: SMEs obviously comprise fewer employees than their larger counterparts. This certainly gives them a distinct advantages sine it is easier to get all employees together to initiate and implement change (Beijerse, 2000). In addition, employees normally know each other more intimately and have face-to-face contact with one another, so there is a greater likelihood that support for KM is obtained more easily. Collaboration among employees can be better, making it easier to organize a KM initiative.

Lack of human resources, however, may be a stumbling block to implementing KM in SMEs. Staffing constrain mean that the appointment of multiple new roles and positions for KM is less practical. Furthermore it is also a problem for SMEs to retain, specialised employees because of limited opportunities for career, and the constant appeal of larger organisations, who can provide better prospect. SMEs are mostly seen by some employees as a stepping-stone to move to larger organisation. The departure of highly knowledgeable

employees is a major threat to SMEs, unless that knowledge is captured, codified and transferred throughout the organisation.

As is apparent from this discussion, management and leadership, and organizational culture emerge as the most critical factors influence KM in SMEs. However, little critical research has been devoted to understanding the impact of these two concepts on KM in SMEs environment. Addressing the aforesaid gap in the literature, this research aims to provide more comprehensive understanding the links between leadership behaviours, organizational culture and KM practices which are discussed in the next sections.

2.2. Leadership

The phenomenon of leadership is probably the most extensively researched social processes known to behavioural science; it is believed that leadership plays a crucial role in organisations, and has a direct influence on group process and outcomes. This section presents a critical literature review on leadership and its crucial role for successful KM.

2.2.1. Definitions of Leadership

Leadership is difficult to define. The term leadership is a word taken from the common vocabulary and incorporated into the technical vocabulary of a scientific discipline without being precisely redefined (Yukl, 2006). As a consequence, there is actually no consensus on the definition of leadership; researchers often define leadership according to their individual perspectives and the aspects of the phenomenon of most interest to them. After a comprehensive review of leadership research, Stogdill (1974, p. 259) concluded that "there are almost as many definitions of leadership as there are persons who have attempted to define the concept". However, for the purpose of this research, the author focuses on the concept of leadership through a knowledge management perspective. Leadership, by its influence component, facilitates the implementation of knowledge activities in an organisation. Leadership initiates the process's beginning.

To further complicate matters, leadership has been defined in terms of group processes, influences, personality, compliance, particular behaviours, persuasion, power, goal achievement, interaction role differentiation, and a combination of two or more of these (Bass, 1990; Northouse, 2001; Yukl, 2006). In the literature, most definitions of leadership

reflect the assumption that it involves a social influence process whereby intentional influence is exerted by one person over the others to structure the activities and relationships in a group or organisation. However, the numerous proposed definitions of leadership appear to have little else in common. The definition of leadership differs in who exerts the influence, the intended purpose of the influence, the manner in which the influence is exerted, and the outcome of the influence attempt (Yukl, 2006). These differences between researchers in their concepts of leadership have led to differences in the choice of the phenomena to investigate, as well as differences in the interpretation of the results. For example, Hemphill and Coons (as cited in Yukl, 2006, p. 2) defined leadership as "the behaviour of an individual when he is directing the activities of a group toward a shared goal"; according to Robbins (2001) "leadership as the ability to influence a group toward the achievement of goals" (p. 314). Tosi, Rizzo, and Carroll (1994) suggested that "leadership is interpersonal influence in which one person is able to gain compliance from another in the direction of organisationally desired goals" (p. 550).

Despite the multitude of ways that leadership has been conceptualized, several significant elements of leadership can be identified as being central to the phenomenon of leadership in the literature (Chelladurai, 2006; Chemers, 1984; Northouse, 2001; Yukl, 2006). Leadership is a process of interpersonal influence (Chemers, 1984; M. A. Hitt, Black, Porter, & Hanson, 2007). Defining leadership as a process means it is not the traits or characteristics that reside in the leader but rather it is a transactional event that occurs between the leader and his or her followers. The word *process* implies that a leader affects and is affected by the followers. As such, leadership can occur anywhere in the organisation. Indeed acts of leadership behaviours can be exhibited by anyone in an organisation and are not limited only to those holding designated positions (M. A. Hitt, et al., 2007; Northouse, 2001). Consequently, leadership behaviour is not confined to just the Chief Executive Officers (CEOs) of organisations. It can also be seen in the actions of the first-line supervisors who inspire their subordinates to implement safety procedures to avoid production downtime; it can even be exhibited by the workers who set an example for their co-workers by continually seeking ways to improve processes and working conditions.

Leadership involves influence and is concerned with how the leader affects the followers.

Influence is the *since qua non* of leadership; without influence, leadership does not exist. Interpersonal influence is directed through communication, and the art of influencing is motivation and persuasion (DuBrin, 1998). If a leader wishes for his/her followers to accomplish a task, they clearly have to tell them what their job consists of and what is expected of them (Schermerhorn, 2001). For this reason, communication is a vital component. Leaders play an important role in improving communication through active listening, clarifying ideas, and changing culture and structure etc. In addition, as a means of getting people to do, a leader must motivate and show what is in it for them. Most people work because they want to satisfy their needs (Ribiere & Sitar, 2003). Thus, it is important for leaders to recognize that different individuals are motivated by different things, so different approaches may need to be used; for example, pay, bonuses, raises, and rewards, as well as job redesign, empowering employees, positive reinforcement, etc.; thus offering each individual what he/she desires.

The leadership process is not divorced from the broader situational context in which leadership takes place. It involves influencing a group of individuals who have a common purpose, such as a small task group, a community group, or a larger group encompassing an entire organisation (Chemers, 1984; Northouse, 2001). Therefore, aspects of the group's task, including the authority system of the larger organisation, and the social, economic, and cultural characteristics of the society in which the organisation is embedded, are critical influences on the nature of leadership.

As leadership includes attention to goals (Chelladurai, 2006; DuBrin, 1998; Northouse, 2001), it is necessary to direct the group of individuals toward a set of goals. Leaders direct their energies toward individuals who are trying to achieve something together. Therefore, leadership occurs and has its effects in context where individuals are moving towards a goal (Northouse, 2001). This element of leadership has been argued as the key distinction between leadership and management. DuBrin (1998) posits that the key function of the leader is to create a vision (mission or agenda) for the organisation. The leader specifies far-reaching goals as well as the strategy for goal attainment. In contrast to the leader, the key management function of the manager is to implement the vision; thus it is the manager and his/her team that decide the means by which to achieve the leader's goals.

In general, as with all constructs in social science, the definition of leadership is arbitrary and very subjective. Some definitions may be more useful than others but there is no "correct" definition (Yukl, 2006). For the time being, it is better to use the various conceptions of leadership as a source of different perspectives on the complex and multifaceted phenomenon. In research, the operational definition of leadership will depend to a great extent on the purpose of the researcher (Karmel, 1978). Based on the significant elements of leadership reviewed in the literature, and with the purpose of studying the influence of leadership and organisational culture on knowledge management, the definition from Yukl and Van Fleet (1992) is adopted:

"leadership is a process that includes influencing the task objectives and strategies of a group or organisation, influencing people in the organisation to implement the strategies and achieve the objectives, influencing group maintenance and identification, and influencing the culture of the organisation" (p. 149).

In this definition, leadership includes motivating people, shaping organisational objectives, and maintaining the group and organisational culture. Thus, leadership pervades not only at the individual level but also at the group and organisational level. Additionally, as leadership is viewed as behavioural processes, the focus is on what the leader *does* rather than what the leader *is*. Therefore, it is important to understand the various descriptions of leader behaviour and their utility. While organisations need strong managers to formulate a detailed plan and oversee day-to-day operation, leaders are needed to challenge the status quo, to create a vision for the future, and to inspire organisational members to want to achieve that vision. Thus, strong organisational vision, a culture that cultivates learning and sharing of a common knowledge base, a structure facilitating the wide use of individual and group knowledge, and leadership that fosters learning are seen as determinants for creating knowledge-based organisations (Dierkes, 2001; Ribiere & Sitar, 2003).

2.2.2. Review of Leadership Theories

The confusion regarding the definition of leadership also extends to the theories of leadership. One such difficulty has been the narrow focus of most researchers and the absence of broad theories that integrate findings from the different approaches. Previously,

leadership has been studied in different ways depending on the researcher's conception of leadership and their methodological preferences (Bass, 1990; Northouse, 2001; Yukl, 1989, 2006). Most leadership research has focused only on the leader's past personality and actions; due to rapidly changing environments, understanding the current effectiveness of the organisation is a huge challenge. Current leadership research has consequently changed the orientation of leadership styles. As Figure 2-1 illustrates, a leader can make a difference in measures of organisation effectiveness. Therefore, the leadership style is one of the most important factors that influence the group or company. The following discussion addresses several leadership theories in the literature.

Traits Theories

The trait approach is one of the first systematic attempts to study leadership. By assuming that a number of individual traits of effective leaders could be found, the traits theory attempts to identify specific characteristics (physical, mental, personality) associated with leadership success; relying on research that various traits lead to certain success criteria (Northouse, 2001; Yukl & Van Fleet, 1992). Leaders, thus, were almost always assumed to be men and were thought to have inherited combinations of traits that distinguished them from their followers. The notion was that those destined to be leaders were born with special qualities that enabled them to lead others rather than to be dominated (M. A. Hitt, et al., 2007). In addition to being studied by personnel testing, the traits of leaders have been studied through observation of their behaviour in group situations, by choice of associates, by nomination or rating by observers, and by analysis of biographical data (Gibson, Donnelly, & Ivancevich, 2003).

Unfortunately, the search for a list of character traits that would promise effective leadership was not successful (Bass, 1990; Gibson, et al., 2003; Robbins, 2001). Upon reflection of the various qualities of several effective leaders suggested that a set of common characteristic, these were challenged as another leader come to the attention of the researchers who displayed none of the shared traits, but a wholly different set. Many types of characteristics were studied, including those related to physical appearance, social background, intelligence and ability, personality, task-related skills, and social qualities. Table 2-3 provides an overview of some of the different classifications of leader's traits by a variety of researchers. After a major literature review, it appears that no consistent set of traits differentiated the leaders from the non-leaders across a variety of situations; a

definitive set of characteristics that portrayed or guaranteed leadership effectiveness could never be finalized (Robbins, 2001; Yukl, 2006).

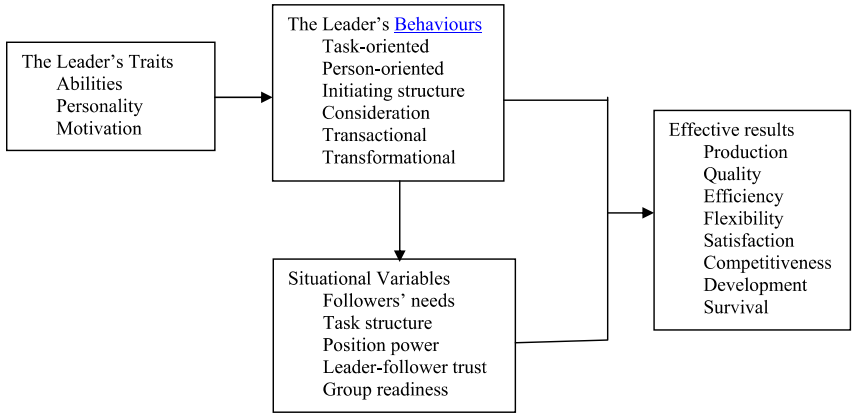


Figure 2-1 A Framework for Studying Leadership (Gibson, et al., 2003, p. 300)

Another limitation of the trait approach is that most of the research on personal traits linked to the effectiveness of leaders has not considered the impact of the selective situation. Northouse (2001) argues that an individual with leadership traits who was a leader in one situation might not be a leader in another situation; there are no universal traits that predict leadership in all situations. Similarly, Robbins (2001) said that in "…highly formalized organisations and those with strong cultures … the power of traits to predict leadership in many organisations is probably limited" (p. 315). Consequently, rather than being a quantity that individuals possessed, leadership was reconceptualised as a relationship between people in a social situation (Stogdill, 1974). Personal factors related to leadership continued to be important, but it is contended that these factors need to be considered as relative to the requirement of the situation.

Research on traits has been criticized for failing to look at traits in relation to leadership outcomes (Northouse, 2001; Robbins, 2001). Although it has emphasised the identification of certain traits, it has not addressed how leadership traits affect group members and their work, which has been suggested as a key element of leadership. In trying to ascertain universal leadership traits, researchers have focused on the link between specific leader

traits and leader emergence, but they have not tried to link leader traits with the other outcomes, such as productivity or employee satisfaction. An individual may exhibit leadership traits, and others may consider that person as a leader, but that does not necessarily mean that the leader is successful in influencing his or her group to achieve its goals.

Table 2-3 Studies of Leadership Traits and Characteristics (Northouse, 2001, p. 18)

Stogdill (1948)	Mann (1959)	Stogdill (1974)	Lord, Devader, and Alliger (1986)	Kirkpatrick and Locke (1991)
Intelligence	Intelligence	Achievement	Intelligence	Drive
Alertness Insight Responsibility Initiative Persistence Self-confidence Sociability	Masculinity Adjustment Dominance Extroversion Conservatism	Persistence Insight Initiative Self-confidence Responsibility Cooperativeness Tolerance Influence Sociability	Masculinity Dominance	Motivation Integrity Confidence Cognitive ability Task knowledge

Despite such limitations, the trait approach is alive and well. In recent years there has been a resurgence of interest in the trait approach – in explaining how traits influence leadership (Bryman, 1992). Kirkpatrick and Locke (1991) further claim that effective leaders are actually distinct types of people in several key respects. They say that "it is unequivocally clear that leaders are not like other people" (p. 59). The notion, then, is that specific traits do not invariably determine leadership effectiveness, but they can increase its likelihood. It is contended that very few people possess every critical trait at an exceptionally high level. If a person has one or more of these relatively enduring characteristics, the probabilities for successful leadership are increased. These traits provide potential, but other factors such as skills, attitudes, experience, and opportunity determine whether the potential will be realised.

It is generally conceded that traits alone are not sufficient to explain leadership (Gibson, et al., 2003; Hogan, Curphy, & Hogan, 1994; Northouse, 2001; Robbins, 2001; Yukl, 2006). Peter Drucker (as cited in DuBrin, 1998) believed that a leader cannot be categorized by a particular personality type, style, or set of traits. Instead, a leader should be understood in terms of his or her constituents, results, example setting, and responsibilities.

Explanations based solely on traits ignore the interaction of the leaders and their group members as well as situational factors. Also, the trait approach has not adequately linked the traits of leaders with other outcomes such as organisational performance. Possessing the appropriate traits only makes it more likely that an individual will be an effective leader (DuBrin, 1998; Northouse, 2001; Robbins, 2006). Additionally, this approach is not particularly useful for training and development, neither for leadership nor professional development, because individuals' personal attributes are relatively stable and fixed; their traits are not amenable to change.

Since work on leader characteristics within the study of leadership did not produce any positive or definitive results, researchers have considered not only leader characteristics, real or attributed, but also the ways in which leaders behave in relation to their followers. This approach has opened up a new sphere of exploration in the field of social psychology and organisational behaviour. The need to recognize idiosyncrasy in human behaviour is a part of cotemporary theorizing upon leadership, giving rise to concepts of personal linkage between individuals and within groups, and personalizing the process lying at the heart of successful leadership.

Behavioural Theories

Behaviour theorists work towards developing a better understanding of what leaders actually do in their positions and how such behaviours relate to leadership effectiveness. The preponderance of theory and the vast quantity of research along these lines has depended upon the idea that the leaders must cope with two separate but interrelated aspects of their situations: they must accomplish the task, and they must do so through the efforts of those they lead (Gibson, et al., 2003). Leadership behaviours can be studied by analyzing what leaders do in relation to accomplishing the task and maintaining the efforts of people performing the tasks. The difference between trait and behavioural theories, then, lies in their underlying assumptions. If the trait theories were valid, then leadership is basically inborn. On the other hand, if behavioural studies turned up critical determinants of leadership, people could be trained to be leaders (Gibson, et al., 2003; Robbins, 2001, 2006).

The most comprehensive and wide-ranging of the behavioural theories have resulted from research at Ohio State University in the late 1940s. The focus was the effects of leadership

styles on group performance. The results indicated the existence of two major dimensions of leadership behaviours, *initiating structure* and *consideration*. Initiating structure refers to "…the extent to which a leader is likely to define and structure his or her roles and those of employees in the search for goal attainment" (Robbins, 2001, p. 316). Whereas initiating structure behaviours were essentially task behaviours, including such acts as organising work, giving structure to the work context, defining role responsibilities, and scheduling work activities, consideration refers to "…a type of leader behaviour that describes the extent to which a leader is sensitive to subordinates, respect their ideas and feelings, and establishes mutual trust" (Hersey, Blanchard, & Johnson, 2001, p. 93). Consideration encompasses behaviours that help, look for, respect, and maintain a good relationship between leaders and followers.

The majority of studies concluded that "initiating structure" is normally associated with efficiency and effectiveness in task performance, while consideration is normally considered to be correlated with job satisfaction and lower turnover (Robbins, 2001). Also, the findings of these studies suggest that some balance is needed between consideration and initiating structure in order to satisfy both individual needs and organisational goals. Thus a leader who scored high in both initiating structure and consideration did not always yield positive result (Gibson, et al., 2003; Northouse, 2001; Robbins, 2001, 2006). Consequently, determining how a leader optimally mixes task and relationship behaviours has been the central task for researchers from the style approach.

Researchers at the University of Michigan also explored the area of leader's behaviour. Their focus was to identify the relationships between leadership behaviour, group process, and measures of group performance (Yukl, 2006). The study categorized three types of behaviour, differentiating between effective and ineffective leader: task-oriented behaviour, relationship-oriented behaviour, and participative leadership. The results resembled those of the Ohio studies, since task-oriented behaviour aligns very closely with initiating structure, and relationship-oriented behaviour with consideration (Likert, 1967).

Another behavioural approach to leadership proposed by Blake & Mouton (1985), utilized the well-known Managerial Grid. The Managerial Grid has two dimensions that measure the manager's level of *concern for people* and *concern for production*. These dimension

are similar to those of consideration and initiating structure from the Ohio State leadership studies, or the Michigan dimensions of task-oriented and relationship-oriented behaviour (Robbins, 2001).

In summary, researchers studying the behaviour approach have determined that leadership is composed of essentially two general types of behaviour: task behaviour and relationship behaviour. The central purpose of the behaviour approach is to explain how leaders combine these two kinds of behaviours to influence subordinates in an effort to reach a goal (Northouse, 2001). Some advantages of the behavioural approach over the trait approach have been identified in the literature, these include: behaviour can be taught, behaviour can be more precisely and accurately measured, and behaviour can be more objectively observed (Nahavandi, 2006). The research on the style approach has not adequately shown how a leaders' style is associated with the performance outcomes (Bryman, 1992; Gibson, et al., 2003; Robbins, 2001, 2006; Yukl, 2006). Due to missing the consideration of the situational factors that influence success or failure, researchers have not been able to establish a consistent link between task and relationship behaviours, and outcomes such as morale, job satisfaction, and productivity. Consequently, with regard to knowledge management perspective, the literature review suggests that it is difficult to understand the evolution of those behaviours that result in successful knowledge management initiatives.

Situational and Contingency Theories

The idea that leadership style or behaviour should alter according to specific demands of particular situations has led to a spate of *situational* or *contingency* theories. The basic premise of these approaches is that no method will always be the best method. Differences in the leaders' personalities, followers' personalities, the task to be done, the urgency and/or importance of the task, the degree of the task structure, ability and expertise of the followers, and many other factors, together determine what would be most appropriate and effective within specific situations. The major contingency models of leadership include Fiedler's leadership effectiveness model, House's path-goal theory, Hersey and Blanchard's situational leadership model, and Vroom and Yetton's decision-making model.

The most widely recognised contingency theory is Fiedler's contingency theory. Fiedler's

(1967) leadership effectiveness model brings into consideration the organisational variables that affect leadership effectiveness, suggesting that the "best" style of leadership will be dependent upon the variable factors in the leadership situation including position power, task structure, and leader-member relations . The theory's premise is that the leader's personal style is fixed, so amendments must be made in the situation to enable that particular leader to become truly effective (Gibson, et al., 2003; Robbins, 2006). The most advantageous situation for leaders to influence their followers, thus, is one in which they are well liked by the members of the group (good leader-member relations), have a powerful position (strong position of power), and are directing a well-defined job (high-task structure). These elements can be combined to describe different situations and determine the level of control a leader has over a situation.

This theory has been the subject of considerable controversy due to the ambiguity in the situational variables; lack of clarity in the meaning of LPC (Least Preferred Co-worker) score, and inconsistent validations (Chemers, 1984; Northouse, 2001; Robbins, 2006; Yukl, 1989; Yukl & Van Fleet, 1992). Another criticism of the theory is that it fails to adequately explain what organisations should do when there is a mismatch between the leader and the situation in the workplace (Northouse, 2001). Instead of advocating that leaders be taught how to adapt their style to various situations as a means of improving leadership in an organisation, this approach advocates that leaders engage in *situational engineering*: changing situations to fit the leader (Yukl, 2006). It is, however, the fact that situations are not always easily changed to match the leader's style, especially in relation to organisational culture. Leadership involves situations or organisational contexts in which both leaders and members are embedded; thus, in some cases, leaders need to adapt to those situations in which his or her style will not achieve the organisational goals. In addition, it is often difficult, in practice, to objectively determine how good the leader-member relations are, how structured the task is, and how much power the leader has (Robbins, 2001).

A different contingency model of leadership is House's (1971) *path-goal theory*. Like Fiedler's contingency theory, the path-goal leadership model attempts to predict leadership effectiveness in different situation. House (1971) argues that leaders are effective because of their positive impact on follower's motivation, ability to perform, and job satisfaction.

Additionally, it is the leaders' job to assist his or her followers in attainting their goals and to provide the direction or support needed to ensure that their goals are compatible with the overall objectives of the group or organisation (Gibson, et al., 2003; Northouse, 2001; Robbins, 2001). The path-goal theory is based on the belief that the individual's motivation is dependent upon the expectations that increased effort to achieve an improved level will be successful, and that improved performance will be instrumental in obtaining positive rewards and avoiding negative outcomes.

In contrast to Fiedler's view that a leader could not change his or her behaviour, the path-goal theory argues that leaders are flexible or need to be flexible. The path-goal theory suggests four main types of leadership behaviour that can be practiced by the same person, at different times, and in varying situations, these are: directive leadership, supportive leadership, participative leadership, and achievement-oriented leadership. By choosing the appropriate style, the leader can increase subordinates' perceptions and motivation, and smooth the path to their goals (House, 1971; House & Mitchell, 1974; Northouse, 2001). The path-goal theory, however, does not show, in a clear way, how the leader's behaviour directly affects subordinates' motivation levels. Furthermore, many researchers contend that path-goal theory is very leader-oriented and fails to recognize the transactional nature of leadership (Northouse, 2001; Robbins, 2001, 2006; Yukl, 2006). It does not promote subordinates involvement in either the leadership process or the knowledge creation process.

Another contingency model of leadership is provided by the leader-participation approach proposed by Vroom and Yetton (1973). This model provides a sequential set of rules to determine the appropriate form and amount of participation in decision making depending on different types of situations (Robbins, 2001; Yukl, 2006); it emphasizes the need for a leader to modify his or her leadership style to suit the situation. This is a fundamental deviation from Fiedler's viewpoint, which recommends changing a situation to suit the leader. The model is arguably the best situational theory as it focuses on the specific aspects of behaviour rather than broad behaviours; it includes meaningful intervening variables, and identifies important moderator variables (Yukl, 1989). However, leader-participation approach deals with only a small part of leadership and has a number of conceptual weaknesses such as a lack of parsimony, the oversimplification of the decision-

making process, and the implicit assumption that managers have the skill to use each decision procedure (Yukl, 1989, 2006).

The Hersey and Blanchard model presents a form of situational leadership based on the circumstances at the time and the readiness level of the people who the leader is attempting to influence. This model draws attention to the importance of developing the ability, confidence, and commitment of subordinates. Therefore, managers should help subordinates to develop their readiness to the extent that they are able and willing to achieve, should such development should take place, by adjusting leadership behaviours through the four styles in the model: telling, selling, participating, and delegating functions (Robbins, 2006).

In conclusion, the principle concern with contingency and situational theories in contributing to the current research is the failure to isolate critical situational factors that affect leadership effectiveness (Northouse, 2001; Robbins, 2001; Yukl, 2006). While some contingency theories have generated strong empirical support (Jago, 1982; Robbins, 2001; Yukl, 2006; Yukl & Van Fleet, 1992) and are still utilized in contemporary leadership study, they have been criticized for some substantial drawbacks; each of these theories is but a piece of the leadership puzzle. As the purpose of this research is to study the influence of leadership on knowledge management, a major limitation of the contingency theories is the lack of sufficient attention to the leadership process that transform the ways followers view themselves and their works (Yukl, 1989, 2006). Such leadership can influence followers by creating knowledge, as well as transforming their individual knowledge to organisational knowledge that is valuable to the company; this is discussed further in this study. A better description of these transformational processes of leadership is provided by the theories of transformational leadership discussed in the next chapter.

2.2.3. Transformational and Transactional Leadership Theory

Earlier leadership theories have contributed to an understanding of leadership and have laid the groundwork for the development of a fresh version of an effective leadership style - transformational and transactional leadership theory. In the old approaches, leadership is viewed as management, with the emphasis on the vision of the leader and learning in the organisation. In the new approach, the focus is on motivation, inspiration, organisational

commitment, and stimulating extra effort from followers. This section presents an overview of transformational and transactional leadership theory.

Transformational leadership

In recent years, the transformation and innovation of organisations have raised great concern (Bass, Jung, Avolio, & Berson, 2003; Coad & Berry, 1998). Leaders are making frantic efforts to change the structure and processes of all forms of organisations. Such efforts include downsizing, innovation, re-engineering, re-structuring or refocusing; re-structuring and innovation in an organisation requires strong leadership. As a result, leadership is increasingly changing from information and knowledge gate keeping to knowledge creation and knowledge sharing for all employees (Politis, 2002). Those who can guide their organisations to innovation are likely to exhibit transformational leadership (Bass & Avolio, 1993; Howell & Avolio, 1993).

Researchers have developed differing yet complementary definitions of transformational leadership. Burns (1978) defined transformational leaders as the process of pursuing collective goals through the mutual tapping of leaders' and followers' motive bases toward the achievement of the intended change. Followers are driven by moral needs, the need to champion a cause, or the need to take a higher moral stance on an issue; according to Burns, focussing on these needs makes leaders more accountable for their followers. People like to feel that a higher organisational spiritual mission guides their motives (Tichy & Devanna, 1986). Bass, Avollo, and Goodheim (1987) suggest that transformational leadership motivates followers to work for transcendental goals and higher level self-actualizing needs rather than simple exchange relationships. These definitions suggest that transformational leaders create a dynamic organisational vision that often necessitates a metamorphosis in cultural values to reflect greater innovation.

Yukl (2006) views transformational leadership in terms of the leader's effect on followers; the follower feels trust, admiration, loyalty, and respect towards the leader, and they are motivated to do more than they originally expected to do. Transformational leaders "seek to raise the consciousness of followers by appealing to higher ideals and moral values such as liberty, justice, equality, peace, not to baser emotions such as fear, greed, jealousy, or hatred" (Yukl & Van Fleet, 1992, p. 176). Such leaders exhibit idealised influence (charisma), individualised consideration, intellectual stimulation, and inspirational

motivation. These four factors present the basic components of transformational leadership and are defined (Bass, 1997; Bass & Avolio, 1990), as follow:

(a) *Idealised Influence*: Leaders behave as strong role models for the followers; they are deeply respected, admired, and trusted by followers (Northouse, 2001). Such leaders are self-confident, persistent, highly competent, and willing to take risks. These leaders usually demonstrate high standards of ethical and moral conduct and avoid using power for personal gain (Bass, 1997).

(b) *Individualised Consideration*: Leaders with individualised consideration provide a supportive climate in which they offer personal attention and treat each employee individually. Such leaders listen and share an individual's concerns while simultaneously helping to build the individual's confidences (Avolio, Waldman, & Yammarino, 1991; Bass & Avolio, 1990). Such leaders link an employee's current needs to the organisation's mission, and raise those needs when it is appropriate to do so (Bass, 1985, 1990, 1997).

(c) *Intellectual Stimulation*: An intellectually stimulating leader inspires followers to be creative and innovative, and to challenge their own beliefs and values as well as those of the leader and organisation (Avolio, et al., 1991; Northouse, 2001). This type of leadership promotes intelligence, rationality, and careful problem solving (Bass, 1990; Northouse, 2001). As a result, followers are encouraged to try new approaches and develop innovative ways of dealing with organisational issues.

(d) *Inspirational Motivation*: Transformational leaders inspire and motivate by providing meaning and challenges for their followers using simple language, symbols, and images (Bass, 1997). Leaders are able to have followers involved in envisioning attractive futures with the company; they create clear expectations that the follower wants to meet and also demonstrate their commitment to the goals and shared vision (Avolio, et al., 1991).

It is clear that transformational leadership is concerned with the performance of the followers, developing each follower to achieve their potential (Bass & Avolio, 1993). Bass (1990) views transformational leadership as going beyond the focus on the exchange between leaders and followers to a broader view that elevates the interest of employees, stimulates employees to look beyond their own interests to what benefits the group, and

encourages employees to accept the organisation's missions as their own. In contrast with the transactional leadership, transformational leadership "originates in the personal values and beliefs of leaders, not in the exchange of commodities between leaders and subordinates" (Podsakoff, MacKenzie, Moorman, & Fetter, 1990, p. 649). Bass (1985) contends that transformational leaders operate out of deeply held personal value systems that include justice and integrity. Followers trust transformational leaders because such leaders are always concerned for the organisation and the followers. Such leaders encourage followers to seek new ways to approach their jobs, resulting in inspirational motivation and intellectual stimulation (Bass, 1985). Thus, transformational leaders are able to generate greater creativity, productivity, and effort.

The basis for transformational leadership is a general discontentment with the status quo; transformational leaders are concerned with creating a new vision for the organisation. In the process of changing the total organisation, transformational leaders build innovative and satisfying organisational culture (Bass & Avolio, 1993; Masood, Dani, Burns, & Backhouse, 2006). Transformational leaders change their culture by first understanding it and then re-aligning the organisation's culture with a new vision and a revision of its values and norms (Bass, 1985). Similarly, Tichy and Devanna (1986) believe that the power of transformational leadership is the visualization of the organisation; they transform the organisation by defining the need for change, articulate the vision, convince the followers of the viability of the vision, and express confidence in their capacity to achieve that vision (Bass & Avolio, 1993; Chelladurai, 2006; Tichy & Devanna, 1986).

By empowering the followers to engage in innovative and creative ways to achieve the articulated vision, the transformational leader fosters a culture of creative change and growth rather than one that merely maintains the status quo (Chelladurai, 2006; Tichy & Devanna, 1986). They take personal responsibility for the development of their followers (Bass & Avolio, 1990). Tichy and Devanna (1986) state that transformational leaders seek support and resources for the personal and professional development of their employees. Transformational leaders encourage followers to participate in educational programs to promote and develop skills to achieve exceptional performance.

Transformational leadership is more commonly exhibited in the higher echelons of an

organisation, particularly an organisation that selects its leader based on their ability to change and improve their work units. Transformational leadership should not be viewed as a replacement for other styles of leadership, such as transactional leadership (Avolio, et al., 1991). It is important to be aware, however, that transformational leadership does not detract from transactional leadership, rather it builds on it, broadening the effects of the leaders on efforts and performance (Avolio, et al., 1991; Bass, 1985, 1990; Howell & Avolio, 1993; Robbins, 2006).

Transactional Leadership

Several authors have suggested that most existing theories of leadership, such as the Ohio State studies, Fielder's model, the path-goal theory, and so on, hold the view that leaders transact with their team members (Bass, 1985, 1990; Chemers, 1984; Robbins, 2001). In contrast with the transformational leadership, transactional leader-follower relationships are based on a series of rational exchanges or bargains that enable each follower to reach his or her own goals (Bass, 1985, 1990). In these exchanges, transactional leaders clarify the different roles that a follower must play, and the task requirements they must complete, to reach their personal goals and fulfil the organisation's mission (Kuhnert & Lewis, 1987). Howell and Avolio (1993) postulate that both the leader and the follower reach an agreement concerning what the follower will receive for achieving the negotiated level of performance.

In practice, transactional leaders define and communicate what work the follower must do, how it will be done, and the rewards he or she will receive for successfully completing the stated objectives. As a result, employees understand their job roles and the expectations set for them by the leader and the organisation. In addition, employees are motivated and directed to achieve expected standards of performance because transactional leaders clarify what the followers receive for the specific level of effort and/or performance required of them (Avolio, et al., 1991). Rewards for the expected performance may include satisfactory performance ratings, pay increases, praise and recognition, and better work assignments, depending on the organisational context.

According to Bass (1995, 1997), there are several different types of behaviour inherent in transactional leadership.

(a) *Contingent reward*: The leader provides contingent rewards for good effort and good performance, and recognises accomplishment in order to reinforce appropriate behaviours and discourage inappropriate behaviours.
(b) *Management by exception*: The leader maintains the status quo and intervenes when employees do not meet acceptable performance levels. This behaviour involves monitoring subordinates and corrective action, when necessary, to ensure that the works is carried out effectively.
(c) *Laissez-Faire*: This is the avoidance or absence of leadership. This behaviour entails avoiding decision making and abdicating responsibilities.

Transactional leadership is considered an essential part of leadership (Nahavandi, 2006). Some studies have found contingent reward leadership to be positively related to leadership effectiveness, organisational commitment, job satisfaction, job performance, and extra effort (Bass, 1985; Bass & Avolio, 1993; Howell & Avolio, 1993). Bass (1990) suggests that rewards are the primary power of transactional leadership; followers obey the leader when the exchanges meet their needs. The relationship continues as long as the reward is desirable to the follower, and both the leader and the follower see the transaction as a mean of advancing toward their personal goals (Bass, 1990). Effective transactional leaders must regularly fulfil the expectations of their followers. Thus, effective transactional leadership is contingent on the leaders' abilities to meet and respond to the reactions and changing expectations of their followers (Kuhnert & Lewis, 1987).

In summary, this section has reviewed the theory of transformational and transactional leadership behaviours. Transformational leadership theory has been considered a hybrid approach because it gathers elements from other approaches (Yukl & Van Fleet, 1992). The real essence of transformational leadership is that these leaders "lift ordinary people to extraordinary heights" and cause followers to "do more than they are expected" (Yukl, 2006), and "perform beyond the level of expectation" (Bass, 1985). The concept of transformational leadership behaviour builds trust, admiration, loyalty, and respect among followers. The concept of transactional leadership behaviour, alternatively, focuses on the exchanges that occur between leaders and their followers. Transformational leaders operate out of deeply held personal value systems, which include justice and integrity; these values cannot be negotiated or exchanged between individuals (Kuhnert & Lewis, 1987).

Transactional leaders, on the other hand, are influential because it is in the subordinates' best interest to follow the leader (Northouse, 2001).

Transactional and transformational leadership styles, however, should not be seen to present incompatible modes of behaviour; transformational leadership is built on top of transactional leadership, while transformational leadership produces levels of employee effort and performance that go beyond what would occur with a transactional approach alone (Robbins, 2006). In fact, effective leaders use a mix of transformational and transactional behaviour (Bass, 1990; Yukl, 2006). Prior empirical research has indicated that transformational and transactional leadership behaviours can be displayed by the same leader, and can be complementary in different amounts and intensities (Avolio, et al., 1991; Bass, 1985, 1997; Bass & Avolio, 1993). Many transformational leaders certainly engage in transactional behaviours, but they often supplement those behaviours with some elements of transformational leadership. As Tosi et al (1994) observed, effective charismatic leaders also engage in managerial activities, such as acquiring resources and assigning responsibilities.

Both transformational and transactional leadership behaviours have been found to positively relate to organisational commitment, job satisfaction, and job performance (Awamleh & Gardner, 1999; Bass & Avolio, 1990; Howell & Avolio, 1993; Podsakoff, et al., 1990; Tichy & Devanna, 1986). This study proposes that there exists a relationship between these two leadership behaviours and knowledge management practices within organisations. The next subsection discusses the influence of transformational and transactional leadership behaviours on knowledge management.

2.2.4. Leadership and Knowledge Management

As previously described, leadership includes motivating people, shaping organisational objectives and maintaining the group and organisational culture; therefore, leaders have a direct impact on how the company approaches and deals with knowledge management (DeTienne, et al., 2004). Without effective leaders, who set appropriate examples, employees will not be motivated to participate in the knowledge management programs (DeTienne, et al., 2004; Lam, 2002). Leaders create conditions that allow participants to readily exercise and cultivate their knowledge-manipulation skills, to contribute their own

individual knowledge resource to the organisation's pool of knowledge, and to have easy access to relevant knowledge (Crawford, 2005). The following is an overview of how leadership behaviours relate to knowledge management.

Drucker (1992) predicted over a decade ago that we were entering a knowledge society along with its respective knowledge economy and industry; the workforce would be rapidly dominated by knowledge workers, and managing them all effectively would be a substantial challenge for most leaders. Leading them can be done only through intellectual power, conviction, persuasion, and interactive dialogue (Ribiere & Sitar, 2003) as knowledge workers are not objects to be manipulated. Drucker (2002) noted that "knowledge workers may have a supervisor, but they are not subordinates. They are associates" (p. 12). They do not identify themselves as workers but as professionals. They are not doing things that are easily observable and also do not follow a set of predictable results (Drucker, 2001). Such knowledge workers have two main needs: formal education enabling them to enter knowledge work in the first place, and continuing education throughout their working lives to keep their knowledge up-to-date (Drucker, 2003). Thus, Politis (2002) suggests that the role of leadership is increasingly changing from information and knowledge gate-keeping to knowledge creation and knowledge sharing for all employees. The challenge for most leaders is to develop capacity in other by creating a climate in which acquiring and sharing knowledge is encouraged or even demanded.

As previously reviewed, knowledge has often been perceived as a source of power; people, thus, tend to have feelings of ownership and hoard knowledge. Many professionals have little respect for others outside of their field. Competition among professionals might result from seeking rewards and recognition. Vermaak and Weggeman (1999) point out that those professionals who do not develop and share their knowledge together rest on their laurels. Hence, the level of trust that exists between the organisation, its sub-units, and its employees greatly influences the amount of knowledge that flows between individuals and from individuals into the firm's database, into best practices achievement etc.(De Long & Fahey, 2000). Trust is fundamental for people to share their knowledge without the fear of becoming vulnerable. Leadership is key to building a trust-based culture by demonstrating concerns, keeping promises, morality, fairness, openness, honesty, discretion, consistency, integrity, accessibility, and delivering expected results (Ribiere & Sitar, 2003). Leaders,

thus, can create psychological conditions and encourage people to be more accountable, more willing to be transparent, and to be less defensive (Fairholm, 1994). A strong, trusting leader is willing to take risks in empowering all members of the learning organisation by developing a shared vision, providing resources, delegating authority, celebrating success, and more importantly being a learning architect (W. D. Hitt, 1995). In contrast, incompetent or unethical leaders can quickly erode whatever trust exists within an organisation or team.

Every organisation is in competition for its most essential resource: qualified and knowledgeable people. Drucker (2001) envisions that the management of knowledge workers should be based on the assumption that the corporation needs them more than they need the corporation. Bukowitz and Williams (1999) stress that, in a knowledge-intensive organisation, leaders are no longer the primary source of knowledge; moreover, they are found in the centre of the organisation, not just at the top. They need to have an ability to grasp value-creating knowledge for potential organisational uses. Consequently, knowledge management processes cannot be managed in the traditional sense of "management", which centres on controlling the flow of information (Nonaka, Toyama, & Konno, 2000). Instead, leaders need to proactively and rapidly evaluate and adapt management concepts and approaches to motivate and retain knowledge workers. Hence, Drucker (2002) suggests that the only way to achieve leadership in a knowledge-based business is to spend time with the potential knowledge professionals: to get to know them and to be known by them; to mentor them and to listen to them; to challenge them and to encourage them.

It also appears that leadership is, and has always been, the principal approach to convince and motivate employees to do what managers have planned for them in advance. Leadership, thus, by its influence component, facilitates the implementation of knowledge activities in an organisation. DeTienne et al. (2004) believe that "without effective leaders who set appropriate examples, employees will not be motivated to participate in the KM programs" (p. 35). Beckman (1999) seems to side with DeTienne et al. (2004), expanding management's responsibilities in the KM process to include motivating employees, providing equal opportunities and development, and measuring and rewarding the performance, behaviours, and attitudes that are required for effective knowledge

management. Bailey & Clarke (2000) have defined knowledge management as "how managers generate, communicate and exploit knowledge (useable ideas) for personal and organisational benefits" (p. 237). In other words, the core competences for effective leaders of knowledge organisations are being a catalyst, a coordinator, and an evaluator, and through exercising control (Holsapple & Joshi, 2000).

It is widely acknowledged in the literature that the key function of the leader is to create a vision (mission or agenda) for the organisation. The leader specifies the far-reaching goal as well as the strategy for goal attainment (DuBrin, 1998). Leadership is the part of management where employees are brought into the picture (Ribiere & Sitar, 2003). For them to start working, an organisation's vision must be shared and understood. Once employees understand how their job contributes to the achievement of the organisation's vision, leadership will inspire and motivate them to action. Hence, while an organisation needs a strong manager to formulate a detailed plan and oversee the day-to-day operations, leaders need to challenge the status quo, to create a vision for the future, and to inspire organisational members to want to achieve that vision. A strong organisational vision, a culture cultivating learning and sharing of a common knowledge base, a structure facilitating the wide use of individual and group knowledge, and leadership that fosters learning are seen as determinant for creating a knowledge-based organisation (Dierkes, 2001; Ribiere & Sitar, 2003).

Organisational culture, on the other hand, has been identified as the main impediment to knowledge activities; leaders should, therefore, model the appropriate behaviours, thus causing the organisational culture to evolve in a way that enables and motivates knowledge workers to create, codify, transfer, use, and leverage knowledge (Ribiere & Sitar, 2003). Baines (1997) holds that leaders, first and foremost, are responsible for learning – both personally as well as organisationally. Leaders create conditions that allow participants to readily exercise and cultivate their knowledge-manipulation skills, to contribute their own individual knowledge resource to the organisation's pool of knowledge, and to have easy access to relevant knowledge (Crawford, 2005). It is the strength of leadership that determines how efficiently the culture changes, and how quickly it adopts organisational learning and knowledge management within a organisation (Ribiere & Sitar, 2003). Consequently, leaders play a crucial role in building and maintaining an organisational

culture of learning, and making knowledge management happen in the organisation (Bollinger & Smith, 2001; Crawford, 2005; Horak, 2001).

This literature review provides ample support for the notion that leadership and knowledge management are strongly related to each other. Studies of the linkage between leadership and knowledge management effectiveness, thus, have been proliferated. Eppler and Sukowski (2000) place leadership at the top of the pyramid of the platforms, norms, processes, and tools necessary for effective knowledge management; emphasising the need for knowledge managers to achieve and maintain a balance between motivating team members with urgency and providing them opportunities to develop competencies and knowledge. In his research, Takeuchi (2001) describes three ways that leaders should provide direction for where the company is to head, in terms of knowledge management: first, leaders articulate a grand theory of what the company, as a whole, ought to be; second, leaders must incorporate its vision for knowledge management into the company's corporate objectives or policy statement; and third, leaders must strategically decide which knowledge management efforts to support and develop; they must then follow that strategy. However, a question has emerged about what kinds of leadership behaviour would meet the above requirements for the success of KM implementation.

This research proposes that the answer could be found in transformational and transactional leadership behaviours. Although there is little direct empirical evidence to suggest a relationship between transformational/transactional leadership behaviours and KM initiatives, numerous studies have found that transformational and transactional leadership behaviours positively relate to a learning organisation, organisational innovation, organisational commitment, job satisfaction, and job performance (e.g. Awamleh & Gardner, 1999; Bass & Avolio, 1990; Chang & Lee, 2007; Howell & Avolio, 1993; Lam, 2002; Ogbonna & Harris, 2000; Podsakoff, et al., 1990; Tichy & Devanna, 1986).

For example, Lam's (2002) cross-national research investigating research into transformational leadership and organisational learning indicates that transformational leadership can actually affect the process and achievement of an organisation's learning. Indeed, transformational leadership has a significantly positive effect on encouraging and

emphasising teamwork spirit and involvement. By motivating followers to question assumptions, be inquisitive, take intelligent risks and come up with creative observations, transformational leaders encourage individuals to break through learning boundaries and to share their learning experiences both within and across departments (Vera & Crossan, 2004). Transactional leadership and the operation of a learning organisation also come with significant relationships; thus, organisations can improve the efficiency of organisation learning through transactional leadership (Bass & Avolio, 1990; Vera & Crossan, 2004). Emphasising existing values and routines, and focusing on increasing efficiency in current practices, enables transactional leaders to foster rule-based ways of doing things (Bass, 1995; Bass & Avolio, 1993). In their research, Vera and Crossan (2004) posit that transactional leaders stimulate the flow of learning from the organisation to individuals and groups by assigning a strong value to organisational rules, procedures, and past experiences. They also provide organisational members with formal systems and training programs that disseminate existing learning to guide future actions and decisions.

Recent studies conducted by Politis (2001, 2002) and Crawford (2005), which established an argument that transformational/transactional leadership behaviours are related to knowledge acquisition attributes and knowledge management, are the most relevant studies to the research investigation of this dissertation. In Politis's (2001) study, five leadership styles, which includes self-management leadership (Manz, 1986), transformational and transactional leadership (Bass, 1985), initiating structure and consideration (Stogdill, 1974), have been conducted to examine their relationship to knowledge acquisition attributes. Politis (2001) found that the self-management, transformational, and transactional leadership styles are positively correlated to some dimensions of knowledge acquisition attributes. Consideration and initiating structure leadership, however, are not, and are negatively related to knowledge acquisition attributes. Politis (2002) found that the dimension of attributed charismatic leadership has a positive and significant relationship with the knowledge acquisition of knowledge workers. In particular, charismatic leadership is important in providing the vision and energy for knowledge sharing and to sustain effective knowledge management in practice. Similarly, among the most specific findings in Crawford's (2005) research is the strong relationship between transformational leadership and knowledge management behaviours. Another interesting finding deals is the relationship between transactional leadership and knowledge management. Crawford

(2005) found significant correlations between knowledge management and contingent reward, and a significant negative correlation with management-by-exception.

The above literature review highlights that transformational and transactional leadership has a significant effect on knowledge management implementation. The major gap in the literature, however, is the lack of attention to the impact of organisational culture on such relationships between leadership and knowledge management (Block, 2003; Chang & Lee, 2007; Ribiere & Sitar, 2003). As previously described, the leadership process cannot be divorced from the broader situational context in which leadership takes place (Chemers, 1984; Northouse, 2001). Unless the culture is supportive of leaders, leadership based on common values is impossible. Culture determines a large part of what leaders do and how they do it (Fairholm, 1994). Furthermore, according to Bass (1985), transactional leaders work within their organisational cultures and maintain consistent rules, procedures, and norms. Bass (1985) also notes that transformational leaders frequently change their organisational culture with a new vision and revise its shared assumptions, values, and norms. In a transformational culture, there is generally a sense of purpose and a feeling of family; assumptions, values, and norms do not preclude individuals from pursuing their own goals and rewards, and superiors feel a personal obligation to help new members assimilate into the culture. Leaders and followers share mutual interests and a sense of shared fates and interdependence (Bass & Avolio, 1993).

Despite the implicit and explicit linking of leadership and organisational culture in many parts of organisational theory, little critical research has been devoted to understanding the link between the two concepts and the impact that such an association might have on knowledge management (Block, 2003; Brown, 1992; Chang & Lee, 2007; DeTienne, et al., 2004; Lok & Crawford, 1999, 2004; Ogbonna & Harris, 2000; Vera & Crossan, 2004; Xenikou & Simosi, 2006). In other words, most research has focused on the behaviour or decision style of the leader, with very little understanding of the values, needs, and motives that reflect an organisation's culture (Hennessey, 1998; Pillai & Meindl, 1998). In contrast to Politis's (2001, 2002) and Crawford's (2005) studies, this dissertation addresses the aforesaid gap in the literature, providing empirical evidence of the links between the different types of organisational culture, and a range of leadership behaviours and knowledge management practices. In the following sections, organisational culture, as well

as its impact on transformational/transactional leadership and knowledge management, will be discussed in detail.

2.3. Organisational Culture

Organisational culture is the newest and has been perhaps the most controversial of the organisation theory perspectives. The aim of this section is to provide an overview of the concept of culture, bearing in mind that one of the objectives of this thesis is to study the organisational culture in terms of the relationship of managerial leadership effectiveness and knowledge management practices. What could be defined as effective leadership behaviour in one organisation might not necessarily work in another. These are discussed in detail in the following sections.

2.3.1. Defining Organisational Culture

The concepts of culture has been discussed and researched for many years. Organisational culture is said to have its roots in the study of culture in the fields of anthropology and organisational sociology, and could be traced back to the late nineteenth century (Berthon, Pitt, & Ewing, 2001; Cameron & Ettington, 1985; Deshpande, Farley, & Webster, 1993; Fairholm, 1994). In their research of the literature, anthropologist Kroeber and Kluckholm (1952) identified 164 different definitions of culture. They found that culture has been defined as the values and beliefs shared by members of a society; the patterns of behaving, feeling, and reacting shared by society, including the unstated premises underlying that behaviour; and the habitual and traditional ways of thinking, feeling, and reacting that are characteristic of the ways a particular group of people meets its problems.

Within anthropology, two divergent perspectives on culture have developed: the functionalist tradition and the semiotic tradition (Cameron & Ettington, 1985). The functionalist tradition focuses on the group, the organisation, or the society as a whole and considers how the practices, beliefs, and values embedded in the unit function to maintain social control. In the semiotic tradition, a person's point of view is discerned through their use of language, symbols, and rituals.

Again, within sociology, two divergent perspectives on culture have emerged (Cameron & Ettington, 1985). One tradition views culture as comprised of the individual's cognitive frameworks – similar to the semiotic tradition in anthropology. The other tradition analyses

culture as a part of social (not individual) activity and behaviour – similar to the functionalist tradition in anthropology.

Despite the similarities between the anthropological and sociological perspectives, important differences exist as well (Cameron & Ettington, 1985). In sociology, culture is used as an independent variable for explaining organisational structure, performance, or activity. On the other hand, anthropological tradition treats organisational culture as a dependent variable, the object of prediction or explanation. Another distinction between the two disciplines is that anthropological literature tends to view culture as something an organisation *is*, while sociological literature tends to view culture as something an organisation *has* (Cameron & Ettington, 1985; Fairholm, 1994).

The literature review postulates that the contemporary study to examine the concept of organisational culture is to focus on organisational culture as a social construct, which may be understood as a continuation of the main line organisational sociology (Berthon, et al., 2001; Cameron & Ettington, 1985; Deshpande, et al., 1993; Ouchi & Wilkins, 1985). These social constructs can be seen as societal value systems, values, beliefs, and assumptions of an organisation that can be integrated into the socialisation process of organisation. Fairholm (1994) posits that cultures provide the basis for an orderly interaction between group members. It structures the group, not in formal, organisational ways, but at the deeper level of foundation values, which causes specific rules and regulations to be set up to order member's actions.

Numerous attempts to define, characterize or describe organisational culture appear in the literature (Denison & Mishra, 1995; Deshpande & Webster, 1989; Grieves, 2000; Schein, 1990, 2004; Trice & Beyer, 1993). Deshpande and Webster (1989) define organisational culture as "the patterns of shared values and beliefs that help individuals understand organisational functioning and thus provide them norms for behaviour in the organisation" (p. 4). Grieves (2000) asserts that organisational culture as "the sum total of the learned behaviour traits, beliefs and characteristics of the members of a particular organisation" (p. 367). The key in Grieves's (2000) definition is the word "learned", which is what distinguishes culture from biologically inherited behaviours. Schein's (2004) definition of organisational culture is perhaps the most widely used in the literature and was adopted for

this dissertation. Schein (2004) views organisational culture as "a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems" (p. 17). Organisational culture is thus viewed as a shared mental model that influences how individuals behave, and how they interpret behaviours (Schein, 2004).

Organisational culture is not only intangible and illusive but can also be observed at multiple levels of an organisation. Indeed, organisational culture is reflected in values, norms, and practices. At the deepest level, organisational culture consists of values, which are embedded tacit preferences about what organisations should strive to attain and how they can achieve that (De Long & Fahey, 2000). At a more observable level, organisational culture also consists of norms and practices that are derived from underlying values (De Long & Fahey, 2000).

Schein (2004) considers culture to be a three-layer phenomenon. The first level of organisational culture, artefacts, is the constructed environment of the organisation; the organisation's written and spoken language, jargon, and office layout and arrangements. Beliefs and values, Schein's second level, are manifest or espoused values. These values are how people reason their behaviour, and the rationalisation for their behaviour. *Basic underlying assumptions* are assumptions that, over time, become taken for granted and shared by the whole group. They are not debated and might be very difficult to change, and often date back to the founding of the company when the founders and leaders used them to succeed (Schein, 1990, 2004). These three levels of organisational culture are extremely powerful determinants of organisational life, and are intuitively incorporated into the actions of the skilled executive who uses them to manage people, formulate the strategy, and induce organisational change (Brown, 1992; Schein, 1990, 2004).

Although the definitions of organisational culture are still being debated, Trice and Beyer (1991) posited that culture originally emerges from people's struggles to manage uncertainties and create some degree of order in their social life. People in organisations face many uncertainties or possible changes related to economic conditions, technology, new competitors, new clients and so on. The change in organisations is pervasive, due to

the amount of change in the external environment (Cameron & Quinn, 1999). Thus, it can be deduced that culture emerges as people within organisations learn how to deal with these changes or uncertainties. It provides accepted ways of expressing and affirming their beliefs, values, and norms (Trice & Beyer, 1993). Hence, organisational culture, in addition to its capabilities to integrate daily activities of employees to reach the planned goals, can also help organisations adapt well to external environments with rapid and appropriate responses (Ogbonna & Harris, 2000).

In an attempt to understand the moderating role of organisational culture, and how it influences leadership behaviours in knowledge management, following Schein (1990, 2004), this study views organisational culture as a pattern of norms, values, beliefs, and attitudes that influence behaviour within an organisation. The implication of this insight is that organisational culture is not just the official values held by the management but rather a range of shared models of social action, containing both ideal and real elements; each layer moulded by the social context and the channels of communication, observed behaviour, official documents, and correspondence in the public forum and in private. Though culture is dependent on the actions of leaders (Fairholm, 1994; Ribiere & Sitar, 2003; Schein, 1990, 2004), the total character of a culture determines, in large part, the kind of leadership that is exercised; that is, the specifics of the cultural surround the condition and the kind of leadership actions that are acceptable to organisational members (Fairholm, 1994). In other words, leaders create and are constrained by the culture created. Therefore, it can be concluded that the relationship between leadership and knowledge management is moderated by the form of the organisational culture. The next subsection will discuss the various types of organisational culture, as well as the impact of organisational culture on leadership and knowledge management.

2.3.2. Organisational Culture and Organisational Climate

Organisational climate shares similarities to organisational culture; distinguishing between these concepts as used in the organisational culture literature is important because they can be easily misinterpreted or incorrectly used in an interchangeable manner.

A review of the literature demonstrates that organisational climate has generally been defined differently from organisational culture. Organisational culture is a set of shared

values, beliefs, and norms that help individuals understand organisational functioning (Deshpande & Webster, 1989). Organisational climate is a related, but different concept, relating to members' perceptions of "observable" practices and procedures that are closer to the surface of organisational life (Deshpande & Webster, 1989; Jackofsky & Slocum, 1988; Schneider, 2000; Schneider, Gunnarson, & Niles-Jolly, 1994). In other words, organisational climate is viewed as the way that organisations operate the themes that pervade everyday behaviour – the routines of organisations, and the behaviours that get rewarded, supported, and expected by organisations (Schneider, et al., 1994). Similarly, Schein (2000) argues that climate is an artefact of culture, resulting from an organisation's espoused values and tacit assumptions. It refers to a situation and is linked to the thoughts, feelings and behaviours of organisational members. Thus, organisational climate is temporal, subjective, and often objects to direct manipulation by people with power and influence, such as the leader or manager (Cameron & Quinn, 1999; Denison, 1996).

Organisational culture, on the other hand, has often focused on the importance of a deep understanding of underlying assumptions, including meaning and the insider's point of view of the organisation (Schein, 2004). For a culture to develop, the people must have shared a significant number of experiences, which have allowed them, over time, to develop a common view of the world around them (Cameron & Quinn, 1999). It is rooted in the history, norms, and values that members believe underlie the organisational climate (why do things happen the way they do) and the meanings of organisational members share about the organisation's imperative (Schneider, et al., 1994). Although organisational culture is difficult to observe at times, it certainly influences the attitudes and feelings of participants and the way they perceive events. As a result, organisational climate appears to be related to and subsumed under organisational culture. Organisational climate is shaped by the organisational culture but also simultaneously exerts its own shaping forces upon that culture (Schneider, 2000; Schneider, et al., 1994).

Despite the above argument that organisational culture and climate should be viewed as different constructs, Denison (1996) contends that the elements measured in both organisational culture and climate are similar. According to Denison (1996), the literature of both organisational culture and climate address a common phenomenon, focusing on the creation and influence of social contexts in organisations. Thus the perceived differences

between organisational culture and climate are mainly derived from their perspective theoretical foundations; consequently, these two research traditions should be viewed as having differences in interpretation rather than differences in phenomenon. In this study, the author addresses the "culture" of an organisation, contends that culture is the most critical factor that shapes behaviour. Thus the organisational culture must be supportive of knowledge workers' business and collaborative needs.

2.3.3. The Impact of Organisational Culture on Leadership

The review of the literature on the relationship between leadership and knowledge management found that a major gap exists regarding the lack of attention to the impact of organisational culture on leadership (Chang & Lee, 2007; Ogbonna & Harris, 2000; Ribiere & Sitar, 2003). The cultural context conditions our actions, our beliefs, and widely held values. Just as the leadership process is not divorced from the broader situational context in which the leadership takes place (Northouse, 2001), unless the culture is supportive of leaders, leadership based on common values is impossible. Culture determines a large part of what leaders do and how they do it (Fairholm, 1994).

After examining culture and leadership closely, Schein (2004) concludes that organisational culture and leadership are two sides of the same coin; neither can be really understood by themself. During the process of organisation formation, the founder of a company creates an organisation, which reflects their values and beliefs. In this sense, the founder creates and shapes the cultural traits of their organisations. In contrast, as an organisation develops and time passes, the created culture of organisations exerts an influence on the leader and shapes the actions and style of leader. The leader, hence, creates and is, in turn, shaped by the organisational culture (Schein, 2004).

Fairholm (1994) mirrors the argument of Schein (2004) by positing that leadership is a consequence of organisational culture, and culture is a result of leadership. Seen in this way, leadership and organisational culture are intertwined; one requires the other. Cultural norms define how a given nation or organisation will define leadership – who will get promoted, who will get the attention of followers. Created culture defines success and appropriate behaviours (Fairholm, 1994). On the other hand, leaders interact with the culture to determine what they should pay attention to, how they should react to member

behaviour, and what is to be communicated to the followers. Thus, it can be argued that a leader is only important because they create and manage culture; that the unique talent of leaders is their ability to understand and work with culture; and that it is an ultimate act of the leader to destroy culture when it is viewed as dysfunctional (Schein, 2004). In short, the leader is constrained by created culture.

Avolio and Bass (1995) contend that what constitutes individualised consideration to one person might appear as interference or paternalism to another person. The perception is dependent on work environment (the situation) or the culture that he/she has experienced (Avolio & Bass, 1995). For instance, if the person works in a very controlling environment, a simple friendly response by the leader might be construed as individual consideration. However, a person who has experience with an organisation that focuses on the development of the individual is more likely to have a higher threshold for individual consideration if they were to be move into a position of control over a work environment (Avolio & Bass, 1995); thus, the cultural beliefs, norms, and values that he/she has experienced in their former work life impacts how he/she feels about the leader's behaviour. In other words, culture defines those characteristics of followers that are attributable. In addition, Gergiovanni (1984, as cited in Ott, 1989, p. 7) describes organisational leadership, and the leader's decision patterns, as cultural artefacts. He believes that leaders, leadership styles and practices, and patterns of decisions are created and shaped more by organisational culture than by the leaders themselves.

Accordingly, organisational culture is found to have an impact upon leadership effectiveness (Avolio & Bass, 1995; Howell & Avolio, 1993). Howell and Avolio (1993) hypothesised that leaders in an organisation that is high in support for innovation (characterised as open to creative suggestions, innovations and risk taking) would have higher levels of performance. The findings of their study suggest that transformational leaders perform better in environments that are described by followers as innovative. Bass and Avolio (1993) postulate that

"A strong organisational culture, with values and internal guides for more autonomy at lower levels, can prevent top administration from increasing its personal power at the expense of middle-level administration. On a more specific level, the culture can affect

how decisions are made with respect to such areas as recruitment, selection, and placement with the organisation" (Bass & Avolio, 1993, p. 113).

Consequently, leaders need to be attentive to the conservatism reflected in the beliefs, values, assumptions, rites, and ceremonies embedded in the culture as they can hinder efforts to change the organisation (Bass & Avolio, 1993). Leaders need to modify key aspects of the culture, when possible, to fit with new directions desired by the leadership and membership of the organisation. In a supportive culture, the leader listens to the views of subordinates and takes them into account. Pheysey (1993) suggested that, in a power culture, the leader tells others what to do. In the achievement culture, the leader both gives direction and encourages participation. In the role culture, the leader does what he or she is authorised to do.

Burke and Litwin (1992) propose a causal model of organisational performance and change that suggests how leadership and organisational culture influence each other to affect the ultimate performance of organisations and individuals. Borrowing from Burns's (1978) theory of leadership, this model posits that leaders respond to external conditions and, in turn, become transformational agents within their organisation, using the vehicles of mission and strategy, and organisational culture to affect changes in organisational and individual performance (Burke & Litwin, 1992). In contrast, culture is viewed as an enduring aspect of the organisation, capable of influencing the policies and procedures that are deemed important to the ongoing success of a company. While it is acknowledged that culture can influence leadership, Burke and Litwin (1992) suggest that the reverse is a much stronger causal link. The leadership category exists where strategy and culture come together in the beliefs and actions of an organisation's leader to ultimately affect changes in organisational and individual performance.

Ogbonna and Harris's (2000) study provides some empirical evidence on the joint effect of organisational culture and leadership on organisational performance. They found that supportive and participative leadership were indirectly and positively linked to performance via innovative and competitive cultures, whereas instrumental (task oriented) leadership had an indirect negative effect on performance. Furthermore, their findings provide support for the proposition that the connection between leadership styles and

performance is mediated by the nature and form of the organisational culture that exists. Similarly, Lim (1995) proposes that culture might be the filter through which other important variables, such as leadership, influence organisational performance.

In summary, the connection between organisational culture and leadership has been made by many researchers (Avolio & Bass, 1995; Block, 2003; Fairholm, 1994; Ogbonna & Harris, 2000). From the literature review, it can be seen that leaders influence organisations, and that cultures represent the vehicle through which a leader's beliefs, values, and actions are transformed into organisational realities. The effectiveness of a leader is viewed as the product of his or her ability to create a culture that supports a broad range of adaptive, stabilising, and strategic activities. It is assumed that the leader who lacks cultural insight cannot lead effectively. Despite such implicit and explicit linking of leadership and organisational culture in much of the organisation theory, little critical research or attention has been devoted to understanding the links between the two concepts and the impact that such an association might have on knowledge management. For these reasons, the current study contends that there must be an impact of organisational culture on the relationship between leadership and knowledge management.

2.3.4. Assessing Organisational Cultures

From the concept of organisational culture and the previous statements, it can be seen that cultural analysis helps us in understanding the interactions of individuals within different teams, especially when they have to work together in meaningful ways to achieve a common objective or goal. An enterprise needs to be aware of the different cultural compositions, or *Culture Types*, operating within its boundaries and comprising its overall culture; an understanding of these Culture Types is necessary to achieve the appropriate level of adjustment and attain optimum performance. This is especially important when designing and implementing effective processes, tools, and technologies across those boundaries (De Long & Fahey, 2000).

Unfortunately, as previously described, most of the important components of organisational culture are invisible and tacit, while the conceptualization of organisational culture as a multifaceted, multilayered construct has created an all-encompassing concept that is difficult to investigate systematically (Howard, 1998; Meek, 1988). Culture is

viewed as having conscious and unconscious elements, as well as a variety of expressive forms (i.e., artefacts, behaviours, norms, values, and assumptions), representing direct and indirect manifestations of the phenomenon (Rousseau, 1990). Further complexity is added when the notions of culture, as a dynamic entity and as the product of the unique social construction of a group, are introduced (Trice & Beyer, 1993). Consequently, in spite of the agreement among researchers concerning organisational culture components and definitions, there are still numerous disagreements on the best methodology to use to assess organisational culture (Ashkanasy, Broadfoot, & Falkus, 2000; Ashkanasy, Wilderom, & Peterson, 2000; O'Reilly, Chatman, & Caldwell, 1991; Rousseau, 1990). This lack of consensus is primarily based on the debate involving qualitative versus quantitative research. In qualitative research, the investigator becomes immersed in the culture and engages in in-depth participant observation. On the other hand, in quantitative research, investigators use a questionnaire to assess particular dimensions of culture. This section carries out a literature review of the methods and tools developed to assess organisational culture.

Quantitative and Qualitative Approach

The rationale for the use of a qualitative approach in culture research is largely predicated on the presumed inaccessibility, depth, or unconscious quality of culture. As such, it is only through interactive probing and discussion that otherwise inaccessible cultural material can be accessed (Schein, 2004; Smircich, 1983). Culture reflects a social construction of reality unique to the members of the social unit, this uniqueness makes it impossible for standardised measures to tap cultural process (Smircich, 1983). Consequently, Rousseau (1990) noted that "quantitative assessment of culture is controversial" (p. 153) and that only certain dimensions of culture may be appropriately studied using quantitative methods.

Schein (2004) criticised quantitative assessments conducted through surveys as unethical, as they reflect conceptual categories not the respondents' own, presuming un-warranted generalisability. Schein supported his argument, first by the assertion that culture is heavily dependent on the company's history and that several hundred questions will be needed in order to assess all the critical dimensions; and second, he argued that asking individuals about a shared phenomenon is insufficient and possibly invalid. These arguments are rooted in the notion of culture as a highly subjective unconscious process (Rousseau, 1990;

Schein, 1999), and that people are unaware of their culture until it is challenged, until they experience a new culture, or until it is made overt and explicit (Cameron & Quinn, 1999). What is often labelled the "desired culture", therefore, is a set of espoused values that may not be tenable in the existing culture (Schein, 1999). Accordingly, Schein (1999, 2000) contends that the deepest level of culture can be investigated only through intensive observations, focused interviews, and the involvement of organisational members in self-analysis. This argument trusts that there is a clear and continuing role for quantitative measures as a means of assessing the less abstract levels of organisational culture (Ashkanasy, Broadfoot, et al., 2000).

The primary purpose of the qualitative approach is to gain a rich and detailed understanding of the cultural complexity from the insider's point of view (Sackmann, 2001). The results gained from qualitative research, however, are limited to specific cases under investigation. A direct comparison cannot be made between the results from other studies unless the research is specifically designed in that manner (Sackmann, 2001). Also, the results cannot be generalised to fit other settings. Explanations of behaviours remain at a descriptive level because they focus on understanding; predictions are not the focus of this kind of research (Sackmann, 2001). Consequently, links to an organisation's performance, knowledge management initiatives, or leadership behaviours are, therefore, hardly explored. Another significant weakness to the qualitative approach is the time needed for data collection and analysis, which makes the research more costly and time consuming (Ashkanasy, Broadfoot, et al., 2000; Ott, 1989; Sackmann, 2001).

In contrast to the qualitative approach, advocates of the quantitative tradition claim that different levels of culture are amendable to different methods and that the swallow layers of culture, which are more explicit, can be measured using standardised, quantitative method (Tucker, McCoy, & Evans, 1990). In an alternative view of organisational culture, Deal and Kennedy (1982, as cited in Ashkanasy, Broadfoot, et al., 2000, p. 133) have argued that three levels of culture (artefacts, espoused beliefs and values, and underlying assumptions) may be unified, especially when a culture is strong. In this case, the quantitative measurement of organisational culture may have the potential to tap deeper levels of culture (Ott, 1989). Also, it has been posited that behaviour and attitudes are determined, not by objective reality, but by the perception of reality (Ashkanasy,

Broadfoot, et al., 2000). Hence, it is clearly appropriate to focus on perceptions rather than on reality; this argument emphasises the potential of using the quantitative approach to increase the understanding of organisational culture.

After completing ten survey studies of over 1,200 employees in ten different organisations, Turker el al. (1990) concluded that organisational culture can be accurately assessed by a quantitative approach. It can provide meaningful and useful results that can be used as an aid for managerial decision making and planning. Based on their extensive research, they conclude that "scrutability of organisational culture, in the final analysis, is an empirical question of a rather large scope" (Tucker, et al., 1990, p. 5). Although no two organisations possess the same culture, using a qualitative approach holds relatively little significance for the possibility of identifying key dimensions of culture that can be generalized and that have salient features across most or all of them. Moreover, the appropriate means of assessment depends on the cultural level to be examined. The shallower layers of culture are more explicit and can be appropriately studied using a structured and quantitative approach (Ott, 1989; Rousseau, 1990). Therefore, it is evident that questionnaires can play an important role in the quantitative analysis of organisational culture.

The literature that has conducted comparisons across many different organisations have emphasised the use of the quantitative approach, since it becomes almost impossible when the qualitative method is needed for each one of them (Cameron & Quinn, 1999). Additionally, Ott (1989) stated that there are many important theoretical questions that cannot be addressed until culture can be measured with a reliable, easily administered instruments, which would allow the systematic observation of organisational culture. In contrast to the qualitative approach, the quantitative method provides an opportunity to maximize the importance of precision, systematization, repeatability, comparability, convenience, large scale assessments, and unobtrusiveness (Tucker, et al., 1990). Other advantages include allowing replication and cross-sectional comparative studies, providing an accepted frame of reference for interpreting data, helping the evaluation and initiation of culture change efforts in organisations, and providing data that can be analysed through multivariate statistical techniques (Ashkanasy, Broadfoot, et al., 2000).

It is undeniable that the deep assessment of an organisational culture is unlikely to only use

a questionnaire. Learning about the history of a company, visiting the place, talking to employees, and observing behaviours may be preferred. This research, however, does not aspire to reach that level of understanding, identifying each organisational culture with its unique dimensions. Moreover, according to Rousseau (1990), the appropriate means of assessment depends on the cultural level to be examined. The shallower layers of culture are more explicit and can be appropriately studied using a structured and quantitative approach (Ott, 1989; Rousseau, 1990). Thus, the selection of research methods depends on the practical problems of the company being studied and the research problems resulting from it; these determine how exact a picture of the culture needs to be obtained. This study aims is to consider how the relationships between leadership behaviours and knowledge management vary in different organisational cultures, thus the goal is to obtain a global perception of the culture of an organisation so as to profile and aggregate it with other organisations that share similar traits. As a result, the quantitative approach is utilised to measure organisational culture in this study; specifically, the four cultural dimensions, as identified by Denison and Mishra (1995) – involvement, consistency, adaptability, and mission – are adopted to measure the organisational culture. The next section discusses in detail these cultural dimensions and explains why they are adopted in this study.

Organisational Culture Dimensions

Among various conceptual frameworks that measure different dimensions of organisational culture. Denison and his colleagues (Denison, 1990; Denison, Hooijberg, & Quinn, 1995; Denison & Mishra, 1995; Fey & Denison, 2003), through a series of studies, identified and validated four dimensions of organisational culture, namely involvement, consistency, adaptability and mission. Although there has been little empirical research examining these four cultural dimensions in the field of knowledge management, from the literature it appears that there exists a general relationship between the four cultural dimensions and knowledge management. The following sub-sections explain the reason that such relationships exist.

Involvement

Effective knowledge management practices require a culture that fosters and rewards the creation and use of knowledge, as well as its sharing among individual members and groups (Davenport, et al., 1998; O'Dell, et al., 1998). However, in reality, companies may foster an environment where individual expertise is highly rewarded, but mentoring and

assisting are not (Leonard & Sensiper, 1998). Involvement refers to the level of participation that organisation members have in decision making (Denison, 1990; Denison & Mishra, 1995).

Involvement is frequently mentioned as a desirable trait of an organisation. High-involvement organisations are described as having the characteristic of a “clan” rather than a normal bureaucracy (Ouchi, 1980). Such high levels of involvement and participation create a sense of ownership and responsibility. Out of this ownership grows a greater commitment to an organisation and a lesser need for an overt control system (Denison, 1990). Voluntary and implicit normative systems, rather than explicit bureaucratic systems, ensure the coordination of behaviour. The high-involvement culture provides a friendly place to work where people can share a lot of themselves. The head of the organisation and the leaders are considered to be mentors or parent figures. Hence, participation of knowledge sharing and creating activities are encouraged (Kayworth & Leidner, 2004). Ruppel and Harrington (2001) found from their study on intranet adoption that, in organisations whose culture displays a high concern for other people and an atmosphere of mutual confidence and trust, early adoption of intranet use is most likely to occur. De Long and Fahey (2000, p. 118) point to the example of one of their case sites where senior management placed very high emphasis on individual expectations by the firm’s engineers. While this management strategy motivated individual accomplishment, it had a de-motivating effect on individual propensity to share knowledge and expertise.

Additionally, the interaction between individuals is essential to the innovation process (Davenport & Prusak, 1998; De la Mothe & Foray, 2001; Nonaka, 1994). Dialog between individuals or groups is often the basis for the creation of new ideas and can therefore be viewed as having the potential for creating knowledge (Gold, Malhotra, & Segars, 2001). Employee interaction is encouraged in high-involvement cultures, both formally and informally, so that relationships, contacts, and perspectives are shared by those not working side-by-side (O'Dell, et al., 1998). This type of interaction and collaboration is important when attempting to transmit tacit knowledge between individuals or convert tacit knowledge into explicit knowledge, thereby transforming it from the individual to the organisational level (Nonaka, 1994; Nonaka, Byosiere, Borucki, & Konno, 1994; Nonaka & Konno, 1998).

In general, involvement is crucial in every step of knowledge management because the purpose of knowledge management is primarily to elevate personal knowledge to organisational knowledge where individual involvement is a precondition. In the other words, effective knowledge management requires a high level of involvement; these strategies should be a part of the method used by a manager to shape the culture.

Consistency

Knowledge management is widely understood as the one that includes the knowledge community, where people can interact in the discovery, use and manipulation of knowledge (Thomas, et al., 2001). Thus effective knowledge management initiatives require behaviours that run counter to firm's values. Consistency refers to the extent to which beliefs, values, and expectations are held consistently by members (Denison & Mishra, 1995). The concept of cultural consistency corresponds with the concept of strong culture that is characterized by how consistently an organisation's values are shared.

In a strong culture, the organisation's members all work from a common framework for values and beliefs that form the basis through which they communicate. Because communication is fundamentally a process of manipulating symbols, a high level of agreement about the meaning of each symbol greatly enhances the encoding-decoding process necessary for communication (Berger & Luckmann 1967, as cited in Denison, 1990, p. 9). A strong culture thus has a much greater potential for implicit coordination and control of behaviour, and facilitates the exchange of information (Denison, 1990).

Moreover, one of De Long & Fahey's (2000) frameworks proposed that organisational culture shapes members' common assumptions about what knowledge is, what individual versus collective knowledge is, and how culture dictates the norms and expectations that govern organisational members' behaviour. The shared assumptions and values can establish the basic mental schema that helps individual employees cognitively process and evaluate information in similar ways, as well as provide members with a common set of heuristic that shapes decision making, task performance, and shared interpretations of information (O'Neill, Beauvais, & Scholl, 2001). Also, consistency is helpful in reaching a high level of efficiency in applying knowledge (Brockman & Morgan, 2003).

Adaptability

Maintaining a competitive advantage implies that an organisation is not only quite open to the new idea but also actively seeks out sources of competitive advantage, and quickly and successfully incorporate them into its own repertoire. Adaptability refers to the degree to which an organisation has the ability to alter behaviour, structures, and systems in order to survive in the wake of environmental changes (Denison & Mishra, 1995).

The concept of adaptability is similar to entrepreneurship, flexibility and change friendliness. Brockman and Morgan (2003) detected a strong relationship between entrepreneurship and innovation. Entrepreneurship is perceived as a cultural characteristic that involves the willingness to take business-related risks, to be proactive in competition, and to favour change and innovation to obtain competitive advantage. In the same vein, Young, Sapienza and Baumer's (2003) study found that organisational flexibility could enhance the organisation's ability to transfer knowledge from its buyers and sellers and increase its productivity of knowledge. Deshpande and Webster (1989) suggest that, in a change-friendly organisational culture, the gathering of information and sharing of knowledge is encouraged. In contrast, knowledge management practices may be hindered by organisational culture that is highly formalized and depends heavily on standard operating procedures, rules, and regulations as templates for decision making (De Long & Fahey, 2000). These rules may stifle the creation of new knowledge as members attempt to address novel problems with fixed patterns of thinking that may no longer be appropriate. Kotter and Heskett (1992) also propose that adaptive culture surpass non-adaptive culture in problem solving, enthusiasm, and innovation.

Mission

Mission refers to the existence of a shared definition of the organisation's purpose (Denison & Mishra, 1995). A mission provides purpose and meaning by defining a social role and external goal for an institution, and by defining an individual's role with respect to the institutional role. Through this process, behaviour is given intrinsic, or even spiritual, meaning that transcends functionally defined bureaucratic roles. This process of internalisation and identification contributes to short- and long-term commitment and leads to effective performance (Denison, 1990; Denison & Mishra, 1995).

A vision that permeates the organisation can provide people with a needed sense of purpose that transcends everyday activities (Gold, et al., 2001). The overall vision is intended to generate a clear organisational purpose and prompt the necessary changes in the organisation so that it can achieve its desired goals (Nonaka & Takeuchi, 1995). The vision does not only incorporate a vision statement that conveys a clear and unambiguous statement of the future and the desired direction of the organisation, it can also incorporate a system of organisational values. Through an articulated and communicated vision, it is important to engender a sense of involvement and contribution among employees (O'Dell, et al., 1998). Accordingly, Denison (1990) suggests that an effective firm must have a strategic plan and a clear direction as well as express the plan in a way that is meaningful to members of the organisation. The vision must be translated into goal directed behaviour on the part of each member of the firm. In this process, a vision helps individuals, groups, and organisations to relocate their basic goals and values, and rebuild a shared perception of the environment.

Vision fosters motivation (Dierkes, 2001) because it activates not only the cognitive potential of individuals, groups, and organisations, but also their emotional, volitional, and affective potential. Dierkes (2001) suggests that vision does more than just appeal to the logical and rational mind; they touch upon the internalized norms, values, and preconceived notions underlying people's perceptions, thinking, and decisions. Thus, vision has the power to motivate people to think and act in a particular direction.

A vision also facilitates and fosters coordination, thus they are able to mediate between people's different ways of perceiving and thinking (Dierkes, 2001). They serve as vehicles of communication through which improvement can be made by the conceptualisation and discussion of abstract processes and future options. A vision also helps people understand complex information and expert ways of perceiving and thinking. In this respect a vision plays a significant role in reducing obstacles to communications and thereby contribute to knowledge management effectiveness.

Davenport and Pruskas's (1998) noted that clarity of vision and language are important knowledge management factors. They argued that it is vital to clarify the specific

objectives and terms used in a knowledge management project because the terms of knowledge, information, and learning are subject to many interpretations, and people's attention and energy can dissipate if there is not a clear vision and language for the knowledge management project. Denison's mission dimension incorporates clear purpose and language for an organisation's overall goals; hence, it can provide a general direction and objective for knowledge efforts.

In general, organisational culture creates the context for social interaction, thus shaping the processes by which new organisational knowledge is created, legitimated, and distributed (De Long & Fahey, 2000). A literature review on Denison's four cultural dimensions clearly highlighted the beneficial effect of each dimension of organisational culture on knowledge management. It is hypothesised that organisational culture, as presented by adaptability, consistency, involvement, and mission, positively affect the influence of transformational and transactional leadership on knowledge management practices.

2.4. Summary of Literature Review

In this chapter, related literature was reviewed to establish the theoretical basis for this research. This chapter was divided into three parts. The first part considered the concept of knowledge and knowledge management. Knowledge has generally been classified as explicit and tacit knowledge. Explicit knowledge can be shared through various communication media, but that is not possible in the case of tacit knowledge; tacit knowledge is highly personal, hard to formalise, and difficult to communicate or share with others (Nonaka & Takeuchi, 1995). As with Nonaka and Takeuchi's (1995) work, this study contends that knowledge management can be understood as a process that transforms tacit knowledge into explicit knowledge, and also includes internalisation, externalisation, socialisation, and combination processes.

The second part of this chapter considered the definition and approaches to the study of leadership. Generally, leadership has been defined as building vision, trust, value, commitment, and a working environment, and also as an influencing activity in accomplishing organisational goals. In the historical development of leadership, much of leadership research has covered the leadership trait, behaviour, power, and influence, as well as situational approaches. This study focuses on transformational and transactional

leadership behaviours. A review of the literature revealed that transformational and transactional leadership behaviour positively relates to knowledge management practice within an organisation. The review also found that, despite the implicit and explicit linking of leadership and organisational culture in many parts of organisational theory, little critical research attention has been devoted to understanding the links between the two concepts and the impact that such associations might have on knowledge management.

The third part of the chapter considered the concept of organisational culture. Although no universally accepted definition of organisational culture emerged, there is general consensus on the importance of shared perceptions, beliefs, and values. It is believed that unless the organisational culture is supportive of leaders, leadership based on common values is impossible. Organisational culture determines a large part of what leaders do and how they do it (Fairholm, 1994). Following Denison's organisational culture model, this study views organisational culture as having four dimensions: adaptability, consistency, involvement, and mission. The influences of organisational culture on leadership are also discussed in this Chapter.

To date, no research has examined the relationship among knowledge management practices, leadership behaviours and organisational culture. Therefore this dissertation will help to fill this gap. Chapter 3 will develop a methodology to answer the research questions.

CHAPTER 3

Research Methodology

This study consisted of exploratory research designed to examine how leadership behaviours relate to knowledge management practices, and to determine if organisational culture moderates the relationship between leadership and knowledge management. The purpose of this chapter is to develop a methodology to answer the research question. The following sections revisit research questions, and present a detailed description of conceptual framework, theoretical research approaches, the relevant research hypotheses, research design, and the data-gathering instruments. Also described are the population and the procedures used. Both the reliability and validity of the survey instruments are also presented.

3.1. Research Questions and Conceptual Framework

The literature review presented in Chapter 2 of this dissertation provided essential background on transformational and transactional leadership behaviours, organisational culture and KM practices. The review of literature has demonstrated that leadership behaviours are widely held to be major barriers to creating and leveraging knowledge. Furthermore, since organisational culture creates the context for social interaction, it determines a large part of what leaders do and how they do it (Fairholm, 1994). Hence, it is believed that the effectiveness of leadership behaviours is contingent upon the type of organisational culture.

A critical evaluation of research studies in the fields of leadership, organisational culture, and knowledge management indicates that, while some evidence exists to support the links between leadership and KM, and between organisational culture and KM, the combined study of all three of these concepts has been hitherto lacking. To address these research gaps, the following research questions were formulated:

(1) How do transformational and transactional leadership behaviours relate to knowledge management practices?

(2) How do organisational cultures moderate the relationship between leadership behaviours and knowledge management practices?

To answer the above research questions, a conceptual framework was developed. The proposed model is comprised of four constructs: the transformational, transactional leadership behaviours, organisational culture, and knowledge management practices (Figure 3-1). Each of these constructs is briefly explained below:

a. Transformational leadership behaviours refer to the behaviours of leaders that influence followers' values and aspirations, activate their higher order needs, and arouse them to transcend their own self-interests for the sake of the organisation (Bass, 1985, 1995; Yukl, 2006).

b. Transactional leadership behaviours refer to the behaviours of leaders that influence followers through a series of rational exchanges or bargains that enable each follower to reach his or her goal (Bass & Avolio, 1997).

c. Organisational culture refers to a pattern of norms, values, beliefs, and attitudes that influence behaviours within an organisation. According to Denison & Mishra (1995), there are four dimensions of organisational culture; namely involvement, consistency, adaptability, and mission.

d. Knowledge management practices refer to formalised and active practices to create, manage, and optimise knowledge within an organisation (Wong & Aspinwall, 2004). Nonaka & Konno (1998) identified four main KM practices in organisations; namely socialisation, externalisation, internalisation, and combination.

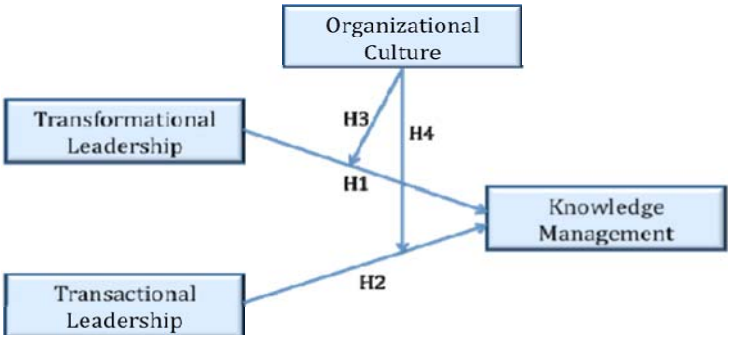


Figure 3-1 Proposed Conceptual Model

3.2. Hypotheses Development

The proposed conceptual model presented above broadly depicts the possible relationships connecting the four constructs (transformational and transactional leadership, organisational culture, and KM practices). To confirm these relationships, a literature search was conducted to find the theoretical evidence upon which the hypothetical relationships linking the model constructs are built. These relationships were proposed as a set of research hypotheses addressing the research questions. The development of these hypotheses is discussed in the following sections

3.2.1. Relationship Between Leadership Behaviours and KM Practices

The conceptual model (Figure 3-1) indicates potential relationships between transformational and transactional leadership behaviours and KM practices. However, these relationships are based on a broad theoretical perspective with limited empirical evidence.

Several prior studies have focused on the relationships among transformational and transactional leadership, organisation commitment, job satisfaction, job performance, and organisational learning (Crawford, 2005; Lam, 2002; Ogbonna & Harris, 2000; Vera & Crossan, 2004; Vincent, 2006; Xenikou & Simosi, 2006). Recent studies conducted by Politis (2001, 2002) and Crawford (2005), which established an argument that transformational/transactional leadership behaviours are related to knowledge acquisition attributes and knowledge management, are the most relevant studies to support the

proposed hypotheses.

Politis (2001) found that self-management, and transformational and transactional leadership styles are positively correlated to some dimensions of knowledge acquisition attributes. Consideration and initiating structure leadership, however, are not, and are negatively related to knowledge acquisition attributes. Politis (2002) noted that the dimension of attributed charismatic leadership generally has a positive and significant relationship with the knowledge acquisition of knowledge workers. In particular, charismatic leaders are important in providing the vision and energy for knowledge sharing and sustaining effective knowledge management in practice (Politis, 2002).

Among the most specific findings in Crawford's (2005) research study is the strong relationship between transformational leadership and knowledge management behaviours. In relation to transactional leadership and knowledge management, Crawford (2005) also found significant correlations between knowledge management and contingent rewards, and a significant negative correlation with management-by-exception. These findings led to the presumption that transformational and transactional leadership behaviours positively contribute to KM practices; hence, the first couple of research hypotheses:

H1: Transformational leadership behaviours are positively related with the type and frequency of knowledge management practices in an organisation.

H2: Transactional leadership behaviours are positively related with the type and frequency of knowledge management practices in an organisation.

3.2.2. The Moderating Effects of Organisational Culture

Although there is no empirical study examining the effect of organisational culture on the influence of transformational/transactional leadership on knowledge management, the literature review revealed that organisational culture has an impact upon leadership (Avolio & Bass, 1995; Block, 2003; Howell & Avolio, 1993; Ogbonna & Harris, 2000). Howell and Avolio (1993) contend that leaders in an organisation that is high in support for innovation (characterised as open to creative suggestions, innovations, and risk taking) would have higher levels of performance. The findings of their study suggest that transformational leaders do perform better in environments that are described by followers

as innovative. Consequently, leaders need to be attentive to the conservatism reflected in beliefs, values, assumptions, and rites and ceremonies that are embedded in a culture, which can hinder efforts to change the organisation (Bass & Avolio, 1993). They need to modify key aspects of culture, when possible, to fit with the new directions desired by the leadership and membership of the organisations.

Similarly, Ogbonna and Harris's (2000) study provides some empirical evidence on the joint effect of organisational culture and leadership on organisational performance. They found that supportive and participative leadership is indirectly and positively linked to performance *via* the innovative and competitive cultures, whereas instrumental (task oriented) leadership has an indirect negative effect on performance. Ogbonna and Harris (2000) interpreted their findings as providing support for proposition that the connection between leadership styles and performance is mediated by the nature and form of organisational culture that exists.

Therefore, it can be deduced from the literature that the effectiveness of a leader is viewed as the product of his or her ability to create a culture that supports a broad range of adaptive, stabilizing, and strategic activities. This implies that the leader who lacks cultural insight cannot lead effectively. In light of these arguments, this study postulates that the contribution of leadership behaviours on KM practice is contingent upon the type of organisational culture. This foregoing presumption has led to the third and fourth hypotheses:

H3: Organisational culture moderates the relationship between transformational leadership and knowledge management.

H4: Organisational culture moderates the relationship between transactional leadership and knowledge management.

3.3. Philosophical Assumptions and Research Approach

According to Guba and Lincoln (1994), a paradigm is a framework or set of 'basic beliefs', and that researchers need to understand the nature of reality, to identify the relationship between variables, and to specify appropriate methods for conducting particular research. There are many paradigms for social sciences such as Positivism, Realism, Post-

positivism, Critical theory, and Constructivism (Gray, 2004).

Positivism, sometimes referred to as “scientific method” or “science research”, is “based on the rationalistic, empiricist philosophy” (Mertens, 1998, p. 8) and “reflect[s] a deterministic philosophy in which cause probably determine[s] effects or outcomes” (Creswell, 2003, p. 7). The positivism paradigm assumes that one reality is driven by universal laws and truth. Research adopting this paradigm is assumed to be objective and independent. Problem solving under this paradigm starts with formulating hypotheses that are subjected to empirical testing through quantitative methods (Buttery & Buttery, 1991). Neuman (2006) notes that positivists consider reality to be apprehensible and measurable with zero error, and use exact and rigorous measures. For this reason, the positivism paradigm is not suitable for research that deals with variables in a complex, social, and real-life experience.

Post-positivism is another paradigm often adopted in the social sciences. It was developed to overcome the major disadvantages of positivism (Guba & Lincoln, 1994) by arguing that, despite the existence of the real world that need to be discovered, it is independent of researchers and open to different perceptions (Easton, 1998). These perceptions are not reality but merely lenses used to obtain a better picture of that particular reality. In other words, post-positivism emphasises the importance of multiple measures and observations, each of which may possess different type of errors. Triangulation needs to be applied across these multiple erroneous sources to get a better picture of what is happening in reality (Godfrey & Hill, 1995).

Under the post-positivism paradigm, researchers tend to emphasise deductive logic in which research is influenced by a theory/hypothesis reflected in a predominantly formal writing style (Onwuegbuzie, 2002). This paradigm also emphasises the objectivity of the researcher by triangulating across multiple fallible perspectives while simultaneously acknowledging the probability of bias (Guba & Lincoln, 1994). Based on this description, it can be claimed that this research is best described as following the post-positivism paradigm.

3.4. Research Design

Research design is important as it serves as a blueprint for meeting the established research objectives. Moreover, it helps researchers arrive at the answer to research questions whilst effectively controlling the variance through logic that links the data to be collected to the initial research questions. Generally, research design involves a series of rational decision-making choices, which must be sensibly chosen by the researchers, with reference to the purpose of the study, the study setting, the extent of the researcher's interference, the time horizon, and the unit of analysis. Furthermore, decisions are made regarding the type of sample and data collection methods to be used, how the variables are to be measured, and how the concepts and variables will be analyzed (Cavana, Sekaran, & Delahaye, 2001). All these research activities and processes are discussed in the following sections.

3.4.1. Details of Study

The primary objective of this investigation is to explore the relationship between leadership and knowledge management practices and to determine if organisational culture moderates the relationship between leadership and knowledge management. A quantitative approach is used in this study. According to Huysamen (1997), "description of quantitative research typically discerns a cycle of successive phases of hypothesis formulation, data collection, analysis and interpretation" (p. 1). In addition, a large portion of the data analysis of quantitative research is statistical, striving to show that the world can be looked at in terms of one reality; this reality, when isolated in context, can be measured and understood. This perspective is known as positivism (Gay & Airasian, 2000).

Using a deductive approach, quantitative research seeks to establish facts, make predictions, and test hypotheses that have already been stated. A descriptive study seeks to describe the current status of the phenomenon to explore what is going on or what exists in a situation (Isaac & Michael, 1971). Correlational analysis studies the relationship among variables (Tabachnick & Fidell, 2007). Therefore, the present study is proposed as the descriptive and correlational study. A quantitative methodology is appropriate for this study in order to reduce error, control biases, remove unwanted influences, and conduct analysis through objective measurement and statistical techniques. Moreover, the author is an objective observer, who neither participated in, nor influenced, the subject being studied.

Pursuant to a correlational analysis, the independent variables in this study are: (1) transformational leadership behaviours, containing the dimensions idealised influence attributed, idealised influence behaviour, inspirational motivation, intellectual simulation, and individualised consideration; and (2) transactional leadership behaviours, including the dimensions contingent reward, active management by exception, passive management by exception, and laissez-faire. The moderating variable is organisational culture. The items used to capture the properties of organisational culture – mission, adaptability, involvement, and consistency – are all adapted from Fey & Denison (2003). Research participants in this study will be asked to describe the leadership behaviours and the culture of their company.

Finally, the dependent variable is knowledge management practices in organisation. Knowledge management practice is assessed by utilizing Becerra-Fernandez and Sabherwal's (2001) knowledge management process assessment questionnaire which divides knowledge management practices into four dimension: externalisation, combination, socialisation, and internalisation. The participants of the survey will be asked to assess how their organisations implement knowledge management in terms of these four dimensions.

3.4.2. Research Setting

This study collects people's perception of their leadership behaviours, organisational culture, and KM practices. The research setting for this study is Small-to-Medium Sized Enterprises (SMEs) in various industries in Australia. Although there is no official or universally accepted definition for an SME, according to the OECD (Organisation for Economic Co-operation and Development) countries, of which Australia is one, an SME is defined as an enterprise that has less than 500 employees (Ayyagari, Beck, & Demirguc-Kunt, 2007).

One of the main characteristics of SMEs is that the hierarchy is often contracted, and decision making is centralised at the owner/manager level. The organisation chart is rarely formalized (Egbu, Hari, & Renukappa, 2005). In SMEs, the owner/manager's personality, skills, responsibilities, attitudes, and behaviours have a decisive influence on the

organisation strategy, thus he/she has a significant influence in supporting organisational knowledge programs and practices (Egbu, et al., 2005; Humphreys, McAdam, & Leckey, 2005). Similarly, Ghobadian & Gallear (1997) found that visibility of leadership and improvement teams are easier in SMEs.

Moreover, in SMEs, the people dimension is easier to tackle in face-to-face relationships because of the lower employees (Temtime, 2003). The communication in SMEs business is more oral and informal in nature than in large ones (Dalley & Hamilton, 2000). Accordingly, Schmidt (1990) argues that culture and cultural fit are more important in SMEs than other organisations because a SME is likely to be entirely enveloped in a culture; in a large organisation, several cultures may be present.

More importantly, the development of the knowledge management field has led to the identification of various critical factors for KM success. However, prior research has explored them predominantly from a large company perspective (Wong & Aspinwall, 2005). There is an abundance of literature describing how various large companies are successful practicing KM. This study is additionally limited by cost and the accessibility of the database. Therefore, the size of the population used for survey is limited to SMEs operating in Australia.

3.4.3. Sample and Sampling Method

According to Neuman (2006), sampling, like random assignment, is a process of systematically selecting cases for inclusion in a research project. A researcher uses a set of cases (elements) or samples, which are more manageable and cost effective to work with than a pool of all the cases (Zikmund, 2003); sampling cuts costs, reduces labour requirement, and quickly gathers vital information. A *sampling element* is the unit of analysis, or case, in a population. In this study, the sampling unit is the company or organisation, which is an element of enterprises in Australia. The sampling frame is the list of the profitable SMEs in Australia sourced from the Business Who's Who of Australia (BWW) database, a large database that includes virtually all organisations and companies operating in Australia. The research population was comprised of approximately 1,000 randomly selected firms.

3.4.4. Data Collection Method

The use of key informants in organisations has been a popular method for data collection in many research contexts (Huber & Power, 1985). Usually, these respondents are the senior ranks of the organisation, residing at middle managers, top managers and executive managers. Those informants can provide the researcher with the data required to conduct research since they have important information about the organisational events. Their responses are account of facts, beliefs, activities and motives related to prior events.

For the purpose of this study, the respondents must be knowledgeable of the organisational characteristics and KM practices in their organisation. For these reasons, it is possible to argue that questionnaires should be forwarded to the CKO (Chief Knowledge Official) or CIO (Chief Information Official) or the knowledge manager; such positions are still not common in SMEs (Jarrar, 2002). Therefore, this study targeted managerial staff members because they frequently interact with organisational members of various department and of different job levels (Evans, 2003), and have a good knowledge of organisational members, knowledge management practices within the organisation, and a more holistic view of the organisation as a whole (J. W. Gilley & Maycunich, 2000).

Since the unit of analysis for this study is organisation – that is, the subject matter is the respondents' organisations, measured by the perception of the respondents – a single form approach is deemed to be appropriate. While the single form approach allows smaller pools of respondents, it eliminates the potential for bias and skew in the results from the multiform approach due to an uneven number of returns across the organisation (Thiagarajan & Zairi, 1998). It also allows accurate and precise demographic to variable analysis to be carried out. The multiform approach exposes some confusion in terms of the unit of analysis in some of the studies. Postal mail, then, was chosen as the primary data collection method.

The three major reasons for the mail survey were: first, mail questionnaire can cover a wide geographical area (Sekaran, 2003); second, through such a survey it is easier to reach a large number of respondents and obtain a generalised view of the situation in the research target; third, this method had been commonly used in recent studies in the field (Crawford, 2005; Moffett, et al., 2003a; Politis, 2001). Nevertheless, to improve the response rate, a

web-based version of the questionnaire was also developed as an alternative method for respondents to complete the survey online.

3.5. Research Instrumentations

This study employs quantitative methods derived from the research of well-established scholars in the field (Bass, 1990; Bass & Avolio, 1997; Becerra-Fernandez & Sabherwal, 2001; Denison, 1990; Denison & Mishra, 1995; Fey & Denison, 2003). While the survey approach presents some methodological and conceptual challenges as outlined by Rousseau (1990), it was assumed that the quality of information gathered from such a comprehensive exploratory analysis would outweigh the suggested limitations associated with this method. In addition, the approach presented minimal disruption to the participant organisation in terms of time requirement. Furthermore, while the quantitative approach employed in this study may not allow for an analysis of the deepest levels of culture defined by Schein (1992), it allows the researcher to examine the perceptual realities of the respondents. Behaviour and attitudes are determined not by objective reality but by the actor's perception of reality (Ashkanasy, Broadfoot, et al., 2000), thus it is clearly appropriate to focus on perception rather than on reality. Lastly, it is assumed that the selection of well-known measurement tools would facilitate the opportunity to add to the body of established findings in the research literature.

Thus self-administered survey is used to collect the data on four constructs: transformational/transactional leadership, organisational culture and knowledge management practices. The survey items are adapted from existing instruments used in the past research. The survey questionnaire was also reviewed and approved for ethical clearance by Griffith University Human Research Ethics Committee. The questionnaire for the study has four sections (see Appendix A):

(1) Multifactor Leadership Questionnaire (MLQ – 5X Short Form) (Bass & Avolio, 1997).
(2) Denison Organisational Culture Survey (DOCS) (Fey & Denison, 2003).
(3) Knowledge Management Practices: An Assessment Questionnaire (Sabherwal & Becerra-Fernandez, 2003).
(4) Background information of the respondents and organisation.

3.5.1. Multifactor Leadership Questionnaire (MLQ – 5X Short Form)

The independent variable in this study is transactional and transformational leadership, as measured by the Multifactor Leadership Questionnaire (MLQ − Form 5X). The MLQ 5X was used in an effort to capture broader range of leadership styles including transformational, transactional, and non-transactional laissez-faire leadership (Northouse, 2001).

The MLQ Form 5X assesses leadership in both business and non-business environments. This instrument has been revised several times over the past two decades to address the criticisms surrounding its component factors and psychometric properties (Avolio & Bass, 1995), such as the instability of MLQ and multi-collinearity among transformational leadership scales (Antonakis, Avolio, & Sivasubramaniam, 2003). Extensive psychometric testing with the use of various statistical methods was performed. The original instrument developer and colleagues added and deleted items, which led to the development of the current MLQ version (Antonakis, et al., 2003).

The current MLQ Form 5X contains 45 items; 36 items present the nine leadership factors (each leadership scale is comprised of four items) and 9 items assess the three leadership outcomes. For the purpose of this study, only 36 items are used. These items present and measure the key aspects of transformational and transactional leadership constructs. Transformational leadership behaviours measured by MLQ are the idealised influence attributed, the idealised influence behaviour, the inspirational motivation, the intellectual stimulation, and the individualised consideration. Transactional leadership behaviours measured by the MLQ are contingent reward, active management by exception, passive management by exception, and laissez-faire. The MLQ Form 5X uses a 5-point 0-4 Likert scale. The anchors used to evaluate the MLQ factors presented are: 0 = not at all, 1 = once in a while, 2 = sometimes, 3 = fairly often, and 4 = frequently, if not always (Bass & Avolio, 1997).

The scales used in the MLQ Form 5X have been found to be reliable and valid (Antonakis, et al., 2003; Avolio, Bass, & Jung, 1999; Bass, et al., 2003; Bycio, Hackett, & Allen, 1995; Gellis, 2001; Howell & Hall-Merenda, 1999; Lowe, Kroeck, & Sivasubramaniam, 1996). Bass and Avolio (1997) based their assessment of reliability on the review of nine

empirical studies that used the MLQ Form 5X. The reliability scales were high, including those assessing outcomes. In a meta-analysis of 22 published and 16 unpublished studies, Lowe et al. (1996) found a strong relationship between individual leadership factors and transformational and transactional styles. Avolio, et al. (1999) concluded that the psychometric properties of the questionnaire confirmed the convergent and discriminate validity of the MLQ Form 5X. The convergent validity determined that the scales were consistent with the intent and concepts desired, while the discriminate validity ensured that the indicators discriminated the measuring concept. The goodness of fit index and reliabilities of the total items, for each individual factor, ranged from 0.74 to 0.94 (Avolio, et al., 1999). Avolio and his colleagues (1999) noted that the reliabilities in each data set of the MLQ Form 5X were reliable for the leadership style factor. Given the reliability of the scales, this survey tool has been determined appropriate for this study.

3.5.2. Measuring Organisational Culture (DOCS)

The moderating variable of this study is organisational culture. Denison's Organisational Cultural Survey (DOCS), adapted from Fey & Denison (2003) is selected to measure this construct. The DOCS measures an employee's perception of organisational culture (See Appendix A). It is based on a theoretical model of cultural traits that incorporates Schein's (1992) concepts of internal integration and external adaptation.

According to Denison and his associates (Denison, 1990, 1996, 2001; Denison, Haaland, & Goelzer, 2004; Denison, et al., 1995; Denison & Mishra, 1995), items capturing general properties of organisational culture are: involvement, consistency, mission, and adaptability. Involvement is defined as the organisation's ability to develop employee skills, engender ownership and create a team-based workforce that is committed to success. Consistency described an organisation in which an employee's behaviours are rooted in set of core values where leaders and followers are able to reach agreement (even when diverse points exist) and where business units and functions within the company work together. Mission reflects the organisation's ability to define a meaningful long-term direction that provides employees with a sense of focus and a common vision of the future. Finally, adaptability refers to the organisation's ability to translate the demands of the business environment into positive actions (i.e., risk-taking, learning from mistakes, having the ability to create change). Denison (1990; 1995) places an employee's beliefs and

assumptions about the organisation, its people and the marketplace, and the espoused values of the organisation, at the core of the model and suggests that these form the foundation for observed behaviours and actions.

The original OCS is a 60-item questionnaire in which correspondents are asked to describe their organisation by rating each statement using a 5-point Likert rating system (1 = strongly agree, 2 = agree, 3 = neutral, 4 = somewhat agree, and 5 = strongly agree). Each cultural trait is composed of three indices, each of which contains five items. However, due to the large number employed in this study, Fey and Denison's (2003) 36-item instrument is adopted in this study (nine items for each cultural trait, see Appendix A) . In assessing the construct validity, Fey & Denison (2003) found that factor loadings ranging from 0.67 to 0.89 indicate acceptable construct validity.

3.5.3. Knowledge Management Processes: An Assessment Questionnaire

In this research, participants describe knowledge management practices in their company using the Knowledge Management Processes: An Assessment Questionnaire. Becerra-Fernandez and Sabherwal (2001; 2003) created the questionnaire, which is based on empirical research, prior literature on knowledge management and feedback from a pre-test at the Kennedy Space Center (KSC) Chief Information Office.

The questionnaire was used to analyse the current types and uses of knowledge management to develop a detailed set of recommendation about knowledge management in organisations. Becerra-Fernandez and Sabherwal (2001; 2003) broadly view knowledge in two dimensions of explicit knowledge and tacit knowledge.

Based on the analysis of their notes and transcripts from the qualitative interview, Becerra-Fernandez and Sabherwal (2001; 2003) identified 37 knowledge management tools used in the KSC. Many of these tools have been highlighted in the literature (Davenport, et al., 1998; Nonaka & Konno, 1998; O'Dell, et al., 1998) and were examined by Becerra-Fernandez and Sabherwal to discover which tools were the keys to each knowledge management process. They then reduced the number of tools to 25 to avoid overloading study participants.

A question (on a five-point Likert scale) was included to evaluate the use of each of these KM tools. The respondents were asked to indicate how frequently each of these KM processes and tools are used to manage knowledge (Sabherwal & Becerra-Fernandez, 2003). The scale for their answers for the 25 items ranged from 1 = "very infrequently", through 3 = "moderate frequency", to 5 = "very frequently".

The exploratory factor analysis found six items to load on multiple dimensions (Becerra-Fernandez & Sabherwal, 2001). The remaining 19 items produced four factors, each within the expected set of items. The reliabilities of the measures for internalisation, externalisation, combination, and socialisation process are 0.74, 0.85, 0.8, and 0.66, respectively.

Using LISREL 7.20, Becerra-Fernandez and Sabherwal (2001; 2003) conducted a confirmatory analysis to assess the overall measurement model involving the 17 indicators of the knowledge management process. The questionnaire was divided into four classifications: externalisation, internalisation, socialisation, and combination.

3.5.4. Background Information

According to O'Reilly et al. (1991) employees tend to be attracted to organisations, which are similar to their personal values. Furthermore, Alexander et al. (1995) argued that organisational demographics are associated with organisational culture.

For these reasons the background information questions are used to profile the respondents and to summarize relevant information about their organisations. The seven demographic measures include the respondent's position in the organisation, organisational composition and size, and number of years the respondent had worked in the organisation.

The proposed demographic questions ensure that the respondents represent diverse organisations, leadership styles, and types of organisational cultures. Testing will not establish a causal relationship between demographics and the studied variables. However, the information will provide background data and gives an additional perspective on the organisations and the respondents (Golding, 2003). The data measured will confirm the

eligibility of the employees to participate in the study (work in an organisation for at least one year) and the diversity of the organisations surveyed.

3.6. Data Analysis

Multivariate statistics were employed to quantitatively analyse the data collected from the questionnaire survey. The techniques were considered suitable for the present study since they provided an analysis of the complicated data set, and that had many independent and dependent variables (Tabachnick & Fidell, 2007).

The descriptive data analysis was conducted, primarily, using the SPSS (version 16.00) program to obtain a feel for the data and to determine if the data met the basic assumption required prior to conducting multivariate data analyses. The analysis included an examination of the respondent profiles, and data screening (through assessing normality, means, standard deviations and standard error of the mean). It also included a preliminary analysis of the mean values to gain a broad picture of the respondent's perceptions regarding each construct, based on the entire survey population. The details and results of descriptive analysis are presented in Chapter 4.

Following descriptive analysis, a measurement scale, used in the questionnaire to capture the meaning of each model construct, was assessed for reliability and validity. To measure scale reliability, the study employed 'Cronbach's alpha', which provided an indication of how consistent the responses were across items within the scale. In addition, 'item-total correlations' were used to assess the degree to which a particular item belonged to its scale.

Although the measurement scales selected in this study were all well established, as reviewed in previous sections, it was necessary to confirm their reliability once again for this study due to their limited usage in the Australian SME context. Therefore, in addition to examining the reliability, the validity of the measurement scale was assessed using factor analysis; this was carried out using two sequential techniques: (1) Confirmatory Factor Analysis (CFA); and (2) Exploratory Factor Analysis (EFA). The main purpose of CFA is to confirm whether or not the collected data fit the theoretical constructs of transformational and transactional leadership behaviours, organisational culture and KM

practices. Since the CFA models focus solely on the links between factors and their measurement variables within the theorised frameworks (Byrne, 2001), the EFA was conducted to refine and uncover the appropriate factor structures to establish the best possible dimensionality, reliability, and validity of these scales based on the resources of the research project (Thompson, 2004). More details and results of the measurement scale assessment are presented in Chapter 5.

Once the reliability and validity of the measurement scales were established, a multiple regression analysis was employed to test the proposed hypotheses concerning the relationship among leadership behaviours, organisational culture, and knowledge management. According to Tabachnick and Fidell (2007), a multiple regression analysis is by far the most widely used in the business and social sciences to explore all types of dependence relationships. It is a powerful analytical tool used to determine which specific independent variables predicts the variance of dependent variables selected by the research (Hair, et al., 2006). Additionally, moderated regression analyses were performed to test the moderating effect of organisational culture on the association between leadership behaviours and knowledge management practices. Further details and results of regression analyses are presented in Chapter 6.

3.7. Chapter Summary

This chapter presented the research methodology employed by this study in studying the research questions and testing the hypotheses, based upon a critical review of the relevant literature. An integrated questionnaire, combining the Knowledge Management Practices: An Assessment Questionnaire (Becerra-Fernandez & Sabherwal, 2001), the Multifactor Leadership Questionnaire (MLQ – 5X Short Form) (Bass & Avolio, 1997), Organisational Culture Survey Questionnaire (OCS) (Fey & Denison, 2003), and a demographic questionnaire, was developed specifically for this study. The sample and unit of analysis was also identified as Small-to-Medium Sized Enterprises (SMEs) in various industries in Australia, which were sourced from the Business Who's Who of Australia database. Lastly, the analytical method was briefly discussed, including descriptive analysis, factor analysis, and multiple regression analyses.

CHAPTER 4

DATA PREPARATION

This Chapter details the initial step of the quantitative analysis of the study. The main purpose of this chapter is to examine the fundamental characteristics of the data to ensure that they were suitable for the statistical technique employed in the subsequent analysis stages. The first section presents the descriptive data analysis of demographics obtained from 157 participants. This is followed by a presentation of the data screening and results. In terms of normality, the outliers of data set, and the standard deviation and standard errors of mean. Accordingly, the preliminary findings of descriptive analyses, as interpreted from the mean values of each variable, are discussed.

4.1. Description of the Sample

The population of this study consisted of approximately 1,000 managers in various SMEs in Australia. Respondents came from a variety of business and organisational levels, geographic locations, backgrounds, and ages. Potential respondents were identified through the organisation's information from the list of profitable Small to Medium Sized Enterprises (SMEs) operating in Australia sourced from Business Who's Who of Australia database. This study focused only on people who occupy management positions as they frequently interact with organisational members of various departments and job levels, and have a good knowledge of organisational members, knowledge management practices within organisations, and a more holistic view of the organisation as a whole.

Respondents received follow-up notices until 157 completed valid questionnaires were received; this reflects an effective survey responses rate of 15.7%. The summary of demographic characteristics, presented in Table 4-1, described by type of business, number of employees, number of years with organisations, and positions in organisation.

The number of employees in respondents' companies: 30 (19.1%) had less than 20 employees, 25 (15.9%) less than 50 employees, 34 (21.7%) between 51-100 employees, 16 (10.2%) between 101-200 employees, and 52 (33.1%) between 210-500 employees.

Regarding the number of years respondents have been working with their current organisations, 73 (46.5%) reported between 1-5 years, 31 (19.7%) between 6-10 years, 40 (25.5%) between 11-20 years, and 13 (8.3%) over 21 years.

Table 4-1 Frequencies of Demographic Variables

	Frequency	Percentage (%)
Business		
Finance	13	8.3
Health	4	2.5
Engineering	28	17.8
Education	20	12.7
Services	17	10.8
Information Technology	17	10.8
Other	58	36.9
Employees Numbers		
20 and less	30	19.1
21-50	25	15.9
51-100	34	21.7
101-200	16	10.2
201-500	52	33.1
Year with Organisations		
1-5	73	46.5
6-10	31	19.7
11-20	40	25.5
Over 21	13	8.3
Position in Organisation		
Senior management	51	32.5
Middle management	72	45.9
Line management	34	21.7
Work Member		
Team leader	109	69.4
Team member	48	30.6

The majority of respondents for this study were at senior and middle management level, accounting for 32.5% and 44.9% respectively; 21.7% of respondent had been working at line management level. The demographic summary also reported 69.4% of the respondent mainly worked as a team leader, and 30.6% worked as a team member in the current organisation.

In general, the opinions given by the respondents provided useful and reliable information, since most of the respondents were in management positions and had a substantial history with their current employers. Hence, it was expected that the respondents have a good knowledge of organisational members and a holistic view of the organisation as a whole. Accordingly, the leadership behaviours, organisational culture, and knowledge

management practices with organisations were likely to be accurately reported.

4.2. Data Screening

Data screening is critical to prepare data for multiple regression analysis (Hair, et al., 2006). Screening through exploratory data analysis includes investigating for missing data, influential outliers, and distributional characteristics. Significant missing data result in convergent failures, biased parameter estimates and inflated fit indices (Shah & Goldstein, 2006). Influential outliers are linked to normality and skewness issues with observed variables. Assessing data normality (along with skewness and kurtosis) is important because model estimation methods are based on an assumptions of normality (Tabachnick & Fidell, 2007). Non-normal data may result in inflated goodness of fit statistics and underestimated standard errors (MacCallum, 1990), although these effects are lessened with the larger sample size (Shah & Goldstein, 2006). The following sections present the results of data screening for the collected data.

4.2.1. Missing Data

Missing data is one of the most pervasive problems in data analysis, since the incomplete questionnaires could bias the results. Missing data could also distort the practical sample size available for analysis (Hair, et al., 2006; Kline, 2005). As a consequence, statistical tests based on sample size, such as significant level, could be distorted. According to Hair et al. (2006), missing data results for two reasons, one is action on the part of respondent and the other is issue external to the respondent. A respondent might refuse to answer some of the questionnaire items due to company policy or to perceptions regarding the sensitive nature of the questions. An issue external to the respondent could simply be a data entry error, or data collection problems. Therefore, before removing questionnaires with missing values, the entire data were first examined to correct any possible data entry errors by comparing the original questionnaires to data entries in SPSS software. Hair et al. (2006) also suggested that cases with missing values on dependent variables be automatically excluded and cases with missing values on variables other than dependent variables be excluded on optional basis. Following Hair's (2006) mentioned rules, five cases were removed in this study due to the missing values in dependent or independent variables. Correspondingly, the composition of the final sample retained for analysis was 157 respondents.

4.2.2. Assessing Normality

The most fundamental assumption in multivariate analysis is normality, referring to the shape of the data distribution for a variable and its correspondence to the normal distribution (Hair, et al., 2006). Therefore, before applying analysis techniques, the normality of the data distribution was examined to determine if they meet the assumption to use multivariate techniques to test the hypotheses.

Normality of variables is assessed either by statistical or graphical methods. Two important components of normality are skewness and kurtosis (Tabachnick & Fidell, 2007). Skewness value provides an indication of the symmetry of the distribution; a skewed variable is a variable whose mean is not in the centre of the distribution. Kurtosis, on the other hand, provides information about the 'peakedness' or 'flatness' of a distribution compared with the normal distribution (Hair, et al., 2006).

A positively skewed distribution has its tail point to the right (i.e. relatively few large values), whereas negatively skewed distribution tails off to the left (i.e. relatively few small values). Positive kurtosis values indicate that the distribution is rather peaked, while kurtosis values below 0 indicate a distribution that is relatively flat (too many cases in the extremes). Theoretically, when a distribution is perfect distribution, the value of skewness and kurtosis are zero (rather an uncommon occurrence in the social research). Garson (2009) suggested that, for a distribution to be considered normal, both skewness and kurtosis of the distribution should fall between -2.00 to +2.00.

Tabachnick & Fidell (2007) posited that both aforementioned statistical tests are sensitive to sample size and recommended using the data's histogram, either as an alternative or in addition to inspection of skewness and kurtosis values, to adequately assessing normality. A histogram is drawn based on the frequency of the data values. Inspection of the shape of the histogram provides information about the distribution of scores on the continuous variable. If the data are normally distributed, the normal curve can be superimposed on the distribution. Visually examining the histogram of the data distribution of all variables showed that the shapes of all the distribution appeared reasonably normal, with most scores occurring in the centre and tapering out toward the extremes.

The results of normal distribution tests indicated that the absolute values of skewness and kurtosis of all variables, ranging from -0.921 to 0.869 and from -0.978 to 0.998 respectively, fell within the aforementioned recommended ranges of -2.00 to +2.00 (as shown in Tables 4-2 through to 4-5). These results, along with the inspection of data's histogram, provided support and justification for the normality of the data set.

4.2.3. Outliers Screening

In statistic, outliers are cases with scores that are substantially different from the rest (Hair, et al., 2006). For this reason, it is very important to screen the data to detect outliers, as they can potentially bias the mean and inflate the standard deviation (Tabachnick & Fidell, 2007). According to Kline (2005), cases with scores of more than three standard deviations beyond the mean may be considered as outliers. To detect such extreme deviations in this study, the entire scores of all 89 variables from all cases were converted into standardised z-scores. Any cases with an absolute value of z-scores (|z|) in excess of 3.29 at $p < 0.01$ were considered potential outliers (Tabachnick & Fidell, 2007). Tabachnick and Fidell (2007) also suggested that, for any variable, the number of such outliers should not be greater than approximately one percent. In this study, there were 2 variables contained cases with absolute z-scores greater than 3.29 (see Tables 4-2 through to 4-5), accounting for 0.65%; this was not excessive compared with the acceptable level of one percent.

To ensure the outliers did not significantly distort the data, the differences between the mean and the '*5% trimmed mean*' of each variable was examined. The 5% trimmed mean refers to a mean calculated from a set of cases in which those scoring in the top and the bottom five percent are removed (Pallant, 2007). By convention, the large difference (> 0.20) between the mean and the 5% trimmed mean indicates that the outlier may cause a problem to the data set (Pallant, 2007). In this study, all the calculated mean differences (Δ mean) were relatively small compared to 0.20, ranging from 0.01 to 0.09 (see Tables 4-2 through to 4-5). These results indicated that the detected outliers did not cause any problems to the data set. As a consequence, all 157 cases were retained for further statistical analyses.

4.2.4. Standard Deviations and Standard Errors of Mean

In a statistical analysis, standard deviation (SD) is a measure of how well the mean represents the observed data, whereas standard errors of the mean (SE) is an indication of how well a particular sample represents the population (Field, 2005). A large standard deviation indicates that the scores cluster more widely around the mean, thus the mean is not a good representation of the data. A small standard deviation, on the other hand, indicates less dispersed data points about the mean, thus adequately represents the data. Whilst SE values represent the variability of sample mean. A large SE means that there is a lot of variation between the means of the different samples, which suggests that the sample is a poor representative of the population. In contrast, a small SE represents a situation where most sample means are similar to the population mean; therefore the sample is an accurate reflection of the population. The values of SD and SE of all variables in this study were relatively small when compared to the means (see Tables 4-2 through to 4-5). Therefore, it can be reasonably concluded that the mean value can be used as a representative score for each variable in the data set. Additionally, the small values of the SE suggest that the sample used was sufficiently representative of the population.

4.3. Preliminary Findings of Descriptive Analyses

As described in the previous sections, the values of standard deviation of all variables were not large; therefore, the mean values were determined to adequately represent the overall response of each variable. This section focuses on evaluating and interpreting the mean values of all variables, calculated from the entire sample. The interpretation of such mean values was carried out with the reference to the 5-point scale format for all variables; the value of four (4) and (0) represented the highest and lowest score respectively for transformational/transactional leadership's scale; for organisational culture and knowledge management, the value of five (5) represented the highest score and one (1) indicated the lowest score.

Table 4.2 shows that respondents perceived their managers/leaders to have a sense of power, confidence in their own leadership, and respect for the followers. They are confident about achieving the organisation's goals and are optimistic about the future. Additionally, they consider the moral and ethical dimensions of decision making. With this leadership method, the leader seeks to raise the consciousness of followers by appealing to

higher ideals and moral values. Interestingly, despite exhibiting a high level of influence, the leaders' scores were low for intellectual stimulation. Evidently, spending time coaching and seeking different perspectives when solving problems were not main behaviours of these leaders when compared to other perceived behaviours (with higher mean scores).

Table 4.3 shows that, with the transactional leadership behaviours, respondents perceived their manager to display contingent reward leadership behaviour more than others. These leaders express satisfaction and promise rewards to their followers in exchange for successful completion of an assignment. Additionally, these leaders were perceived to display the passive and ineffective form of leadership. More specifically, leaders only intervened after noncompliance had occurred or when mistakes had already happened, and avoided making decisions and abdicated responsibility.

The level of organisational culture was generally perceived to be moderate, ranging from 3.19 to 3.94. Overall, organisational culture in Australian SMEs displayed strong in mission and adaptability dimensions. Evidently, organisations had a clear sense of purpose and direction, defining goals and strategic objectives, and expressing a vision of the future (variables OC28, OC29, and OC30). Additionally, organisations were found responsive and change-friendly to maintain competitive advantages, as indicated by variables OC19 to OC27. Nevertheless, the cultures were found highly consistent, well coordinated and integrated. It appeared that behavioural norms were rooted in core values, and both leaders and followers were able to reach agreement despite diverse points of view (variables OC11 to OC13). The organisational cultures were also described as having characteristics of involvement rather than normal bureaucracy. This high level of involvement and participation is reflected in empowering people, organising around teams, and developing human capacities, as indicated by variables OC4, OC5, OC6, and OC9. Consequently, executives, managers, and employees are committed and feel a strong sense of ownership. People at all levels feel that they have input into decisions that will effect their work and see a direct connection to the goals of the organisation.

In relation to knowledge management practices in organisations, internalisation was found to be the most frequent practices utilized in the organisations. Evidently, "learning by doing", "on-the-job training", "learning by observation", and "face-to-face meetings" were

among the highest scored variables compared with others (as shown in Table 4-5), thus indicating that individuals tended to acquire knowledge by re-experiencing what others have been through. High scores were also found in repositories of information, web pages (intranet and Internet), and databases, indicating effective communications, diffusion, integration, and systemisation of knowledge within the group and organisational levels within an organisation. Nevertheless, articulating tacit knowledge into explicit knowledge was not the main practice in the organisations, compared with others practices. Evidently, pointers of expertise, web-based discussion groups, and other collaboration tools were not frequently used.

4.4. Chapter Summary

The main purpose of the descriptive data analysis, as presented in this chapter, was to provide an understanding of the characteristics of the data collected from the questionnaire survey of Australian SMEs. Firstly, examining the profiles of the 157 respondents revealed that the opinions given by these respondents provided reliable and unbiased information according to their current positions, and the characteristics of the firms by which they were employed. The data set was screened and found to have an acceptable normal distribution, without extreme outliers. A further assessment for standard deviation and standard error of the mean indicated that a mean value could be used as a representative score for each variable, and that the sample used in the study sufficiently represented the populations. It was just considered as a suitable input for the subsequent measure scale analysis, which is presented in the next chapter.

The interpretations of the variables' mean values provided preliminary findings that indicated the overall characteristics of the leadership, organisational cultures and knowledge management practices as perceived by the respondents. In general, it appeared the leaders were confident and optimistic, and were highly respected by the employees. Equally important is the leader-follower relationships, based on rational exchanges or bargains that enabled each follower to reach his or her goal; for instance, promised rewards in exchange for successfully completing the assignments. Organisational culture was revealed to be strong in the mission dimension, indicated by evidence of a clear strategic plan and direction, expressed in the way that was meaningful to employers. The organisational cultures were also perceived as proactive in competition, and to favour

change and innovation to obtain competitive advantage. Ironically, organisations scored low in their ability to transfer and share knowledge at the organisational level, with the evidence of unusual decision-supporting systems, web-based discussion groups, and other team collaboration tools.

Table 4-2 Descriptive statistics for the 'transformational leadership behaviours' variables

	Variable Description	Missing Values	Cases with |z| > 3.29	Mean	5%Trimmed Mean	Δ Mean*	SD	SE	Skewness	Kurtosis
LD2	Re-examines critical assumptions to question whether they are appropriate	0.00%	0.00%	2.53	2.55	-0.02	0.944	0.075	-0.361	-0.240
LD6	Talks about his/her most important values and beliefs	0.00%	0.00%	1.93	1.92	0.01	1.155	0.092	0.037	-0.765
LD8	Seeks differing perspectives when solving problems	0.00%	0.00%	2.51	2.55	-0.04	1.010	0.081	-0.517	-0.291
LD9	Talks optimistically about the future	0.00%	0.00%	3.05	3.11	-0.06	0.830	0.066	-0.640	-0.064
LD10	Instills pride in me for being associated with him/her	0.00%	0.00%	2.57	2.62	-0.05	1.094	0.087	-0.501	-0.404
LD13	Talks enthusiastically about what needs to be accomplished	0.00%	0.00%	2.87	2.91	-0.04	0.921	0.073	-0.579	-0.168
LD14	Specifies the importance of having a strong sense of purpose	0.00%	0.00%	2.57	2.62	-0.05	1.094	0.087	-0.441	-0.531
LD15	Spends time coaching	0.00%	0.00%	1.82	1.80	0.02	1.222	0.098	0.112	-0.945
LD18	Goes beyond self-interest for the good of the group	0.00%	0.00%	2.60	2.65	-0.05	1.005	0.080	-0.696	0.119
LD19	Treats me as an individual rather than just a member of a group	0.00%	0.00%	3.02	3.11	-0.09	1.053	0.084	-1.006	0.489
LD21	Acts in the way that builds my respect	0.00%	0.00%	2.75	2.80	-0.05	0.985	0.079	-0.583	-0.119
LD23	Considers the moral and ethical consequences of decisions	0.00%	0.00%	2.76	2.82	-0.06	1.065	0.085	-0.632	-0.208
LD25	Displays a sense of power and confidence	0.00%	0.00%	2.96	3.04	-0.08	0.980	0.078	-0.834	0.484
LD26	Articulates a compelling vision of the future	0.00%	0.00%	2.64	2.70	-0.06	1.087	0.087	-0.600	-0.233
LD29	Considers me as having different needs, abilities, and aspirations from others	0.00%	0.00%	2.24	2.26	-0.02	1.177	0.094	-0.374	-0.560
LD30	Gets me to look at problems from many different angles	0.00%	0.00%	2.38	2.41	-0.03	1.022	0.082	-0.278	-0.415
LD31	Helps me to develop my strengths	0.00%	0.00%	2.49	2.54	-0.05	1.136	0.091	-0.521	-0.360
LD32	Suggests new ways of looking at how to complete assignments	0.00%	0.00%	2.29	2.31	-0.02	0.974	0.078	-0.267	-0.142
LD34	Emphasizes the importance of having a collective sense of mission	0.00%	0.00%	2.51	2.55	-0.04	1.004	0.080	-0.354	-0.260
LD36	Expresses confidence that goals will be achieved	0.00%	0.00%	2.88	2.95	-0.07	0.929	0.074	-0.921	0.998

Δ Mean* = Mean – 5% trimmed mean; Standard deviation (SD); Standard error of mean (SE)

Table 4-3 Descriptive statistics for the 'transactional leadership behaviours' variables

	Variable Description	Missing Values	Cases with |z| > 3.29	Mean	5%Trimmed Mean	Δ Mean*	SD	SE	Skewness	Kurtosis
LD1	Provides me with assistance in exchange for my efforts	0.00%	0.00%	2.83	2.89	-0.06	0.949	0.076	-0.790	0.402
LD3	Fails to interfere until problems become serious	0.00%	0.00%	2.27	2.30	-0.03	1.196	0.095	-0.090	-0.978
LD4	Focuses attention on irregularities, mistakes, and deviations from standards	0.00%	0.00%	1.91	1.90	0.01	1.184	0.095	0.034	-0.875
LD5	Avoids getting involved when important issues arise	0.00%	0.00%	3.18	3.26	-0.08	1.003	0.080	-0.983	-0.053
LD7	Is absent when needed	0.00%	0.00%	3.00	3.07	-0.07	1.006	0.080	-0.764	-0.162
LD11	Discusses in specific terms who is responsible for achieving performance targets	0.00%	0.00%	2.39	2.43	-0.04	1.042	0.083	-0.285	-0.383
LD12	Waits for things to go wrong before taking actions	0.00%	0.00%	2.82	2.89	-0.07	1.114	0.089	-0.726	-0.219
LD16	Makes clear what one can expect to receive when performance goals are achieved	0.00%	0.00%	2.03	2.04	-0.01	1.201	0.096	-0.197	-0.858
LD17	Shows that he/she is a firm believer in "if it ain't broke, don't fix it"	0.00%	0.00%	2.21	2.23	-0.02	1.166	0.093	-0.074	-0.774
LD20	Demonstrates that problems must become chronic before taking action	0.00%	0.00%	2.89	2.97	-0.08	1.136	0.091	-0.796	-0.306
LD22	Concentrates his/her full attention on dealing with mistakes, complaints and failures	0.00%	0.00%	1.76	1.74	0.02	1.127	0.090	0.422	-0.633
LD24	Keeps track of all mistakes	0.00%	0.00%	2.33	2.36	-0.03	1.157	0.092	-0.072	-0.956
LD27	Directs my attention toward failures to meet standards	0.00%	0.00%	2.27	2.30	-0.03	1.106	0.088	-0.058	-0.705
LD28	Avoids making decisions	0.00%	0.00%	3.10	3.17	-0.07	0.975	0.078	-0.711	-0.657
LD33	Delays responding to urgent questions	0.00%	0.00%	2.84	2.89	-0.05	1.029	0.082	-0.534	-0.542
LD35	Expresses satisfaction when I meet expectations	0.00%	0.00%	2.89	2.94	-0.05	1.019	0.081	-0.762	-0.176

Δ Mean* = Mean – 5% trimmed mean; Standard deviation (SD); Standard error of mean (SE)

Table 4-4 Descriptive statistics for the 'organisational culture' variables

	Variable Description	Missing Values	Cases with |z| > 3.29	Mean	5%Trimmed Mean	Δ Mean*	SD	SE	Skewness	Kurtosis
OC1	Decisions are usually made at the level where the best information is available	0.00%	0.00%	3.76	3.81	-0.05	0.935	0.075	-0.705	0.115
OC2	Information is widely shared so that everyone can get it	0.00%	0.00%	3.42	3.45	-0.03	1.122	0.090	-0.281	-0.862
OC3	Everyone believes that he or she can have a positive impact	0.00%	0.00%	3.69	3.72	-0.03	0.926	0.074	-0.712	0.067
OC4	Working is like being a part of a team	0.00%	0.00%	3.80	3.86	-0.06	1.040	0.083	-0.771	-0.025
OC5	We rely on coordination to get work done, rather than hierarchy	0.00%	0.00%	3.87	3.94	-0.07	1.044	0.083	-0.891	0.160
OC6	Teams are the primary building blocks of this organisation	0.00%	0.00%	3.77	3.83	-0.06	1.073	0.086	-0.664	-0.335
OC7	We constantly improve compared with our competitors	0.00%	0.00%	3.66	3.68	-0.02	0.889	0.071	-0.150	-0.443
OC8	We continue to invest in the skills of employees	0.00%	0.00%	3.65	3.72	-0.07	1.103	0.088	-0.750	-0.005
OC9	The capability of people is viewed as an important source of competitive advantage	0.00%	0.00%	3.94	4.02	-0.08	1.039	0.083	-0.891	0.222
OC10	Leaders and managers follow the guidelines that they set for the rest of the organisation	0.00%	0.00%	3.68	3.72	-0.04	0.981	0.078	-0.561	-0.171
OC11	There is a clear and consistent set of values that governs the way we do business	0.00%	0.00%	3.94	4.01	-0.07	1.004	0.080	-0.909	0.307
OC12	Ethical codes guide our behaviours	0.00%	0.00%	3.92	3.98	-0.06	1.000	0.080	-0.846	0.219
OC13	When disagreements occur, we work hard to achieve solutions that benefit both parties	0.00%	0.00%	3.87	3.91	-0.04	0.914	0.073	-0.497	-0.498
OC14	It is easy to reach consensus, even on difficult issues	0.00%	0.00%	3.33	3.35	-0.02	0.983	0.078	-0.420	-0.546
OC15	We often have trouble reaching agreement on key issues	0.00%	0.00%	3.19	3.21	-0.02	1.069	0.085	-0.198	-0.583
OC16	People from different organisational units still share a common perspective	0.00%	0.00%	3.49	3.51	-0.02	0.972	0.078	-0.355	-0.443
OC17	It is easy to coordinate projects across functional units in this organisation	0.00%	0.00%	3.29	3.32	-0.03	1.092	0.087	-0.293	-0.674
OC18	There is good alignment of goals across levels of this organisation	0.00%	0.00%	3.64	3.68	-0.04	1.007	0.080	-0.591	-0.187
OC19	We are very responsive	0.00%	0.00%	3.89	3.96	-0.07	0.971	0.078	-0.801	0.308
OC20	We respond well to competitors and other changes	0.00%	0.00%	3.72	3.76	-0.04	0.912	0.073	-0.544	0.034
OC21	We continually adopt new and improved ways to do work	0.00%	0.00%	3.68	3.72	-0.04	0.942	0.075	-0.658	0.321
OC22	Customer comments and recommendations often lead to changes	0.00%	0.00%	3.71	3.76	-0.05	0.948	0.076	-0.769	0.239
OC23	Customer input directly influences our decisions	0.00%	0.00%	3.56	3.61	-0.05	1.015	0.081	-0.670	-0.036
OC24	The interests of the final customer often get ignored in our decisions	0.00%	0.00%	3.71	3.74	-0.03	0.995	0.079	-0.568	-0.382
OC25	We view failure as an opportunity for learning and improvement	0.00%	0.00%	3.69	3.75	-0.06	0.965	0.077	-0.825	0.514
OC26	We encourage and reward those who take risk	0.00%	0.00%	3.24	3.27	-0.03	0.996	0.080	-0.346	-0.190
OC27	We make certain that we coordinate our actions and efforts between different units	0.00%	0.00%	3.45	3.48	-0.03	0.950	0.076	-0.474	-0.225
OC28	There is a long-term purpose and direction	0.00%	0.65%	3.93	4.03	-0.10	1.069	0.085	-1.135	0.952
OC29	There is a clear mission that gives meaning and direction to our work	0.00%	0.00%	3.83	3.92	-0.09	1.079	0.086	-0.842	0.241

Δ Mean* = Mean – 5% trimmed mean; Standard deviation (SD); Standard error of mean (SE)

Table 4-4 Descriptive statistics for the 'organisational culture' variables (cont.)

	Variable Description	Missing Values	Cases with |z| > 3.29	Mean	5%Trimmed Mean	Δ Mean*	SD	SE	Skewness	Kurtosis
OC30	There is a clear strategy for the future	0.00%	0.00%	3.69	3.77	-0.08	1.158	0.092	-0.708	-0.284
OC31	There is widespread agreement about goals of this organisation	0.00%	0.00%	3.68	3.74	-0.06	1.128	0.090	-0.662	-0.368
OC32	Leaders of this organisation set goals that are ambitious, but realistic	0.00%	0.65%	3.71	3.79	-0.08	1.064	0.085	-0.879	0.453
OC33	The leadership has clearly stated the objectives we are trying to meet	0.00%	0.00%	3.77	3.85	-0.08	1.097	0.088	-0.831	0.057
OC34	We have a shared vision of what this organisation will be like in the future	0.00%	0.00%	3.58	3.64	-0.06	1.110	0.089	-0.645	-0.222
OC35	Leaders of our organisation have a long-term orientation	0.00%	0.00%	3.73	3.81	-0.08	1.168	0.093	-0.735	-0.269
OC36	Our vision creates excitement and motivation for our employees	0.00%	0.00%	3.43	3.48	-0.05	1.111	0.089	-0.412	-0.512

Δ Mean* = Mean – 5% trimmed mean; Standard deviation (SD); Standard error of mean (SE)

Table 4-5 Descriptive statistics for the 'knowledge management' variables

	Variable Description	Missing Values	Cases with |z| > 3.29	Mean	5%Trimmed Mean	Δ Mean*	SD	SE	Skewness	Kurtosis
KM1	Learning by doing	0.00%	0.00%	4.18	4.22	-0.04	0.629	0.050	-0.474	0.850
KM2	On-the-job training	0.00%	0.00%	3.89	3.95	-0.06	0.917	0.073	-0.844	0.526
KM3	Learning by observation	0.00%	0.00%	3.60	3.62	-0.02	0.831	0.066	-0.489	0.009
KM4	Face-to-face meeting	0.00%	0.00%	3.69	3.72	-0.03	0.758	0.061	-0.659	0.726
KM5	The use of apprentices and mentors to transfer knowledge	0.00%	0.00%	3.06	3.06	0.00	1.045	0.083	0.021	-0.656
KM6	Brainstorming retreats or camps	0.00%	0.00%	2.20	2.14	0.06	1.096	0.087	0.592	-0.507
KM7	Employee rotation across areas	0.00%	0.00%	2.49	2.44	0.05	1.078	0.086	0.445	-0.413
KM8	Cooperative projects across directorates	0.00%	0.00%	2.68	2.69	-0.01	0.934	0.075	0.056	-0.602
KM9	Repositories of information, best practices, and lessons learned	0.00%	0.00%	3.04	3.04	0.00	1.067	0.085	0.019	-0.494
KM10	Web pages (Intranet and Internet)	0.00%	0.00%	3.39	3.44	-0.05	1.131	0.090	-0.368	-0.586
KM11	Databases	0.00%	0.00%	3.36	3.40	-0.04	1.115	0.089	-0.378	-0.481
KM12	Modeling based on analogies	0.00%	0.00%	2.46	2.44	0.02	1.003	0.080	0.366	-0.686
KM13	Capture and transfer of experts' knowledge	0.00%	0.00%	3.00	3.00	0.00	1.056	0.084	-0.099	-0.777
KM14	Decision support systems	0.00%	0.00%	2.69	2.67	0.02	1.091	0.087	0.048	-0.769
KM15	Pointers to expertise (skill "yellow pages")	0.00%	0.00%	2.53	2.48	0.05	1.118	0.089	0.429	-0.486
KM16	Chat group/web-based discussion groups	0.00%	0.00%	2.11	2.02	0.09	1.174	0.094	0.869	-0.201
KM17	Groupware and other team collaboration tools	0.00%	0.00%	2.40	2.33	0.07	1.131	0.090	0.558	-0.440

Δ Mean* = Mean – 5% trimmed mean; Standard deviation (SD); Standard error of mean (SE)

CHAPTER 5

ASSESSING MEASUREMENT MODELS

This chapter reports the results of the analysis of the measurement scales utilised in the questionnaire in order to gauge the constructs proposed in the conceptual model. Although all measured variables in these scales were derived from previous research and an extensive literature review, assessments of reliability and validity were deemed necessary since these variables had not been extensively operationalised within the Australian context. Given that each of the model constructs was measured by an independent scale, the reliability of each scale was tested through an assessment of internal consistency and inter-total correlations.

Following assessment of scale reliability, this study employed both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to assess the validity of the scales. Section 5.3 outlines the CFA, which was used to test the theorised measurement models and theories concerning the underlying structure based on the sample data (Roberts, 1999; Thompson, 2004).

Because the CFA models focused solely on the links between factors and their measurement variables within the theorised frameworks (Byrne, 2001), the exploratory factor analysis (EFA) reported in Section 5.4, was conducted to refine and uncover the appropriate factor structures to establish the best possible dimensionality, reliability, and validity of these scales, based on the data resources of this research project (Thompson, 2004).

5.1. Scale Reliability

Scale reliability comes to the forefront when variables developed from summated scales are used as predictor components in objective models (Santos, 1999). According to Peterson (1994), there is virtual consensus among researchers that, for a scale to be valid and possess practical utility, it must be reliable. He also stated that, conceptually,

reliability is defined as the degree to which measures are free from error and yield consistent results. Bryman & Cramer (2005) defined reliability as the degree to which an instrument measures the same way each time it is used under the same conditions with the same subject.

In this study, the survey questionnaire used four scales to measure the constructs proposed in the research conceptual framework (Figure 3.1), namely transformational and transactional leadership behaviours, organisational culture, and knowledge management. To ensure that such a set of measurement scales consistently and accurately captured the meaning of the constructs, an analysis of scale reliability was performed through an assessment of internal consistency and inter-total correlations. Each of the assessment procedures and associated results are presented in the following sections.

5.1.1. Internal Consistency

Internal consistency refers to the degree to which responses are consistent across the items (variables) within a single measurement scale (Kline, 2005). According to Cortina (1993), Cronbach's Alpha remains the most widely used measure of scale reliability. A low Cronbach's Alpha coefficient indicates that variables may be too heterogeneous, thus perform poorly in representing the measure (i.e. the construct) (Santos, 1999). Accordingly, Cronbach's Alpha above 0.70 is considered an acceptable indicator of internal consistency, and the values of 0.60 to 0.70 are at the lower limit of acceptability as suggested in the literature (Bryman & Cramer, 2005; Hair, et al., 2006; Pallant, 2007; Santos, 1999).

Table 5-1 presents the Cronbach's alpha for four scales: Transformational Leadership Behaviours (20 items), Transactional Leadership Behaviours (16 items), Organisational Culture (36 items) and Knowledge Management Practices (17 items). The values of the alpha coefficient of all the scales ranged from 0.799 to 0.971, suggesting very good internal consistency reliability for the scales with this sample. Therefore, the measurement scales appear to consist of a set of consistent variables for capturing the meaning of the model constructs.

The Cronbach's Alpha values are, however, quite sensitive to the number of items in the scale (Pallant, 2007). When data have a multidimensional structure, Cronbach's Alpha is usually low (Bryman & Cramer, 2005); this is also true of short scales (e.g. scales with fewer than ten items). Technically speaking, Cronbach's Alpha is not a statistical test – it is a coefficient of reliability (or consistency) (Hair, et al., 2006; Santos, 1999). Therefore, it was suggested that analyses of the inter-total correlations for the items should be considered (Briggs & Cheek, 1986; Pallant, 2007)

Table 5-1 Reliability of Constructs

Construct's Measurement Scale	Cronbach's Alpha
Transformational Leadership Behaviours (MLQ – 5X Short Form) (20 items)	N of cases = 157 **Cronbach's Alpha = 0.925**
Transactional Leadership Behaviours (MLQ – 5X Short Form) (16 items)	N of cases = 157 **Cronbach's Alpha = 0.799**
Denison Organisational Culture Survey Questionnaire (DOCS) (36 items)	N of cases = 157 **Cronbach's Alpha = 0.971**
Knowledge Management Practices: An Assessment Questionnaire (17 items)	N of cases = 157 **Cronbach's Alpha = 0.886**

5.1.2. Inter-total Correlations

Item-total correlation or corrected item-total correlation has been used extensively in psychology, and marketing literature for the development of uni-dimensional scales. The inter-total correlation refers to the correlation of a variable, with the composite score of all variables forming the measure of constructs. According to Nunnally (1978), variables (items) within a measure are useful only to the extent that they share a common construct: the attribute to be measured. He further posited "the variables that correlate most highly with total scores are the best items for a general-purpose test" (Nunnally, 1978, p. 274). For that reason, Briggs & Cheek (1986) recommended that this analysis should be performed to purify the measure by eliminating 'garbage items' prior to determining the factor that represents the construct. This approach helps to prevent the unnecessary production of more factors than can be conceptually defined.

Table 5-2 Inter-total correlations of transformational leadership variables

	Variable Description	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted*
LD2	Re-examines critical assumptions to question whether they are appropriate	0.554	0.922
LD6	Talks about his/her most important values and beliefs	0.497	0.924
LD8	Seeks differing perspectives when solving problems	0.474	0.924
LD9	Talks optimistically about the future	0.574	0.922
LD10	Instills pride in me for being associated with him/her	0.674	0.920
LD13	Talks enthusiastically about what needs to be accomplished	0.657	0.920
LD14	Specifies the importance of having a strong sense of purpose	0.584	0.922
LD15	Spends time coaching	0.620	0.921
LD18	Goes beyond self-interest for the good of the group	0.618	0.921
LD19	Treats me as an individual rather than just a member of a group	0.507	0.923
LD21	Acts in the way that builds my respect	0.711	0.919
LD23	Considers the moral and ethical consequences of decisions	0.628	0.921
LD25	Displays a sense of power and confidence	0.499	0.923
LD26	Articulates a compelling vision of the future	0.685	0.919
LD29	Considers me as having different needs, abilities, and aspirations from others	0.374	0.927
LD30	Gets me to look at problems from many different angles	0.625	0.921
LD31	Helps me to develop my strengths	0.765	0.917
LD32	Suggests new ways of looking at how to complete assignments	0.590	0.921
LD34	Emphasizes the importance of having a collective sense of mission	0.659	0.920
LD36	Expresses confidence that goals will be achieved	0.645	0.920

* To be compared with Cronbach's Alpha of transformational leadership scale 0.925

According to Pallant (2007), a value of the inter-total correlation of less than 0.30 indicates that the variable is measuring something different from the constructs as a whole. With the exception of three variables within transactional leadership, and one variables within knowledge management, the results of the inter-total correlations, presented in Table 5-2 through to Table 5-5 indicate that most of the variables within each construct appeared to measure the same constructs as proposed in conceptual model, since their corrected inter-total items were relatively greater than 0.30. Since the elimination of the four variables with inter-total correlations less than 0.30, namely LD11, LD17, LD24, and KM1, would not significantly improve the alpha coefficient (as shown on Tables 5-2 through to 5-5), these variables were retained for subsequent analyses (Pallant, 2007).

Table 5-3 Inter-total correlations of transactional leadership variables

	Variable Description	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted*
LD1	Provides me with assistance in exchange for my efforts	0.392	0.789
LD3	Fails to interfere until problems become serious	0.378	0.790
LD4	Focuses attention on irregularities, mistakes, and deviations from standards	0.414	0.787
LD5	Avoids getting involved when important issues arise	0.491	0.782
LD7	Is absent when needed	0.564	0.777
LD11	Discusses in specific terms who is responsible for achieving performance targets	0.272	0.797
LD12	Waits for things to go wrong before taking actions	0.686	0.767
LD16	Makes clear what one can expect to receive when performance goals are achieved	0.374	0.790
LD17	Shows that he/she is a firm believer in “if it ain’t broke, don’t fix it”	0.202	0.803
LD20	Demonstrates that problems must become chronic before taking action	0.615	0.772
LD22	Concentrates his/her full attention on dealing with mistakes, complaints and failures	0.081	0.811
LD24	Keeps track of all mistakes	0.236	0.801
LD27	Directs my attention toward failures to meet standards	0.312	0.795
LD28	Avoids making decisions	0.586	0.776
LD33	Delays responding to urgent questions	0.432	0.786
LD35	Expresses satisfaction when I meet expectations	0.431	0.786

* To be compared with Cronbach’s Alpha of transactional leadership scale 0.799

Table 5-4 Inter-total correlations of organisational culture variables

	Variable Description	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted*
OC1	Decisions are usually made at the level where the best information is available	0.724	0.970
OC2	Information is widely shared so that everyone can get it	0.697	0.970
OC3	Everyone believes that he or she can have a positive impact	0.705	0.970
OC4	Working is like being a part of a team	0.755	0.969
OC5	We rely on coordination to get work done, rather than hierarchy	0.724	0.969
OC6	Teams are the primary building blocks of this organisation	0.683	0.970
OC7	We constantly improve compared with our competitors	0.589	0.970
OC8	We continue to invest in the skills of employees	0.643	0.970
OC9	The capability of people is viewed as an important source of competitive advantage	0.752	0.969
OC10	Leaders and managers follow the guidelines that they set for the rest of the organisation	0.662	0.970
OC11	There is a clear and consistent set of values that governs the way we do business	0.742	0.969
OC12	Ethical codes guide our behaviours	0.666	0.970
OC13	When disagreements occur, we work hard to achieve solutions that benefit both parties	0.703	0.970
OC14	It is easy to reach consensus, even on difficult issues	0.643	0.970
OC15	We often have trouble reaching agreement on key issues	0.418	0.971
OC16	People from different organisational units still share a common perspective	0.646	0.970
OC17	It is easy to coordinate projects across functional units in this organisation	0.635	0.970
OC18	There is good alignment of goals across levels of this organisation	0.803	0.969
OC19	We are very responsive	0.637	0.970
OC20	We respond well to competitors and other changes	0.625	0.970
OC21	We continually adopt new and improved ways to do work	0.679	0.970
OC22	Customer comments and recommendations often lead to changes	0.513	0.970
OC23	Customer input directly influences our decisions	0.393	0.971
OC24	The interests of the final customer often get ignored in our decisions	0.477	0.971
OC25	We view failure as an opportunity for learning and improvement	0.652	0.970
OC26	We encourage and reward those who take risk	0.498	0.971
OC27	We make certain that we coordinate our actions and efforts between different units	0.771	0.969
OC28	There is a long-term purpose and direction	0.782	0.969
OC29	There is a clear mission that gives meaning and direction to our work	0.786	0.969
OC30	There is a clear strategy for the future	0.825	0.969
OC31	There is widespread agreement about goals of this organisation	0.819	0.969
OC32	Leaders of this organisation set goals that are ambitious, but realistic	0.772	0.969
OC33	The leadership has clearly stated the objectives we are trying to meet	0.755	0.969
OC34	We have a shared vision of what this organisation will be like in the future	0.797	0.969
OC35	Leaders of our organisation have a long-term orientation	0.762	0.969
OC36	Our vision creates excitement and motivation for our employees	0.755	0.969

* To be compared with Cronbach's Alpha of organisational culture scale 0.971

Table 5-5 Inter-total correlations of knowledge management variables

	Variable Description	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted*
KM1	Learning by doing	0.209	0.888
KM2	On-the-job training	0.310	0.887
KM3	Learning by observation	0.436	0.882
KM4	Face-to-face meeting	0.505	0.881
KM5	The use of apprentices and mentors to transfer knowledge	0.396	0.884
KM6	Brainstorming retreats or camps	0.431	0.883
KM7	Employee rotation across areas	0.544	0.879
KM8	Cooperative projects across directorates	0.583	0.877
KM9	Repositories of information, best practices, and lessons learned	0.697	0.873
KM10	Web pages (Intranet and Internet)	0.581	0.877
KM11	Databases	0.580	0.877
KM12	Modeling based on analogies	0.604	0.876
KM13	Capture and transfer of experts' knowledge	0.681	0.873
KM14	Decision support systems	0.570	0.878
KM15	Pointers to expertise (skill "yellow pages")	0.671	0.873
KM16	Chat group/web-based discussion groups	0.561	0.878
KM17	Groupware and other team collaboration tools	0.508	0.880

* To be compared with Cronbach's alpha of knowledge management scale 0.886

5.2. The Confirmation of Scale Measurements – Validity Issues

According to Thompson (2004) the reliability is only a necessary – not a sufficient – condition of validity of the measurement scales. Hence, before conducting the statistical techniques, i.e., multiple regression analysis and correlation matrix analysis to examine the hypotheses, it is important to confirm whether the collected data are appropriate (fit) for the hypothesised model (proposed measurement) for the present study. In this study, MLQ-5X (Bass & Avolio, 1997), the Denison Organisational Culture Survey (DOCS) (Denison, 1990), and Knowledge Management Practice Assessment (Becerra-Fernandez & Sabherwal, 2001) are measurements that have been adopted to measure leadership behaviours, organisational culture, and knowledge management practice, respectively. To confirm whether these measurements are appropriate for this study, a confirmatory factor analysis (CFA) was conducted.

The main difference between exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) is the timing of the analysis. The theory and theoretical factors are the productions of EFA. Using data from empirical studies, an EFA was performed; the results were compared to prior research findings to define the theory and theoretical

factors. In contrast to EFA, CFA involves using particular data set to confirm what is theoretically believed (Hair, et al., 2006). Hence, CFA is appropriately used when some the underlying latent variable structure is known (Byrne, 2001).

Accordingly, the CFA technique has been widely used for testing the psychometric properties of measurement instruments because it tests a pre-specified factor structure and the goodness of fit for the resulting solution (Anderson & Gerbing, 1988). Byrne (2001) noted that a confirmatory factor analysis of a measurement is highly appropriate when it is applied to a measure what has been fully developed and has had its factor structures validated. Similarly, Thompson (2004) postulated that the CFA is more useful than EFA in the presence of theory because (a) the theory is directly tested by the analysis, and (b) the degree of model fit can be quantified in various ways.

In this study, since there has been a significant number of research evidence into the underlying structure of transformational and transactional leadership behaviours, organisational culture dimensions, and knowledge management practices, as previously discussed in the literature, confirmatory factor analysis was chosen over exploratory factor analysis.

5.2.1. Assessment of Model Fit and Estimation Method

The key feature of the CFA is its ability to determine how well the specified factor model represents the data, which can be done by examining the model fit indices. If the fit indices prove to be good, the model is invariably accepted. However, rather than being rejected, the model with unsatisfactory fit indices will be re-specified to improve the model fit. Fit indices are also commonly classified as either absolute or incremental as described below:

(1) *Absolute fit indices* – are a direct measure of how well the specified model reproduces the observed data (Hair, et al., 2006). As such, they provide the most basic assessment of how well the theory fits the sample data. The most fundamental absolute fit index is a Chi-square (X^2) statistic, which generally includes the value of X^2, degree of the freedom (*df*), and significance level (*p*-value). By convention, the non-significant X^2 indicates that the model fits the data, thus the model is accepted. On the other hand, a

significant X^2 ($p < 0.05$) suggests that the model does not fit the data and should be rejected. However, absolute indices may be adversely affected by sample size (Kline, 2005). In light of this issue, numerous alternative indices have been developed to quantify the degree of model fit (Shah & Goldstein, 2006), including goodness-of-fit index (GFI), adjusted-goodness-of-fit index (AGFI), standardised root mean square residual (SRMR), and root mean square error of approximation (RMSEA).

(2) *Incremental Fit Indices* – differ from absolute indices in that they assess how well a specified model fits relative to some alternative baseline models (Hair, et al., 2006). The most common baseline model is referred to as a null model, which assumes all observed variables are uncorrelated. Some of the most popular incremental fit indices are: normed-fit-index (NFI), comparative-fit-index (CFI), Tucker-Lewis index (TLI), and incremental-fit-index (IFI).

(3) *Estimation Method* – required to accurately calculate the model parameters and fit indices. A variety of estimation methods such as the maximum likelihood (ML), generalized least square (GLS), weighted least square (WLS), asymptotically distribution free (ADF), and ordinary least square (OLS) are available. According to Shah & Goldstein (2006), the choice of the estimation method generally depends upon the distributional properties of the data, model complexity and sample size. Each estimation method has computational advantages and disadvantages relative to the others. ML assumes data are univariate and multivariate normal, but it is relatively unbiased under moderate violation of normality (Bollen, 1989). WLS and ADF, on the other hand, do not require an assumption of normal distribution, but they demand a very large sample size for accurate estimates. OLS is considered as the most robust method and requires no distributional assumption, but it is scale invariant and does not provide fit indices or standard errors for estimates (Shah & Goldstein, 2006).

As discussed in the data screening section, two of the observed variables had the *z*-value of the indices of skewness exceed the critical values of ∓ 3.29, indicating that the data were slightly non-normal at the 0.05 probability level (Hair, et al., 2006). Regarding sample size, 157 cases in this study were considered as relatively small for the CFA

(Kline, 2005). In light of these data characteristics, the ML was considered as the most appropriate method. According to Shah & Goldstein (2006), despite the ML requiring data distribution be multivariate normal, it was still found robust under the condition of moderate non-normality even with a small sample size. In addition, these data characteristics also justified the use of the following model fit indices: X^2/df, GFI, TLI, CFI, and RMSEA. According to the results of a simulation conducted by Shah and Goldstein (2006), these fit indices were not found to be substantially biased under the condition of non-normality or small sample size when using the ML estimation method. For the model to be considered as having an acceptable fit, all six indices were measured against the following criteria:

- $X^2/df < 3.0$ (Hair, et al., 2006; Kline, 2005)
- GFI, TLI, CFI, and IFI > 0.90 (Hair, et al., 2006)
- RMSEA < 0.08 (Hair, et al., 2006)

5.2.2. Assessment of Construct Validity

One of the biggest advantages of CFA is its ability to assess the construct validity of a proposed measurement theory. Construct validity is the extent to which a set of measured items actually reflects the theoretical latent construct those items are designed to measure (Hair, et al., 2006). Thus, it deals with the accuracy of measurement.

Assessing construct validity using the CFA involves an examination of the *convergent validity* and the *discriminant validity*. The *convergent validity* refers to the extent to which the measured variables of a specific construct share a high proportion of variance in common. The assessment of the convergent validity focuses on the magnitude of the standardised factor loadings and their significance level. The larger factor loadings with the corresponding significant *t*-values, the stronger the evidence that the measures variables represent the underlying constructs (Bollen, 1989). As a guideline, Hair, et al. (2006) suggested that the factor loadings should be greater than 0.50. Koufteros (1999), however, argued that only significant *t*-values should suffice to demonstrate convergent validity. Hence, in addition to significant factor loadings, the reliability of the variables, which can be determined by inspecting the R^2 value, is also an indicator of convergent

validity. As recommended by Bollen (1989), a variable should have an R^2 value greater than 0.50 in order to demonstrate an acceptable reliability.

Discriminant validity, in addition, is the extent to which a construct is truly distinct from other constructs (Hair, et al., 2006). Thus high discriminant validity provides evidence that a construct is unique and captures some phenomena other measures do not. According to Kline (2005), discriminant validity can be assessed by an inspection of the correlation coefficient between each pair of variables. If the value of the correlation coefficient is very high (i.e. greater than 0.850) then the variables of interest might represent the same concept and should be combined as a single variable (Tabachnick & Fidell, 2007). The following sections present the result of the CFA for each individual construct.

5.2.3. Transformational Leadership Behaviours Confirmation Measurement

In this study, the CFA was performed on each construct using AMOS (version 16.0) program, which is an extension program to SPSS. As default in AMOS, the covariance matrix was automatically used as an input data set (Shah & Goldstein, 2006). The results of each construct are presented in Tables 5-6 through to 5-9. The factor loadings, *t*-value and significant level of each variable, shown in the tables, provide a measure for the convergent validity; the value of R^2 provides a measure with which to assess the reliability of the variables; the value of correlation between the factors provides an indication of the discriminant validity. The model fit indices are also presented for the purpose of unidimensionality assessment.

The 20 items comprising five theoretical facets of transformational leadership behaviours (TF) including idealised influence attributed (IIA), idealised influence behaviours (IIB), inspirational motivation (IM), intellectual stimulation (IS), and individual consideration (IC), were used to perform the CFA. In terms of reliability, Cronbach's alpha for the overall construct of transformational leadership was moderately high at 0.925 (as presented in Section 5.1.1), indicating reliable measure.

The independence that test the hypothesis that all variables are uncorrelated was easily rejected X^2 = 1662; *df* = 190; X^2/df = 8.750. The hypothesized model was tested next and support was found for hypothesised model; X^2 = 360; *df* = 160; X^2/df = 2.25 (<3.00). A chi-square difference test indicated a significant improvement in fit between the independence model and the hypothesized model. However, the values of GFI = 0.809 and CFI = 0.864 were indicative of a poor fit of the model to the data. Thus, it was apparent that some modification in specification was needed in order to determine a model that better represents the sample data.

Table 5-6 CFA results of transformational leadership behaviours

	Variable Description	Factor Loading	*t*-value	R^2
	Idealised Influence Attributed (IIA)			
LD10	Instills pride in me for being associated with him/her	0.66	5.632***	0.44
LD18	Goes beyond self-interest for the good of the group	0.64	5.382***	0.41
LD25	Displays a sense of power and confidence	0.58	f.p.	0.31
	Idealised Influence Behaviours (IIB)			
LD6	Talks about his/her most important values and beliefs	0.51	6.149***	0.26
LD14	Specifies the importance of having a strong sense of purpose	0.70	8.410***	0.49
LD23	Considers the moral and ethical consequences of decisions	0.66	8.283***	0.44
LD34	Emphasizes the importance of having a collective sense of mission	0.74	f.p.	0.65
	Inspirational Motivation (IM)			
LD9	Talks optimistically about the future	0.67	7.945***	0.45
LD13	Talks enthusiastically about what needs to be accomplished	0.77	8.835***	0.59
LD26	Articulates a compelling vision of the future	0.75	8.850***	0.56
LD36	Expresses confidence that goals will be achieved	0.71	f.p.	0.50
	Intellectual Stimulation (IS)			
LD2	Re-examines critical assumptions to question whether they are appropriate	0.66	6.889***	0.35
LD30	Gets me to look at problems from many different angles	0.64	8.778***	0.58
LD32	Suggests new ways of looking at how to complete assignments	0.58	f.p	0.57
	Individual Consideration (IC)			
LD15	Spends time coaching	0.75	9.649***	0.56
LD31	Helps me to develop my strengths	0.84	f.p.	0.71

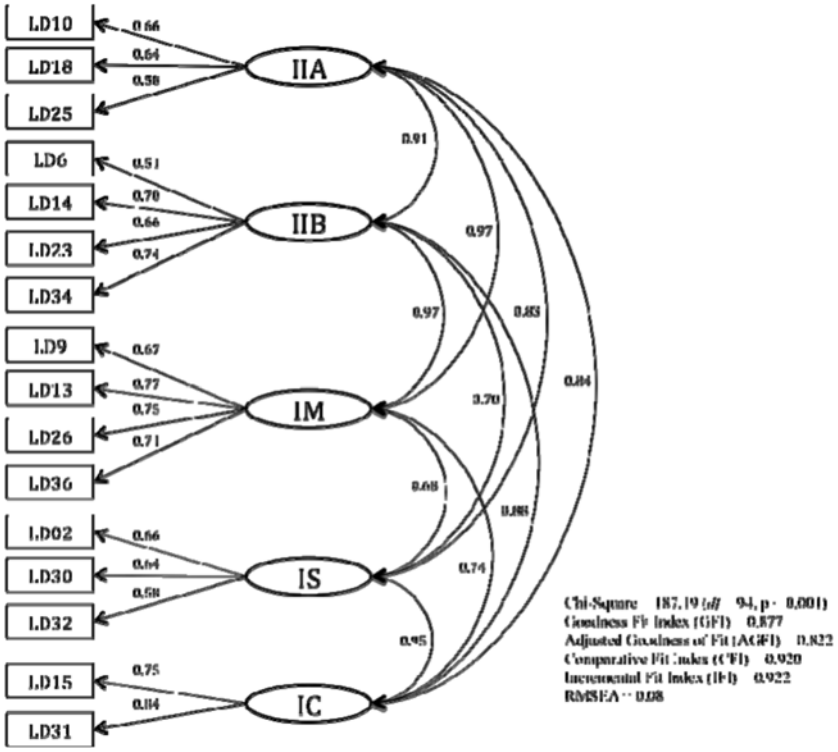
Note: f.p.: fixed parameter for estimation; ***p<0.001

Accordingly, post hoc model modifications were performed in an attempt to develop a better fitting. A review of modification indices revealed one parameter indicative of crossloading at item LD21 on the IIA. In addition, due to low factor loadings (<0.50), item LD8 of IS; and variables LD19 and LD29 of IC were deleted (Hair, et al., 2006). As a result, the twenty variables of LF were reduced to sixteen variables.

The final CFA results of the TF constructs are presented in Table 5-6. The respecified

model, as presented in Figure 5.1, appears to have a moderately adequate fit: $X^2 = 187$; $df = 94$; $X^2/df = 1.997$; CFI = 0.920; TLI = 0.898; IFI = 0.922; and RMSEA = 0.08 (Hair, et al., 2006). All factor loadings, ranging from 0.560 to 0.840, were greater than the threshold level of 0.50, and were all significant at $p < 0.001$ level, suggesting convergent validity. With the exception of only three variables, all of the R^2 values were either greater than, or close to the threshold of 0.50, thus supporting an acceptable reliability of the variables. However, 5 out of 10 correlation coefficients between each pair of factors were found exceeding the limit of 0.85 (as show in Figure 5.1), indicating a poor discriminant validity of the construct (Kline, 2005).

With ample evidence, the collected data failed to fit the transformational leadership behaviours of the five-factor model. Hence, exploratory factor analysis would need to be performed to produce the new factors based on the presently collected data and prior literature review. With exploratory factor analysis, the research can first identify the separate dimensions of the structure and then determine the extent to which each variable is explained by each dimension. Once these dimensions and then an explanation of each variable have been determined, the two primary uses for factor analysis – summarisation and data reduction – can be achieved. The exploratory factor analysis of transformational leadership behaviours is discussed and presented in the following sections of this chapter.



Note: Idealised influence attributed (IIA), idealised influence behaviours (IIB), inspirational motivation (IM), intellectual stimulation (IS), individual consideration (IC)

Figure 5-1 CFA model of transformational leadership behaviours

5.2.4. Transactional Leadership Behaviours Confirmation Measurements

The second construct of the research model is transactional leadership (TA), which was theorised to consist of four sub-constructs: management-by-exception active and passive (MBEA, MBEP), contingent reward (CR), and laissez-faire (LF). The overall Cronbach's alpha for transactional leadership was 0.799 (as shown in Table 5.1), indicating an acceptable reliability.

The independence model, tests the hypothesis, was rejected as all the variables are uncorrelated with $X^2 = 801$; $df = 120$; $X^2/df = 6.68$. The hypothesised model was hence

tested next and found a significant improvement in fit between the independence model and the hypothesized model. Table 5–7 presents the CFA result for the TS construct. All the fit indices for this construct suggest that the CFA model of the construct (Figure 5-2) had a good level of fit: $X^2 = 121.58$; $df = 98$; $X^2/df = 1.23$; CFI = 0.965; TLI = 0.958; IFI = 0.966; and RMSEA = 0.039 (Hair, et al., 2006).

Table 5-7 CFA results of transactional leadership behaviours

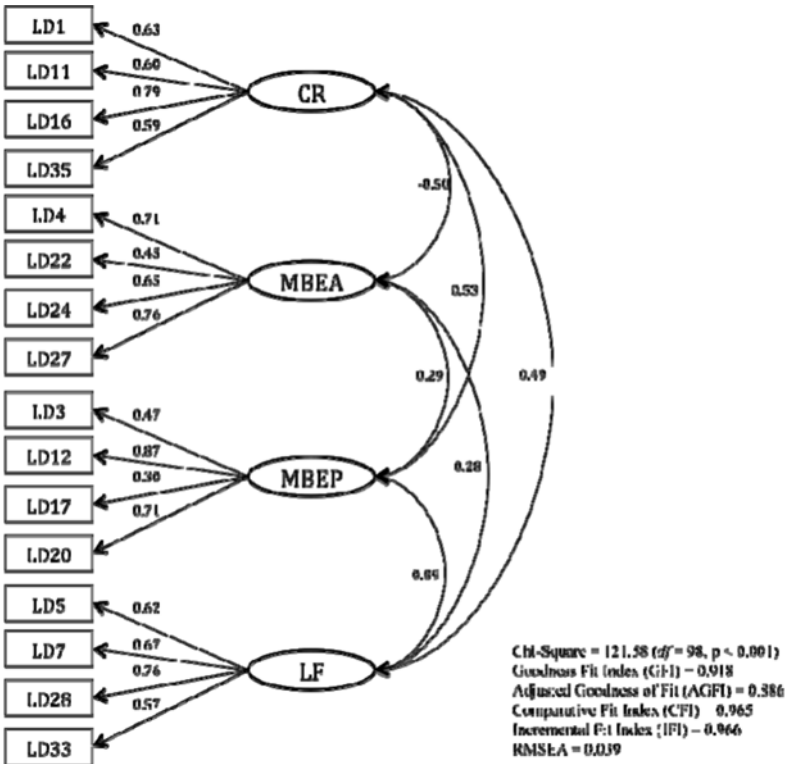
	Variable Description	Factor Loading	*t*-value	R^2
	Contingent reward (CR)			
LD1	Provides me with assistance in exchange for my efforts	0.63	5.803***	0.40
LD11	Discusses in specific terms who is responsible for achieving performance targets	0.60	5.634***	0.36
LD16	Makes clear what one can expect to receive when performance goals are achieved	0.79	6.416***	0.62
LD35	Expresses satisfaction when I meet expectations	0.59	f.p.	0.35
	Management by exception – active (MBEA)			
LD4	Focuses attention on irregularities, mistakes, and deviations from standards	0.71	6.912***	0.50
LD22	Concentrates his/her full attention on dealing with mistakes, complaints and failures	0.45	4.801***	0.22
LD24	Keeps track of all mistakes	0.65	6.578***	0.42
LD27	Directs my attention toward failures to meet standards	0.76	f.p.	0.59
	Management by exception – passive (MBEP)			
LD3	Fails to interfere until problems become serious	0.47	5.361***	0.22
LD12	Waits for things to go wrong before taking actions	0.87	9.239***	0.45
LD17	Shows that he/she is a firm believer in “if it ain’t broke, don’t fix it”	0.40	3.446***	0.25
LD20	Demonstrates that problems must become chronic before taking action	0.71	f.p.	0.51
	Lasses-faire (LF)			
LD5	Avoids getting involved when important issues arise	0.67	5.886***	0.38
LD7	Is absent when needed	0.76	6.190***	0.45
LD28	Avoids making decisions	0.62	6.658***	0.58
LD33	Delays responding to urgent questions	0.57	f.p.	0.38

Note: f.p.: fixed parameter for estimation; ***p<0.001

Regarding construct validity, apart from item LD17 (Shows that he/she is a firm believer in “if it ain’t broke, don’t fix it”), all the factor loadings were either greater than, or close to the threshold 0.50; they were all significant at $p < 0.001$, suggesting convergent validity. With the exception of only four variables, all the R^2 values were either greater then, or close to the threshold of 0.50, thus supporting an acceptable reliability of the variables (Kline, 2005). The correlation coefficients between each pair of factors, except the correlation between MBEP and LF (0.89), were all less than 0.85, thus confirming the discriminant validity of the construct (Kline, 2005). Finally, the

acceptable level of the fit indices confirmed that the specified factor model of this construct possessed unidimensionality.

The result of CFA, as discussed above, revealed the construct of transactional leadership of the four-factor model to be moderately supported by the collected data. The evidence shows that both X^2/df and RMSEA, and other fit indices, meet the suggested value. There were only two concerns of the CFA model of transactional leadership: first the convergent validity was problematic, since 4 out of 16 variables of this construct were of R^2 less than 0.50 (Bollen, 1989; Kline, 2005); second, the correlation coefficient between MBEP and LF was 0.89, exceeding the threshold of 0.85 (Kline, 2005). Consequently, to achieve a good data-model fit, this study needed to find which items were not appropriate based on the collected data. To do this, an exploratory factor analysis would need to be performed in order to achieve the best possible dimensionality, reliability, and validity based on the collected data (Thompson, 2004).



Note: Contingent reward (CR), Management-by-exception – active (MBEA), Management-by-exception – passive (MBEP), Laissez-faire (LF)

Figure 5-2 CFA model of transactional leadership behaviours

5.2.5. Organisational Culture Confirmation Measurement

The third measurement model is organisational culture (OC), which was theorised to consist of four sub-constructs: involvement (INV), consistency (CON), adaptability (ADP), and mission (MIS). In terms of reliability, Cronbach's Alpha for the overall construct of organisational culture was moderately high at 0.971, indicating reliable measure.

The independence model that test the hypothesis that all variables are uncorrelated was rejected $X^2 = 4893.21$; $df = 630$; $X^2/df = 7.67$. The hypothesised model was tested next

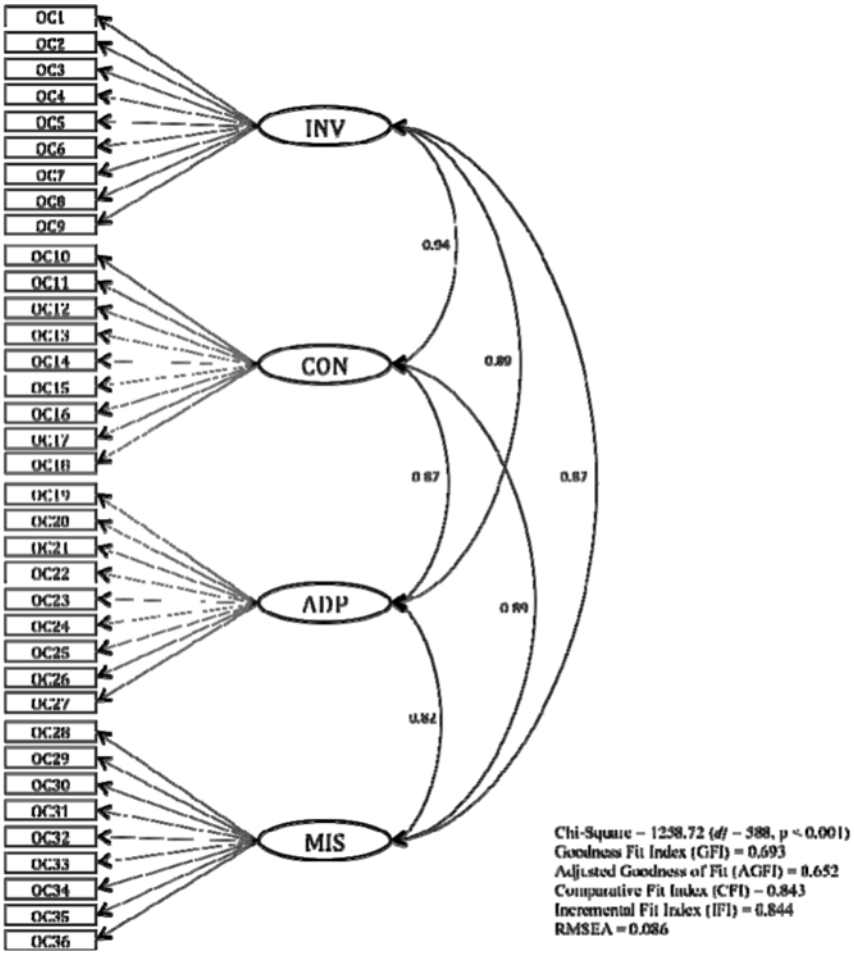
and indicated a significant improvement in fit between the independence model and the hypothesised model; X^2 = 1258.72; df = 588; X^2/df = 2.14 (<3.00). However, the values of GFI = 0.693, CFI = 0.43 and RMSEA = 0.086 were indicative of a poor fit of the model to the collected data (as shown in Figure 5-3) (Hair, et al., 2006).

In addition, as presented in Figure 5-5, five out of six correlation coefficients between the four organisational culture dimensions were found exceeding the recommended limit of 0.85, thus suggesting a poor discriminant validity of the construct (Hair, et al., 2006; Kline, 2005); this indicates that the cultural dimensions could not be clearly differentiated from each other. Additionally, with the exception of item OC15 and OC23, all the factor loading and R^2 values were either greater than, or close to the threshold of 0.50, supporting the reliability of the variables; further confirmation that the collected data failed to fit the construct of organisational culture of the four-factor model. Hence, exploratory factor analysis was needed to be performed to produce the new factors based on the collected data and prior literature review (Bollen, 1989; Roberts, 1999).

Table 5-8 CFA result of Organisational Culture

	Variable Description	Factor Loading	*t*-value	R^2
	Involvement (INV)			
OC1	Decisions are usually made at the level where the best information is available	0.73	9.825***	0.54
OC2	Information is widely shared so that everyone can get it	0.73	9.781***	0.53
OC3	Everyone believes that he or she can have a positive impact	0.73	9.750***	0.53
OC4	Working is like being a part of a team	0.80	10.992***	0.64
OC5	We rely on coordination to get work done, rather than hierarchy	0.77	10.508***	0.60
OC6	Teams are the primary building blocks of this organisation	0.74	9.886***	0.54
OC7	We constantly improve compared with our competitors	0.62	8.101***	0.32
OC8	We continue to invest in the skills of employees	0.67	8.838***	0.46
OC9	The capability of people is viewed as an important source of competitive advantage	0.66	f.p.	0.61
	Consistency (CON)			
OC10	Leaders and managers follow the guidelines that they set for the rest of the organisation	0.70	9.941***	0.49
OC11	There is a clear and consistent set of values that governs the way we do business	0.70	11.613***	0.61
OC12	Ethical codes guide our behaviours	0.78	9.973***	0.49
OC13	When disagreements occur, we work hard to achieve solutions that benefit both parties	0.73	10.547***	0.53
OC14	It is easy to reach consensus, even on difficult issues	0.66	9.203***	0.44
OC15	We often have trouble reaching agreement on key issues	0.44	5.594***	0.19
OC16	People from different organisational units still share a common perspective	0.69	9.739***	0.49
OC17	It is easy to coordinate projects across functional units in this organisation	0.69	9.681***	0.47
OC18	There is good alignment of goals across levels of this organisation	0.64	f.p.	0.70
	Adaptability (ADP)			
OC19	We are very responsive	0.73	9.572***	0.54
OC20	We respond well to competitors and other changes	0.71	9.176***	0.50
OC21	We continually adopt new and improved ways to do work	0.76	10.042***	0.58
OC22	Customer comments and recommendations often lead to changes	0.56	7.049***	0.31
OC23	Customer input directly influences our decisions	0.44	5.460***	0.20
OC24	The interests of the final customer often get ignored in our decisions	0.49	5.025***	0.24
OC25	We view failure as an opportunity for learning and improvement	0.71	9.182***	0.50
OC26	We encourage and reward those who take risk	0.56	7.095***	0.32
OC27	We make certain that we coordinate our actions and efforts between different units	0.76	f.p.	0.63
	Mission (MIS)			
OC28	There is a long-term purpose and direction	0.81	11.535***	0.65
OC29	There is a clear mission that gives meaning and direction to our work	0.86	12.660***	0.75
OC30	There is a clear strategy for the future	0.90	13.438***	0.81
OC31	There is widespread agreement about goals of this organisation	0.88	12.954***	0.77
OC32	Leaders of this organisation set goals that are ambitious, but realistic	0.83	11.963***	0.69
OC33	The leadership has clearly stated the objectives we are trying to meet	0.83	11.910***	0.69
OC34	We have a shared vision of what this organisation will be like in the future	0.83	11.946***	0.69
OC35	Leaders of our organisation have a long-term orientation	0.81	11.611***	0.66
OC36	Our vision creates excitement and motivation for our employees	0.79	f.p.	0.66

Note: f.p.: fixed parameter for estimation; ***p<0.001



Note: Involvement (INV), Consistency (CON), Adaptability (ADP), and Mission (MIS)

Figure 5-3 CFA model of Organisational Culture

5.2.6. KM Practices Confirmation Measurement

The last measurement model examined the relationships among 17 measures of knowledge management practices, which was theorised to consist of four sub-constructs: socialisation (SO), internalisation (IN), externalisation (EX), and combination (CO) (Becerra-Fernandez & Sabherwal, 2001). The overall Cronbach's

alpha for knowledge management found 0.886, was considered as excellent reliability (Bryman & Cramer, 2005; Hair, et al., 2006).

The independence model test was rejected with X^2 = 1059.72; *df* = 136; X^2/df = 7.792. The likelihood ratio test of hypothesized model showed a significant improvement; X^2 = 262.82; *df* = 113; X^2/df = 2.326 (<3.00); thus providing support for the model (Hair, et al., 2006). However, the absolute fit indices and incremental fit indices of the hypothesized model GFI, CFI, and TLI, were found 0.838, 0.838, and 0.805 respectively, and so were below the recommended minimum of 0.90 (Hair, et al., 2006), thus indicating of a very poor fit to the data. Consequently, Post hoc model modifications were performed in an attempt to develop a better fitting.

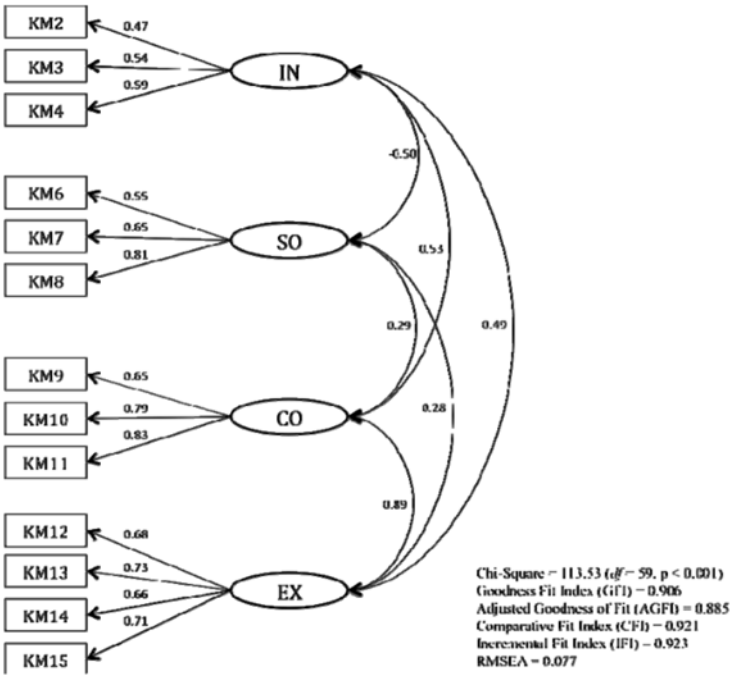
An inspection of the modification indices (MIs) related to the covariance showed a clear evidence of misspecification associated with KM16 and KM17, which represented misspecified error covariance (Byrne, 2001). Therefore, it was prudent to respecify the model with these two variables (KM16 and KM17) deleted. In addition, due to low factor loadings (<0.50), item KM1 of IN (0.33); and item KM5 of SO (0.43) were deleted (Hair, et al., 2006).

Table 5-9 CFA results of KM Practices

	Variable Description	Factor Loading	*t*-value	R^2
	Internalisation (IN)			
KM2	On-the-job training	0.47	3.345***	0.34
KM3	Learning by observation	0.54	3.800***	0.39
KM4	Face-to-face meeting	0.59	f.p.	0.35
	Socialisation (SO)			
KM6	Brainstorming retreats or camps	0.55	5.975***	0.31
KM7	Employee rotation across areas	0.65	6.814***	0.49
KM8	Cooperative projects across directorates	0.81	f.p.	0.65
	Externalisation (EX)			
KM9	Repositories of information, best practices, and lessons learned	0.65	7.974***	0.42
KM10	Web pages (Intranet and Internet)	0.79	9.851***	0.62
KM11	Databases	0.83	f.p.	0.78
	Combination (CO)			
KM12	Modelling based on analogies	0.68	f.p.	0.46
KM13	Capture and transfer of experts' knowledge	0.73	7.815***	0.54
KM14	Decision support systems	0.66	7.139***	0.44
KM15	Pointers to expertise (skill "yellow pages")	0.71	7.568***	0.59

Note: f.p.: fixed parameter for estimation; ***p<0.001

The respecified model with the 13 variables presented fit indexes (as shown in Figure 5-4) that improved substantially when compared with the initial model. As illustrated in Table 5-9, the likelihood ration test of the respecified model yielded X^2 = 113.53; *df* = 59; X^2/df = 1.92 (<3.00). The absolute fit indices (GFI = 0.906) and the incremental fit indices (CFI (0.921), IFI (0.923), and TLI (0.895) of the model were indicative of a moderate good fit. At 0.077, the root mean square error of approximations (RMSEA) was within the limit of 0.08 (Hair, et al., 2006).



Note: Internalisation (IN), Socialisation (SO), Externalisation (EX), Combination (CO)

Figure 5-4 CFA model of KM Practices

In terms of construct validity, and with the exception of variable KM2 (0.47), all the factor loadings were greater than the recommended threshold limit of 0.50, and were all significant at $p < 0.001$ level, suggesting convergent validity (Hair, et al., 2006). There were, however, 5 out of 15 variables with R^2 values lower than the limit of 0.50.

Additionally, the correlation coefficient between EX and CO was 0.89, exceeding the limit of 0.85, indicating poor discriminant validity (Kline, 2005; Tabachnick & Fidell, 2007). Consequently, an exploratory factor analysis would need to be performed in order to achieve a good data model fit (Thompson, 2004).

5.3. Exploratory Factor Analysis (EFA)

The result of the CFA revealed that the research constructs transformational leadership, organisational culture, and knowledge management (as previous discussed) were not satisfactorily supported by the collected data, evidence of poor model fit indices and construct validity. Thus, exploratory factor analysis (EFA) was employed to define the new underlying structure of the data matrix by identifying the separate dimensions of a set of items, and determining the extent to which each item was explained (Bryman & Cramer, 2005; Hair, et al., 2006; Pallant, 2007). In addition, EFA was performed to establish the best possible reliability and validity of the transactional leadership measurement. In the following sections, an overview of the factorability, factor extraction, and rotation for the four EFA scenarios is provided; this is followed by the detailed discussion on the EFA of each construct.

5.3.1. Factorability of Data

The factorability refers to the suitability of the data to be factorized in terms of the inter-correlation between variables (Pallant, 2007; Tabachnick & Fidell, 2007). As the variables included in the analysis were deemed to measure the same underlying construct, a correlation matrix, that was factorable, needed to include sizable values for the correlation (Field, 2005; Tabachnick & Fidell, 2007). According to Pallant (2007), the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, and Bartlett's test of sphecicity, are generally applied to determine the factorability of such matrix.

For this study, the strength of the inter-correlation among variables within each construct was supported by the inspection of correlation matrix with evidence of coefficients greater than 0.30. As presented in Table 5-10, the values of Kaiser-Meyer-Olkin (KMO) of each construct ranged from 0.813 to 0.935, making them well above the minimum acceptable level of 0.60 (Tabachnick & Fidell, 2007); thus confirming sampling adequacy. In addition, the 157 cases in the data file met the acceptable sample

size of 100 for the EFA; it was larger than the minimum requirement of five times as many subjects as the variables to be analysed in the construct (Hair, et al., 2006). Finally, Bartlett's test of sphecicity statistics for each construct was highly significant at $p < 0.001$ level, indicating that there were adequate relationships between the variables included in the analysis (Field, 2005). These results confirmed the factorability of the EFA conducted for each research construct (Hair, et al., 2006; Pallant, 2007).

Table 5.10 Factorability of the EFA

Constructs	KMO*	Bartlett's Test of Sphericity		
		Approx. Chi-Square	*df*	Sig.
TF: Transformational Leadership Behaviours	0.908	1582.53	190	0.0005
TA: Transactional Leadership Behaviours	0.813	769.75	120	0.0005
OC: Organisational Culture	0.935	4490.67	630	0.0005
KM: Knowledge Management	0.859	1015.64	136	0.0005

Note: KMO*: Kaiser-Meyer-Olkin measure of sampling adequacy

5.3.2. Factor Extraction and Rotation

To produce an appropriate solution that explains an adequate number of factors representing a construct, the EFA needs to follow two essential steps; (1) factor extraction; and (2) factor rotation and interpretation (Pallant, 2007). The former aims to uncover factors based on a particular method and criteria to determine the adequacy of the number of factors, whereas the latter aims at improving the interpretation of a given factor solution (Tabachnick & Fidell, 2007).

To perform the factor extraction in this study, the principal components analysis was chosen to achieve an empirical summary of data set; this technique was psychometrically sound and mathematically simpler, and it also avoided some of the potential problems with "factor indeterminacy" associated with factor analysis (Pallant, 2007). In the principal component analysis, the original variables were transformed into a smaller set of linear combinations, with all of the variance in the variables being used (Pallant, 2007).

When determining the number of factors that best describe the underlying relationship among variables, there are several rules of thumb suggested in the literature, to ensure the robustness of the solutions, a combination of the following criteria were used: (1) latent root criterion; (2) Catell's scree test; (3) a priori criterion; and (4) percentage of

variance criterion (Hair, et al., 2006). Following the latent root criterion, only factors with an eigenvalue of 1.0 or more were retained for further investigation (Pallant, 2007). While Catell's scree test involves plotting each of the eigenvalues of the factor and retaining the factors above the elbow, a point at which the shape of the curve changed direction and became horizontal (Pallant, 2007; Thompson, 2004). An additional technique gaining popularity, particular in the social science literature, is Horn's parallel analysis (Horn, 1965). Parallel analysis involves comparing the size of the eigenvalues with those obtained from randomly generated data sets of the same size. Only those eigenvalues that exceed the corresponding values from the random data sets are retained. The '*a priori*' criterion is a simple, yet reasonable, criterion where the number of factors are known prior to undertaking the factor analysis. This approach is particular useful when testing theory or hypothesis about the number of factors to be extracted. It is also an appropriate criterion in attempting to replicate another research's work and extract the same number of factors that were previously found (Hair, et al., 2006).

A percentage of variance criterion ensures practical significance for the derived factors by ensuring that they explain at least a specified amount of variance (Tabachnick & Fidell, 2007). According to Hair, et al. (2006), in the social sciences, where the information is often less precise, it is quite common to consider the solution that account for 60 percent (or less) of the total variance.

Once the factor had been extracted, it was then possible to determine the degree to which the variables load onto these factors; this was done by examining the factor loadings (Field, 2005). In most instances, regardless of the extraction method employed, the initial factor solution does not provide an adequate interpretation, since most variables will have high loadings on the most important factor, and small loadings on the other factors (Tabachnick & Fidell, 2007). For this reason, a factor rotation was employed to achieve simpler and more meaningful solutions. The Varimax orthogonal rotation was the preferred method, since it is the simplest and most commonly used rotation (Tabachnick & Fidell, 2007). After the factor had been rotated, a specific criterion was employed to justify the significance of the factor loadings. With the sample of 157, a factor loading of 0.50 and above was considered significant at the 0.05

level to obtain a power level of 80% (Hair, et al., 2006); thus the variables of a factor loading less than 0.50 were eliminated.

Considering the above criteria, the detailed procedures of the EFA for each individual construct is discussed in the followings sections.

5.3.3. Transformational Leadership Behaviours

Twenty items pertaining to the transformational leadership behaviours are included in the MLQ – 5X Form. These items represent five theoretical components of transformational leadership, which are idealised influence – attributed (IIA), idealised influence – behaviours (IIB), inspirational motivation (IM), intellectual stimulation (IS), and individual consideration (IC).

The initial principal component analysis revealed the presence of four factors with eigenvalues exceeding 1.0; nevertheless, an inspection of the Cartell's scree test revealed a clear break after the second factor (as shown in Figure 5-5). Using the scree test, it was decided to retain only two factors. This was further supported by the result of a parallel analysis, which showed only two factors with eigenvalues greater than the corresponding criterion values for a randomly generated data matrix. Accordingly, a two-factor solution was performed to produce the new factors (see Table 5-11).

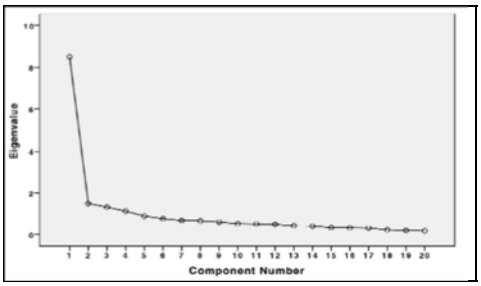


Figure 5-5 *Scree plot for the EFA of transformational leadership*

Table 5-12 presents the detailed result of the two-factor solution including a rotated component matrix, the total variance explained and the reliability. The two factors

explained about 50% of the variance. Nevertheless, variables LD6, LD8, LD25, and LD32 were dropped due to their low factor loadings (<0.50) (Hair, et al., 2006). While variable LD21 were removed due to crossing loading on the two factors, LD21 loaded on factors 1 and 2 with loadings of 0.549 and 0.531 respectively. Consequently, the Cronbach's alpha coefficient of the two-factor model was 0.917, indicative of an excellent reliability (Hair, et al., 2006; Pallant, 2007).

Table 5-11 Comparison of eigenvalues from EFA and criterion values from Parallel Analysis – Transformational leadership

Factor	Actual eigenvalue	Criterion value from Parallel Analysis	Decision
1	8,487	1.692	Accept
2	1.498	1.493	Accept
3	1.322	1.401	Reject
4	1.130	1.341	Reject

Table 5-12 Items constituting the factors of EFA - Transformational Leadership

	Items	Theorised Dimension	Factor Loadings	
			1	2
LD14	Specifies the importance of having a strong sense of purpose	IIB	0.770	
LD13	Talks enthusiastically about what needs to be accomplished	IM	0.756	
LD34	Emphasizes the importance of having a collective sense of mission	IIB	0753	
LD26	Articulates a compelling vision of the future	IM	0.722	
LD36	Expresses confidence that goals will be achieved	IM	0.660	
LD9	Talks optimistically about the future	IM	0.650	
LD23	Considers the moral and ethical consequences of decisions	IIB	0.625	0.316
LD18	Goes beyond self-interest for the good of the group	IIA	0.600	0.326
LD15	Spends time coaching	IC	0.579	0.348
LD29	Considers me as having different needs, abilities, and aspirations from others	IC		0.766
LD30	Gets me to look at problems from many different angles	IS		0.726
LD10	Instills pride in me for being associated with him/her	IIA	.401	0.650
LD19	Treats me as an individual rather than just a member of a group	IC		0.634
LD31	Helps me to develop my strengths	IC	0.526	0.626
LD2	Re-examines critical assumptions to question whether they are appropriate	IS	0,349	0.519
Rotation sum of squared loadings				
Eigenvalues			8.487	1.498
Percentage of variance explained (%)			29.117	20.808
Cumulative percentage of variance explained (%)			29.117	49.924
Reliability			0.917	
Idealised influence attributed (IIA), idealised influence behaviours (IIB), inspirational motivation (IM), intellectual stimulation (IS), individual consideration (IC)				

With the exception of variable LD15 'spends time coaching', the first factor was highly

loaded by idealised influence attributed and behaviours (IIA & IIB) and inspirational motivation (IM) variables. Nevertheless, Downton (1973) posited that charismatic leaders are likely to be inspirational and motivational. Charisma was also viewed as leaders who exhibit certain charismatic qualities and behaviours and those followers who have certain perceptions, emotions, and attitude toward the leader, the group led by the leader, and vision (goals) advocated by the leader (House, 1971; Howell & Shamir, 2005). Many theorists and researchers have proposed that charismatic behaviours including building credibility and commitment to the vision, and creating emotional challenges and encouragement for followers, thus influencing and motivating the followers to move beyond their self-interest and to focus on the broader and meaningful organisational interest (Conger & Kanungo, 1987; Javidan & Waldman, 2003; Yukl & Van Fleet, 1992). This is strong among leaders who have a vision and sense of mission; who gain respect, trust, and confidence; and who acquire strong identifications from followers (Bass & Avolio, 1990). Hence, this study labeled this factor as *attributed charisma***.**

With the exception of variable LD10 'Instills pride in me for being associated with him/her', the second factor was highly loaded by intellectual stimulation and individual consideration variables such as treats me as individual rather than just a member of a group (LD19); consider me having different needs, abilities and aspirations from others (LD29); help me to look at the problems from different angles (LD30); and help me to develop my strength (LD31). These items mainly described the behaviours of leaders in stimulating learning and considering the followers individually. Leaders actively encourage a new look at old methods/problems. They foster creativity and stress rethinking and re-examination of assumptions underlying problems. Hence, leaders develop followers to tackle problems using their own unique and innovative perspectives. On the other hand, leaders concentrate on diagnosing the needs and capabilities of followers, thus raising the needs and confidence levels of followers to take on greater levels of responsibility (Avolio & Bass, 1995). Recently, theorists have begun to move toward defining individualised consideration as encompassing supportive leadership and developmental leadership (Rafferty & Griffin, 2006). While the first dimension focuses on traditional individual consideration as proposed in Bass's

(1985) original theoretical framework of transformational leadership, the later one includes career counseling, encouraging, and stimulating followers to develop their own skills and abilities (Ellemers, De Gilder, & Haslam, 2004; Godshalk & Sosik, 2000). Therefore, this study labels this factor as *individualised consideration*.

In summary, the result of the exploratory factor analysis did not to match the theorised dimension of transformational leadership as only two components were loaded, which were charisma, and intellectual stimulation and individual consideration. Nevertheless, these results are consistent with the result of the CFA where the correlation coefficients among each pair of theorised component were high especially among idealised influence (IIA & IIB) and inspirational motivation (IM), and between intellectual stimulation (IS) and individual consideration (IC); thus suggesting combination of these components. Additionally, the results are aligned with the findings from a number of previous research studies. Bass and Avolio (1997) recognised that the dimensions theoretically supporting the constructs have not been consistently realised in research, and when they have been, their inter-correlations were high. Recently, in an attempt to confirm and explore the dimensions of transformational leadership behaviours using a multifactor leadership questionnaire (MLQ), Politis (2002) found only three dimensions of transformational leadership: attributed charisma, and individual considerations and intellectual stimulation. Den Hartog, et al. (1997) reported that five dimensions of transformational leadership as defined by Bass were not found through exploratory factor analysis, and that transformational leadership items were grouped together differently. Similarly, Bycio, et al. (1995) arguably posited that a simpler factor structure may underlie the MLQ survey and described it as active vs. passive leadership. Therefore, the newly developed dimensions of transformational leadership behaviours, *attributed charisma* and *individualised consideration*, were adopted for further statistical analyses regarding the relationship of transformational leadership with knowledge management and organisational culture.

5.3.4. Transactional Leadership Behaviours

Sixteen items related to transactional leadership behaviours, which included contingent reward, management-by-exception active and passive) and lasses-faire behaviours. This study followed the guideline mentioned above to explore the factors and each of their

associated items for further analysis.

Based on the collected data, 12 items of transactional leadership behaviour were used to conduct EFA. The initial component analysis revealed the presence of three components with eigenvalues exceeding 1.0. Additionally, an inspection of the scree plot revealed a clear break after the third factor. Using Cattells's (1966) scree test, it was decided to retain three factors. This was further supported by the results of a parallel analysis that showed three factors with eigenvalues greater than the corresponding criterion values for a randomly generated data. Table 5-13 displays the items, factor loadings, and theoretical dimension associated with items.

Table 5-13 Items constituting the factors of the EFA – Transactional Leadership

Items		Theorised Dimension	Factor Loadings		
			1	2	3
LD16	Makes clear what one can expect to receive when performance goals are achieved	CR	0.808		
LD11	Discusses in specific terms who is responsible for achieving performance targets	CR	0.724		
LD35	Expresses satisfaction when I meet expectations	CR	0.720		
LD1	Provides me with assistance in exchange for my efforts	CR	0.659		0.301
LD27	Directs my attention toward failures to meet standards	MBEA		0.807	
LD24	Keeps track of all mistakes	MBEA		0.767	
LD4	Focuses attention on irregularities, mistakes, and deviations from standards	MBEA		0.751	
LD22	Concentrates his/her full attention on dealing with mistakes, complaints and failures	MBEA		0.618	
LD12	Waits for things to go wrong before taking actions	MBEP	0.324		0.745
LD20	Demonstrates that problems must become chronic before taking action	MBEP			0.729
LD17	Shows that he/she is a firm believer in "if it ain't broke, don't fix it"	MBEP			0.686
LD3	Fails to interfere until problems become serious	MBEP			0.554
Rotation sum of squared loadings					
Eigenvalues			3.18	2.38	1.26
Percentage of variance explained (%)			20.24	19.41	17.21
Cumulative percentage of variance explained (%)			20.24	39.65	56.87
Reliability			0.712		

Note: management-by-exception – active (MBEA), management-by-exception – passive (MBEP), contingent reward (CR)

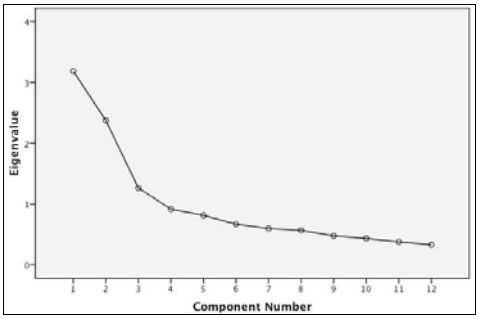


Figure 5-6 Scree Plot for the EFA of transactional leadership

Table 5-14 Comparison of eigenvalues from EFA and criterion values from Parallel Analysis – Transactional Leadership

Factor	Actual eigenvalue	Criterion value from Parallel Analysis	Decision
1	3.185	1.476	Accept
2	2.376	1.352	Accept
3	1.264	1.254	Accept

Following the above guidelines, EFA was conducted with four items of non-leadership behaviours (laissez-faire). The value of KMO and the Bartlett test were found 0.752 and 0.00 respectively, both of which were acceptable levels of factor analysis. EFA output revealed only one factor that had eigenvalue greater than 1.0. The following table displays the factor loading, items and theorised dimension.

Table 5-15 Items constituting the factors of the EFA – Non-leadership (laissez-faire)

	Items	Theorised Dimension	Factor Loadings
LD28	Avoids making decisions	LF	.810
LD5	Avoids getting involved when important issues arise	LF	.765
LD7	Is absent when needed	LF	.728
LD33	Delays responding to urgent questions	LF	.723

Note: Laissez-faire (LF)

Generally, the results of exploratory factor analysis for transactional leadership match Bass & Avolio's (1997) theoretical dimensions: contingent reward, management-by-exception (active), management-by-exception (passive), and laissez-faire. Furthermore, these result were aligned with the CFA results and all the factor loadings were well above the threshold of 0.50 (Hair, et al., 2006). Hence, these factors and items were

adopted as dimensions of transactional leadership behaviours for further statistical analysis.

5.3.5. Organisational Culture

As previously discussed, the result of CFA showed evidence that the collected data failed to fit the construct of organisational culture of Denison and Mishra's (1995) four-factor model. Hence, the 36 items measuring organisational culture were subjected to EFA to produce the new factors based on the collected data and prior literature review.

The initial principal component analysis revealed the presence of six components with eigenvalues exceeding 1.0 (see Table 5-16). An inspection of the scree plot revealed a clear break after the first component. The result of parallel analysis, however, showed two factors with eigenvalues either greater or close to the corresponding criterion values for a randomly generated data matrix. Parallel analysis has been shown to be the most accurate, with both Kaiser's criterion and Catell's scree test tending to overestimate the number of components (Hubbard & Allen, 1987; Pallant, 2007), so it was decided to retain two factors for further investigation. As a result, the two-factor solution was chosen to perform the EFA for organisational culture construct.

In the subsequent analysis, variables OC5, OC15 and OC26 were eliminated due to low factor loadings. Table 5-17 present the detailed result of the two-factor solutions. These two factors explained a total of 54.77% of the variance. Cronbach's alpha coefficient of the two-factor solution was 0.970, indicative of very good internal consistency (Hair, et al., 2006).

As presented in Table 5-17, the second factor was highly loaded by adaptability variables (AD) as suggested by Denison (1990), hence was labelled as *adaptability*. However, the number of variables in the first factor was still relatively large and consisted of variables from various theorised factors. For further understanding the underlying structure of the first factor, these variables were selected to perform further EFA.

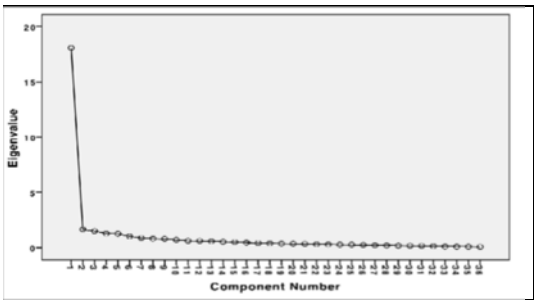


Figure 5-7 Scree Plot for the EFA of Organisational Culture

Table 5-16 Comparison of eigenvalues from EFA and criterion values from Parallel Analysis – Organisational Culture

Factor	Actual eigenvalue	Criterion value from Parallel Analysis	Decision
1	18.06	1.89	Accept
2	1.76	1.78	Accept
3	1.50	1.69	Reject
4	1.28	1.62	Reject
5	1.26	1.56	Reject
6	1.03	1.49	Reject

Based on the output of eigenvalues, Catell's scree test, parallel analysis, and percentage of variance criterion, two factors were retained for further investigation. In the subsequent analyses, variable OC7, OC9, OC10, OC11, and OC12 were removed, since they either had factor loadings smaller than 0.50 or cross loadings on the two factors. Table 5-18 presents the results of the final EFA solution. The EFA identified two factors explaining a total of 61.76% of variance. Cronbach's Alpha coefficient was 0.968, indicative of very good internal consistency (Hair, et al., 2006). The results of the EFA showed that, with the exception of variable OC8 'we continue to invest in the skills of employees', all the variables loaded in the first factor were found to have the same theoretical dimension of mission as proposed by Denison & Mishra (1995); hence, was labelled as *mission*.

Table 5-17 Items constituting the factors of the EFA – Two-factor solutions- Organisational Culture

	Items	Theoretical Dimension	Factor Loadings	
			1	2
OC29	There is a clear mission that gives meaning and direction to our work	MI	0.850	
OC30	There is a clear strategy for the future	MI	0.844	
OC32	Leaders of this organisation set goals that are ambitious, but realistic	MI	0.784	
OC31	There is widespread agreement about goals of this organisation	MI	0.781	0.326
OC36	Our vision creates excitement and motivation for our employees	MI	0.756	
OC28	There is a long-term purpose and direction	MI	0.755	0.302
OC35	Leaders of our organisation have a long-term orientation	MI	0.743	
OC34	We have a shared vision of what this organisation will be like in the future	MI	0.742	0.346
OC33	The leadership has clearly stated the objectives we are trying to meet	MI	0.739	
OC11	There is a clear and consistent set of values that governs the way we do business	CO	0.734	
OC18	There is good alignment of goals across levels of this organisation	CO	0.703	0.419
OC8	We continue to invest in the skills of employees	IN	0.694	
OC27	We make certain that we coordinate our actions and efforts between different units	AD	0.692	0.382
OC9	The capability of people is viewed as an important source of competitive advantage	IN	0.683	0.361
OC2	Information is widely shared so that everyone can get it	IN	0.642	0.334
OC12	Ethical codes guide our behaviours	CO	0.634	
OC16	People from different organisational units still share a common perspective	CO	0.621	
OC1	Decisions are usually made at the level where the best information is available	IN	0.618	0.414
OC4	Working is like being a part of a team	IN	0.617	0.469
OC10	Leaders and managers follow the guidelines that they set for the rest of the organisation	CO	0.601	0.329
OC3	Everyone believes that he or she can have a positive impact	IN	0.585	0.433
OC13	When disagreements occur, we work hard to achieve solutions that benefit both parties	CO	0.573	0.451
OC14	It is easy to reach consensus, even on difficult issues	CO	0.566	0.348
OC6	Teams are the primary building blocks of this organisation	IN	0.555	0.441
OC7	We constantly improve compared with our competitors	IN	0.532	0.302
OC17	It is easy to coordinate projects across functional units in this organisation	CO	0.526	
OC22	Customer comments and recommendations often lead to changes	AD		0.776
OC23	Customer input directly influences our decisions	AD		0.758
OC21	We continually adopt new and improved ways to do work	AD	0.446	0.603
OC25	We view failure as an opportunity for learning and improvement	AD	0.439	0.564
OC24	The interests of the final customer often get ignored in our decisions	AD		0.561
OC19	We are very responsive	AD	0.439	0.543
OC20	We respond well to competitors and other changes	AD	0.448	0.503
Rotation sum of squared loadings				
Eigenvalues			18.06	1.76
Percentage of variance explained (%)			37.51	17.26
Cumulative percentage of variance explained (%)			37.51	54.77
Reliability				

Note: Involvement (IN), Consistency (CO), Adaptability (AD), and Mission (MI)

The second factor was highly loaded by both CO (consistency) and IN (involvement) variables. According to Fey & Denison (2003), these variables represent the internal focus of organisations, which focuses on coordinating and integrating (OC17: it is easy to coordinate projects across functional units in this organisation), core values (OC16: people from different organisational units still share a common perspective), agreement (OC14: It is easy to reach consensus, even on difficult issues), empowering people (OC3: everyone believes he has a positive impact) and organising around teams (OC6: teams are primary building blocks of this organisation). Following Cameron and Quinn (1999), these characteristics are presented in either a hierarchical culture or the internal process mode the organisations that fit in this type of culture are the ones that focus on internal maintenance with a need for stability and control. Hierarchy culture places the emphasis on rules and structure, policies, and procedures, and well-defined multiple levels of authority (Cameron & Ettington, 1985); it exemplifies workplaces that are formal and structured, and stress efficiency; their leaders excel at coordinating and integrating (Gotwon & Ditomaso, 1992; Twati & Gammack, 2006). Therefore, the second factor was labelled *hierarchy*.

In summary, the results of the EFA were found not to match with the theorised dimensions of organisational culture (Denison & Mishra, 1995), except with regards to the mission and adaptability dimensions. These results were consistent with the result of the CFA which indicated that the collected data failed to fit the organisational culture of the four-factor model. Similar results had also been obtained in the previous study (G. Davidson, Coetzee, & Visser, 2007). Davidson, et al (2007) found that the correlation between the four theoretical cultural dimensions was high, thus suggesting that these dimensions could not be clearly distinguishable. An alike findings were presented in the original validity studies conducted by Denison & Neale (2009), thus indicating that the culture may in fact be measured in dimensions different to the four theoretical dimensions originally proposed by Denison (1990). In this study, based on the output of the EFA, three dimensions of organisational culture were found to be *adaptability*, *mission*, and *hierarchy*. These three dimensions were adopted to conduct the statistical analyses for testing the hypotheses for this study.

Table 5-18 Items constituting the factors of the EFA – Organisational Culture

	Items	Theoretical Dimension	Factor Loadings	
			1	2
OC30	There is a clear strategy for the future	MI	0.851	0.346
OC29	There is a clear mission that gives meaning and direction to our work	MI	0.815	0.347
OC32	Leaders of this organisation set goals that are ambitious, but realistic	MI	0.785	0.339
OC33	The leadership has clearly stated the objectives we are trying to meet	MI	0.770	0.332
OC31	There is widespread agreement about goals of this organisation	MI	0.763	0.413
OC35	Leaders of our organisation have a long-term orientation	MI	0.758	0.351
OC34	We have a shared vision of what this organisation will be like in the future	MI	0.717	0.432
OC36	Our vision creates excitement and motivation for our employees	MI	0.702	0.407
OC28	There is a long-term purpose and direction	MI	0.667	0.471
OC8	We continue to invest in the skills of employees	IN	0.616	0.349
OC17	It is easy to coordinate projects across functional units in this organisation	CO		0.714
OC13	When disagreements occur, we work hard to achieve solutions that benefit both parties	CO	0.314	0.714
OC4	Working is like being a part of a team	IN	0.407	0.697
OC14	It is easy to reach consensus, even on difficult issues	CO		0.697
OC2	Information is widely shared so that everyone can get it	IN	0.368	0.680
OC3	Everyone believes that he or she can have a positive impact	IN	0.361	0.662
OC18	There is good alignment of goals across levels of this organisation	CO	0.509	0.649
OC1	Decisions are usually made at the level where the best information is available	IN	0.411	0.646
OC6	Teams are the primary building blocks of this organisation	IN	0.383	0.614
OC16	People from different organisational units still share a common perspective	CO	0.465	0.611
Rotation sum of squared loadings				
Eigenvalues			14.21	1.330
Percentage of variance explained (%)			33.04	28.72
Cumulative percentage of variance explained (%)			33.04	61.76
Reliability			0.968	

Note: Involvement (IN), Consistency (CO), Adaptability (AD), and Mission (MI)

5.3.6. Knowledge Management Practices

The measurement of KM practices within organisation consisted of four dimensions: socialisation, internalisation, externalisation, and combination (Sabherwal & Becerra-Fernandez, 2003). The initial principal component analysis revealed the presence of four factors with eigenvalues exceeding 1.00 (see Table 5-19). An inspection of the scree test revealed a clear break after the second factor, suggesting the retention of only

two components. However, these two factors only explained a total of 36% of variance, which was far lower than the recommended limit of 60% (Hair, et al., 2006). Additionally, the results of the parallel analysis showed three factors with eigenvalues either greater or close to the corresponding criterion values of a randomly generated data matrix (as shown in Table 5-19). Based on the output of the eigenvalues, percentage of variance criterion, and the parallel analysis results, it was decided to retain three factors for further investigations. Consequently, the three-factor solution was chosen to perform the EFA for knowledge management construct.

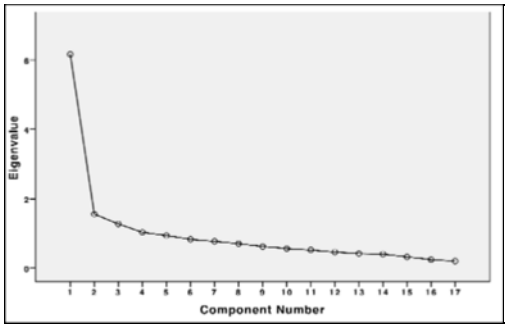


Figure 5-8 Scree Plot for the EFA of Knowledge Management

Table 5-19 Comparison of eigenvalues from EFA and criterion values from Parallel Analysis – Knowledge Management

Factor	Actual eigenvalue	Criterion value from Parallel Analysis	Decision
1	6.163	1.543	Accept
2	1.558	1.433	Accept
3	1.273	1.340	Accept
4	1.031	1.263	Reject

In the subsequent analyses, variables KM9 and KM14 were removed due to low factor loadings (<0.50). Table 5-20 presents the detailed information of the final EFA solution. The EFA identified three factors, which explained 52.909% of the variance. Cronbach's alpha coefficient of this three-factor scale was 0.862, indicative of good internal consistency (Kline, 2005; Pallant, 2007).

Table 5-20 Items constituting the factors of EFA – Knowledge Management – Final factors

	Items	Theorised Dimension	Factor Loadings		
			1	2	3
KM11	Databases	COM	0.812		
KM10	Web pages (Intranet and Internet)	COM	0.757		
KM16	Chat group/web-based discussion groups	EX	0.728	0.332	
KM15	Pointers to expertise (skill "yellow pages")	EX	0.630	0.332	
KM17	Groupware and other team collaboration tools	EX	0.603	0.354	
KM12	Modelling based on analogies	EX	0.582	0.406	
KM13	Capture and transfer of experts' knowledge	EX	0.527	0.450	0.353
KM8	Cooperative projects across directorates	SO		0.722	
KM6	Brainstorming retreats or camps	SO		0.687	
KM7	Employee rotation across areas	SO		0.653	
KM5	The use of apprentices and mentors to transfer knowledge	SO		0.520	
KM4	Face-to-face meeting	IN		0.502	
KM1	Learning by doing	IN			0.688
KM2	On-the-job training	IN			0.620
KM3	Learning by observation	IN		0.331	0.572
Rotation sum of squared loadings					
Eigenvalues			6.613	1.558	1.273
Percentage of variance explained (%)			36.25	9.17	7.49
Cumulative percentage of variance explained (%)			36.25	45.42	52.91
Reliability			0.862		

Note: Internalisation (IN), Socialisation (SO), Externalisation (EX), and Combination (CO)

Seven variables were loaded in the first factor. Although these items did not share the same proposed theoretical dimension, they met with Sabherwal & Becerra-Fernandez's (2005) definition of knowledge exchange process. Sabherwal and Becerra-Fernandez's (2005) defined knowledge exchange practices as the transfer of explicit knowledge between individuals. It depends on externalisation, or the conversion of tacit knowledge into an explicit form (Nonaka, 1994). As a result, Sabherwal & Becerra-Fernandez (2005) included knowledge externalisation within knowledge exchange practices. Additionally, by engaging communication of information through written or electronic means, knowledge exchange involves reconfiguration of existing information through sorting, adding, combining, and categorizing of explicit knowledge (as conducted in computer database) (Nonaka & Konno, 1998). Further, communication is more efficient and effective in the presence of common knowledge (Carlson & Zmud, 1999; Conner & Prahalad, 1996); thus, knowledge exchange based on explicit communication can obtain great benefits from individual exchange and knowledge combination through such media as web pages (intranet and Internet). Therefore, the first factor was labelled as

knowledge exchange in this study.

With the exception of variable KM4 'face-to-face meeting', the second factor was highly loaded by SO's variables. However, Davenport and Prusak (1998) described conversation such as face-to-face meeting as an important social process that helped knowledge sharing among groups at IBM. This study, therefore, labelled this second factor as *socialisation*. Finally, the last factor were highly loaded by IN's variables, hence was labelled as *internalisation***.**

In summary, using exploratory factor analysis, the construct of knowledge management was found to be a multidimensional variable consisting of exchange, socialisation and internalisation dimensions. These three dimensions were adopted to conduct further statistical analysis for testing the hypotheses on this study.

5.4. Chapter Summary

This chapter reported the process employed by this study to confirm the theorised framework and developed the valid and reliable measurement scales for the four constructs of the research framework. In the first phase of this process, an analysis of the scale reliability was performed through an assessment of internal consistency and inter-total correlations. However, reliability is only necessary – not a sufficient – condition for validity. Consequently, factor analyses, including the CFA and EFA, was performed to inform evaluation of scale validity. The CFA was utilised to test the fit of theorised models adopted in this study to measure the four research constructs. Secondly, the EFA was performed to improve the model fit to the collected data, convergent validity, and discriminant validity of the measurement scales (Kline, 2005)

The EFA analysis found two factors for the constructs of transformational leadership: *attributed charisma,* leaders behave as strong models for the follower, and inspire and motivate them through providing meaning and challenging (Bass, et al., 2003); and *individualised consideration* referring behaviours of the leader in terms of providing a supportive climate and stimulating followers to be creative and innovative (Avolio, et al., 1991; Northouse, 2001). The EFA analysis also confirmed the constructs of

transactional leadership in line with the dimensions proposed by Bass and Avolio (1997): *contingent reward, management by exception (active and passive),* and *laissez-faire*. These factors represented the basic components of transactional leadership behaviours in their business environment.

Three factors were identified for the organisational culture; *Adaptability* (AD), referring to the ability of an organisation to alter behaviour and structure in the wake of environmental changes; *Mission* (MI) represents purpose and direction, and expresses strategic objectives and a vision for an organisation (Fey & Denison, 2003); and *Hierarchy* (HI) represents the internal focus of an organisational culture including empowering people, developing human capability and behavioural norms, and internal integration and coordination.

The factor analysis also revealed that the common and latent variables of KM practices constructs were in line with the dimension of *exchange, socialisation, and internalisation.* According to Nonaka & Takeuchi (1995) these dimensions represents organisational knowledge management as involving a continual interplay between the tacit and explicit dimension of knowledge, and a growing spiral flow as knowledge moves through individuals, groups, and organisational levels.

In conclusion, the EFA and CFA developed and confirmed good measurement scales for the four constructs (transformational leadership, transactional leadership, organisational culture, and knowledge management practices), with very good reliability, validity, and conceptual definitions (as shown in Table 5.21). These scales were used in the further multivariate analyses during the next stage of identifying the relationships among these constructs.

Table 5-21 Summary of assessing measurement model result

Construct	Item(s) removed	Factor Extracted	Cronbach's Alpha	Cumulative Variance	Factor Description
Transformational Leadership (TF)	LD6, LD8, LD21 LD25, LD32	2	0.917	49.924%	TF1: Attributed charisma (9 variables) TF2: Individualised consideration (6 variables)
Transactional Leadership (TA)		4	0.799	68.348%	TA1: Contingent reward (4 variables) TA2: Management-by-exception (Active) (4 variables) TA3: Management-by-exception (Passive) (4 variables) TA4: Laissez-faire (4 variables)
Organisational Culture (OC)	OC5, OC7, OC9, OC10, OC11, OC12, OC15, OC26, OC27	3	0.968	54.772%	OC1: Adaptability (7 variables) OC2: Mission (10 variables) OC3: Hierarchy (10 variables)
KM Practices (KM)	KM9, KM14	3	0.862	52.909%	KM1: Exchange (7 variables) KM2: Socialisation (5 variables) KM3: Internalisation (3 variables)

CHAPTER 6

RELATIONSHIP IDENTIFICATION

This chapter presents the process of testing the proposed hypotheses to answer the research questions concerning the relationship among leadership behaviours, organisational culture and knowledge management. The chapter contains the exploratory study, which employed correlations and multiple regression analyses in analysing the relationships between constructs. The objective was to reveal if these constructs were associated with each other; and if they were, whether these associations were strong enough so that the variance of one or two constructs could be used to predict that of another. This study was also interested in assessing the relationships between the factor(s) of one specific construct with those of another. The objective of such an approach was to identify, within each construct, the factor that was most sensitive to the variance of, or most influential to, the factors of the other constructs. Additionally, moderated regression analyses, introduced in Section 6.3, were performed to test the moderating effect of organisational culture on the association between leadership behaviours and knowledge management practices.

6.1. Correlation Analysis

The variables of this study were quantitative, having five values, and being measured on a level with at least approximate interval characteristic. Therefore, the statistical techniques of the Pearson product moment correlation, known as Pearson's correlation, were used to determine the extent to which they were linearly related (Hair, et al., 2006; Weinberg & Goldberg, 1990). The extent of linear approximation between two variables was indexed by a statistic known as the Pearson correlation coefficient (r) (Jaccard & Becker, 1997), which can assume any value from -1.00 to +1.00 inclusive. The size of the absolute value provides an indication of the strength of the relationship. A correlation coefficient of -1.00 or +1.00 and -0.50 or +0.50 indicates perfect and moderate correlation respectively (Pallant, 2007). However, in behavioural science research, where complex behaviours are studied, significant correlation of 0.20 to 0.30 (and -0.20 to -0.30), are often considered important (Jaccard & Becker, 1997). The variable that was identified to have significant association with several other variables, was further analysed through a stepwise regression process to reveal whether

it (as a criterion) could be predicted or explained by those variables (as predictors). In this study, 12 factors which included 2 factors of transformational leadership (TF), 4 of transactional leadership (TA), 3 of organisational culture (OC), and 3 of knowledge management practices (KM), were used to test the hypotheses and answer the research questions. The correlation analysis was performed to identify aspects of the relationship among these dimensions. Table 6-1 displays the correlations matrix of the constructs level, while the detailed correlation analyses at the factor level are presented and discussed the next sections.

Table 6-1 Correlations Matrix of Constructs

	Pearson Correlation	
	KM (Knowledge Management)	**OC** (Organisational Culture)
TF: Transformational Leadership	0.404**	0.663**
TA: Transactional Leadership	0.294**	0.619**
**. Correlation is significant at the 0.01 level (2-tailed).		
*. Correlation is significant at the 0.05 level (2-tailed).		

6.2. Testing Hypotheses

Upon determining the relationships among variables and factors by correlation analysis, it is important to identify the strength and the direction of the relationship among variables, thus testing the four hypotheses stated in Chapter 3:

(H1) Transformational leadership behaviours are positively related to the type and frequency of KM practices within organisation.

(H2) Transactional leadership behaviours are positively related to the type and frequency of KM practices within organisation.

(H3) Organisational culture moderates the relationships between transformational leadership and KM practices.

(H4) Organisational culture moderates the relationships between transactional leadership and KM practices.

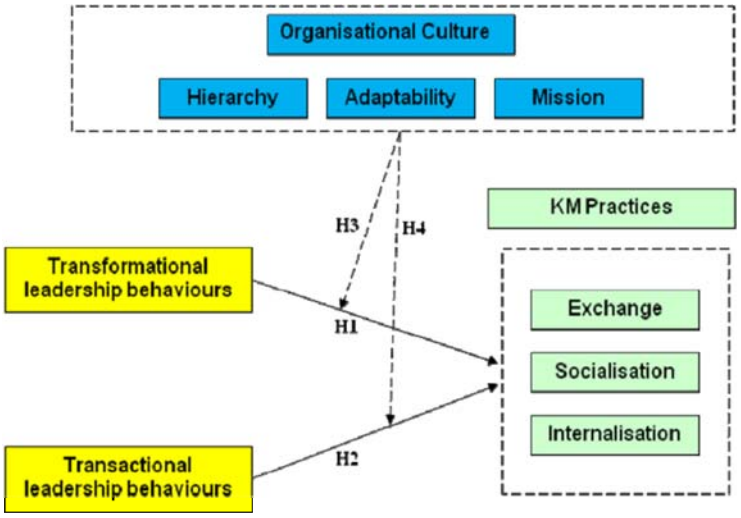


Figure 6-1 Conceptual model and hypotheses

According to Tabachnick & Fidell (2007), multiple regression analysis is by far the most widely used in the business and social sciences to explore all types of dependent relationships. It is a powerful analytical tool used to determine which specific independent variables predict the variance of dependent variables selected by the research (Hair, et al., 2006). Hence, regression analyses were performed to predict the relative test of the four research hypotheses. For this analysis, the independent variables were subordinates' perceptions of their leadership behaviours including both transformational and transactional behaviours, and the dependent variable (outcome variable) was knowledge management practices. In addition, moderated regression analysis was used to predict the interaction effect of organisational culture on the outcome variable (knowledge management practices), when leadership behaviours are the predictors.

6.2.1. Testing the Underlying Assumptions for Multiple Regression

In drawing conclusions about a population based on a regression analysis conducted on sample data, testing the assumptions is critically important because of the complication of the relationship between variables (Berry & Feldman, 1985; Hair, et al., 2006). The assumptions for multiple regression analysis are: (1) Normality of residuals; (2) Linearity and homoscedasticity; (3) and Multicollinearity and Residual Independence. If the data do not

meet these assumptions, they need to be transformed before applying multiple regression analysis.

Normality: As previously discussed in Chapter 4, the most fundamental assumption in multivariate analysis is normality, referring to the shape of the data distribution for a variable and its correspondence to the normal distribution (Hair, et al., 2006). Normality of variables is assessed either by statistical methods or graphical analyses. Two important components of normality are skewness and kurtosis (Tabachnick & Fidell, 2007). Theoretically, when a distribution is perfect distribution, the value of skewness and kurtosis are zero (rather an uncommon occurrence in the social research). Garson (2009) suggested that, for a distribution to be considered normal, both skewness and kurtosis of the distribution should fall between -2.00 to +2.00. The skewness and kurtosis values of the research constructs and factors are presented in Table 6-2 The results indicated that the data set are generally normally distributed with skewness and kurtosis values ranged from -0.892 to 0.172 and from -0.579 to 1.228, respectively.

Linearity: The assumption of linearity is that there is a straight line relationship between dependent variables and independent variables (Hair, et al., 2006). Linearity is important as Pearson's *r* only captures the linear relationships among variables (Tabachnick & Fidell, 2007); if there are sustainable nonlinear relationships among variables, they are ignored. Linearity between two variables is assessed roughly by inspection of bivariate scatterplot. If both variables are normally distributed and linearly related, the scatterplot is oval-shaped (Tabachnick & Fidell, 2007).

Homoscedasticity: Refers to the assumption that dependent variable(s) exhibit equal levels of variance across the range of predictor variable(s) (De Vaus, 1995). Homoscedasticity is desirable because the variance of the dependent variable being explained in the dependence relationship should not be concentrated in only a limited range of independent value (Hair, et al., 2006). The standard procedure for establishing the presence of homoscedasticity is to examine residual plots for actual standardised values (ZREDID), dependent values against predicted residuals values (ZPRED), and dependent variables (De Vaus, 1995)

Table 6-2 Normality statistic test

	Mean	Std Deviation	Skewness	Kurtosis
TF	2.59	.690	-.495	.102
CH	2.63	.741	-.571	-.016
IC	2.53	.778	-.441	.133
TS	2.54	.544	-.415	.434
CR	2.53	.796	-.499	-.446
MBEA	2.06	.852	.128	-.579
MEBP	2.54	.812	-.260	-.129
LF	3.03	.758	-.705	-.048
OC	3.66	.742	-.738	.184
AD	3.70	.686	-.892	1.228
MI	3.70	.931	-.826	.198
HI	3.60	.769	-.571	-.244
KM	3.00	.592	.042	-.625
IN	.389	.572	-.283	.294
SO	2.82	.673	-.071	-.349
EX	2.75	.803	.172	-.460

Note
TF: Transformational leadership; CH: Attributed charisma; IC: Individualised consideration
TS: Transactional leadership; CR: Contingent reward; MEBA: Management-by-exception active;
MEBP: Management-by-exception passive; LF: Laissez-faire
OC: Organisational culture: AD: Adaptability; MI: Mission; HI: Hierarachy
KM: Knowledge management practices; IN: Internalisation; SO: Socialisation; EX: Exchange

Multicollinearity: Defined as a strong correlation among the predictor variables (Hair, et al., 2006). The presence of multicollinearity threatens the internal validity of multiple regression analysis and increases the likelihood of errors in hypothesis testing (Field, 2005). The diagnostic of multicollinearity within multiple regression procedure suggests two statistical indicators: the variable inflation factor (VIF) and tolerance measure (De Vaus, 1995). The VIF value and the tolerance measure are acceptable if they are below 10 and over 0.1 respectively (Hair, et al., 2006; Menard, 1995; Tabachnick & Fidell, 2007).

Independence of residuals: Another assumption of regression, testable through residuals analysis, is that the errors of prediction are independent of one another (Tabachnick & Fidell, 2007). The associated Durbin-Watson statistic is used to measure the autocorrelation of errors over the sequence of cases, and, if significant, indicates dependence of errors. Field (2005) suggested that Durbin-Watson statistic is better closer to 2.00.

6.2.2. Multiple Regression Analyses

Following the determination of the appropriateness of the data set, multiple regression analysis was performed to predict the relative contribution of transformational and transactional leadership behaviours on the outcome variable (knowledge management

practices). According to Tabachnick & Fidell (2007), multiple regression analyses provide a means of objectively assessing the magnitude and direction of each predictor's relationship to its outcome variable. Hence, to test the hypotheses regarding the relationship among and between transformational and transactional leadership behaviours, and knowledge management practices, multiple regression analyses were performed.

According to Arnold (1982), moderated regression analysis provides the most straightforward method for testing hypotheses in which an interaction is implied. Thus, moderated regression analyses were used to test the hypotheses regarding the moderating effect of organisational culture. The forced entry regression method and the hierarchical regression method are also utilised. The reason for selecting the forced entry regression method is that this method is considered most suitable for theory testing (Studenmund & Cassidy, 1987), whereas 'stepwise' regression is more appropriate in the exploratory phase of research, or for the purpose of prediction (Menard, 1995). While the selection of hierarchical regression method for testing the moderation effect is critical in eliminating the main effect of transformational and transactional leadership behaviours prior to examining the interaction effect (Stone & Hollenbeck, 1989); evidence of moderation is presented when the interaction terms account for significant residual variance in the outcome variable. Therefore, change in the R^2 and the F statistic is examined in each step (Becerra-Fernandez & Sabherwal, 2001).

The interpretation of the multiple regression analyses included understanding of multiple correlation indices such as *R*, R^2, and adjusted R^2. Multiple Pearson's product moment correlation efficient *(R*) value ranges from 0 to 1. A value of 0 means that there is no linear relationship between predicted scores (independent variable) and the criterion scores (dependent variable). While a value of 1 implies that the linear combination of the predictor variables perfectly predicts the criterion variable; values between 0 to 1 indicate a less than perfect linear relationship between predicted and criterion scores (Hair, et al., 2006). The value of R^2 is interpreted as the percentage of the criterion variance accounted by the linear combination of predictors. However, R^2 is adjusted to correct the overestimation (inflated) value) of the population of the sample (Hair, et al., 2006; Tabachnick & Fidell, 2007). Therefore adjusted R^2 values are reported in this chapter to indicate the degree (in percentage) to which particular constructs/factors were predicted and explained by others and

to compare degree of prediction between the constructs/factors.

Both standardised and unstandardised regression coefficients are also reported for the significant regression models. Unstandardised regression coefficient B was used to construct a regression equation, calculate the predicted values for each observation and to express the expected change in the criterion variable for each unit change in predictor(s) (Pallant, 2007). Standardised regression coefficient β (also called the beta coefficient) was the coefficient that resulted from the standardised data (Pallant, 2007). The β coefficients eliminated the problems dealing with different units of measurement, thus they reflected the relative impact on the criterion of a change in one standard deviation in either variable. In the other words, based on the value of the β coefficients, the predicting power of predictors within a multiple regression model could be compared; i.e, the larger the β coefficient value was, then the larger effect the predictor had in predicting (Hair, et al., 2006). The β coefficient was particular relevant to this study because determining the most influential variable was one of this study's objectives.

6.2.3. Testing the Effect of Transformational Leadership on Knowledge Management

The first hypothesis about the relationship between transformational leadership behaviours (TF) and knowledge management (KM) derived from the literature review (H1): Transformational leadership (TF) is positively correlated with the frequency of knowledge management practices (KM).

Testing the Assumption of Multiple Regression

Figure 6-2 shows that the points are randomly and evenly dispersed throughout the scatterplot. This pattern indicates a situation in which the assumption of linearity and homoscedasticity have been met (Hair, et al., 2006). The Durbin-Watson values ranged from 1.748 to 1.920 (close to 2.00) as shown in Table 6-4 and Table 6-5, thus indicating that the independence of residuals assumption does not violate (Pallant, 2007). The maximum value for Cook's Distance is 0.110 (<1.00), suggesting no potential problems with the outliers (Tabachnick & Fidell, 2007). Additionally, multicollinearity was absent from the regression model, where the tolerance values was 0.567 (<1.00) and the variance inflation factor (VIF) was 1.673 (<10.00) (Pallant, 2007).

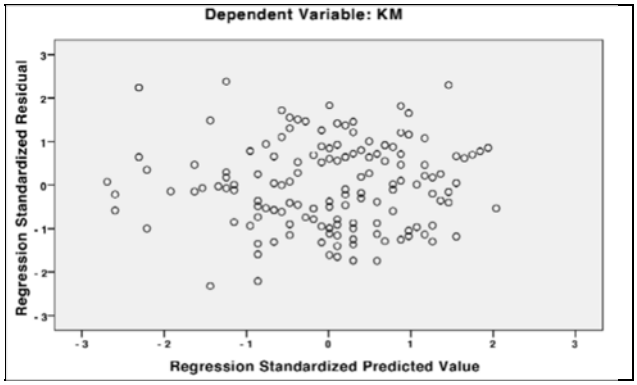


Figure 6-2 Scatterplot: Transformational Leadership vs. Knowledge Management

Correlation Analyses

As presented in Table 6-1, the Pearson correlation *r* value between the TF construct and KM construct was 0.404, reflecting a moderate positive correlation (Pallant, 2007) between TF and KM. Additionally, the correlation analyses on the factors of these two constructs revealed that all factors within the TF construct had positive correlation with the three factors of KM. However, 'SO: socialisation' was the only factor within the KM construct that has a moderate positive correlation with the two factors of TF with the positive *r* correlation values of 0.423 and 0.380, respectively (see Table 6-3). The correlation between the two factors of TF construct and two factors of KM construct (IN and EX) were weak, ranging from 0.183 to 0.314; these findings suggest that the TF constructs did not have strong associations with KM factors or the construct. In addition, all factors of TF were significantly correlated with the factors of the KM construct at the 0.001 level (2-tailed) and upheld the nomological validity of the scales of TF and KM and their factors (Bresnen, Edelman, Newell, Scarbrough, & Swan, 2003; Wang & Ahmed, 2001).

Table 6-3 Correlations between TF and KM factors

TF factors	**Pearson Correlation**		
	IN (Internalisation)	**SO** (Socialisation)	**EX** (Exchange)
CH: Attributed charisma	0.183*	0.423**	0.314**
IC: Individualised Consideration	0.224**	0.380**	0.227**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Regression Analyses

The next research issue was to identify the potential predicting power of the transformational leadership (TF) construct and factors on the intensity of KM practices. As presented in Table 6-4, the regression analyses revealed that the TF predicted and explained 15.8% of variance of KM with adjusted R^2 values significant at the 0.005 level. This finding suggested that TF was positively correlated to KM, and the association was strong enough to support the statistically significant predicting power of TF upon the variance of KM.

The more detailed picture of the relationship between the TF and KM factors was revealed by the findings of the regression analyses at the factor level; these results are presented in Table 6-5. The findings revealed that the TF factors (CH and IC) predict and explain 4%, 18.7%, and 8.8% of the variance of IN, SO, and EX respectively. These adjusted R^2 values were significant at the 0.05 level with the power of 0.80 (Jaccard & Becker, 1997). Additionally, the results of *t*-values, shown in Table 6-5, indicate that CH is a significant predictor of both SO and EX. Nevertheless, IC had no significant predicting power on any of the KM factors, thus indicating that the independent variable IC could be totally removed and not need be considered for any further analysis of the moderating effect of OC on TF and KM.

The above findings suggested that the transformational leadership behaviours (TF) construct have moderate associations with knowledge management (KM constructs and factors). Within the TF construct, CH was the only factor that had statistically significant predicting power over the variance of two out of three KM factors; nevertheless, the predicting level ranged from 10% to 20%, marginally significant at the 0.05 level. Based on these findings, it is concluded that TF is related to KM, and thus hypotheses H1 is supported, albeit not strongly.

Table 6-4 Regression model of the relationships between TF and KM construct

Criterion	Constant (*t* statistic)	Predictor Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)	Model Summary				
		TF	R	R^2	Adj. R^2	F	Durbin-Watson
KM	2.105 (12.459***)	0.346 (0.063) / 0.404 (5.495**)	0.406	0.165	0.158	30.193	1.920

Notes:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
TF: Transformational leadership; KM: Knowledge management

Table 6-5 Regression model of the relationships between TF and KM factors

Criterion	Constant (*t* statistic)	Predictor Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)		Model Summary				
		CH	IC	R	R^2	Adj. R^2	F	Durbin-Watson
IN	3.423 (19.612***)	0.048 (0.080)/ 0.062 (0.600)	0.135 (0.077)/ 0.183 (1.756)	0.229	0.052	0.040	4.259	1.911
SO	1.701 (8.999***)	0.278 (0.087)/ 0.305 (3.185**)	0.155 (0.083)/ 0.179 (1.864)	0.444	0.197	0.187	18.897	1.876
EX	1.827 (7.648***)	0.315 (0.110)/ 0.291 (2.864**)	0.037 (0.010)/ 0.036 (0.351)	0.315	0.099	0.088	8.506	1.748

Note:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
CH: Attributed charisma; IC: Individualised consideration
IN: Internalisation; SO: Socialisation; EX: Exchange

6.2.4. Testing the Effect of Transactional Leadership on Knowledge Management

The second hypothesis about the relationship between transactional leadership behaviours (TA) and knowledge management (KM) derived from the literature review (H2): Transactional leadership (TA) is positively correlated with the frequency of knowledge management practices (KM).

Testing the Assumptions of Multiple Regression

Figure 6.3 shows that the points are randomly and evenly dispersed throughout the scatterplot. This pattern indicates a situation in which the assumption of linearity and homoscedasticity have been met (Hair, et al., 2006). Multicollinearity was absent, since the tolerance values ranged from 0.577 to 0.938 (>0.10) and the variance inflation factor (VIF) ranged from 1.066 to 1.733 (<10.00) (Pallant, 2007). As presented in Table 6-7, the Durbin-Watson values indicated no evidence of autocorrelation among the residuals (Tabachnick & Fidell, 2007). Additionally, the inspection of Cook's Distance (maximum = 0.073 < 1.00) suggested no potential problems with the outliers (Tabachnick & Fidell, 2007).

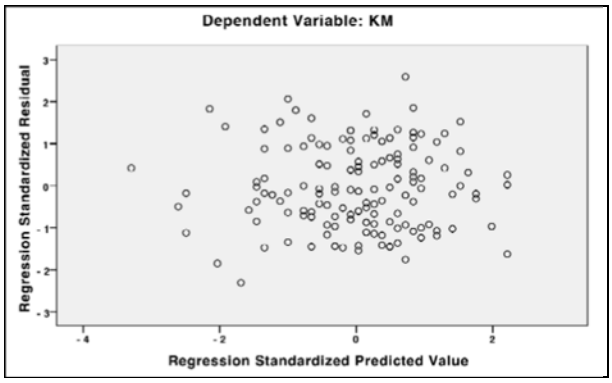


Figure 6-3 Scatterplot: Transactional Leadership vs. Knowledge Management

Correlation Analyses

The correlation analyses showed that the TA constructs were positively correlated with the KM construct (see Table 6-6). The Pearson's correlation *r* value between the TA and KM construct was 0.294, and significant at the 0.01 level (2-tailed), indicating a positive, but, not

strong, correlation (Hair, et al., 2006). Similar positive correlations were also revealed between factors of these two constructs, with the exception of MBEA (management-by-exception active), which was found to be negatively correlated with all KM factors (as presented in Table 6-6). In addition, the correlation analysis found that only the CR (contingent reward) factor within the TA construct had significant positive correlation with all the factors of KM construct. The findings of correlation analysis suggested that the TA construct and factors appeared to have weak associations with the KM construct and its factors.

Table 6-6 *Correlations between TA and KM factors*

	Pearson Correlation		
	IN (Internalisation)	**SO** (Socialisation)	**EX** (Exchange)
CR: Contingent reward	0.245**	0.483**	0.398**
MEBA: Management-by-exception active	-0.159*	-0.031	-0.063
MEBP: Management-by-exception passive	0.074	0.222*	0.142
LF: Laissez-faire	0.123	0.219*	0.193*

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Regression Analyses

The more detailed picture of the relationships between TA and KM at construct and factor levels were revealed by the findings of regression analyses. Table 6.7 summarises the regression results of the regression analysis at the construct level. Using simple regression analysis, the coefficient of correlation R and coefficient of determination R^2 were found to be 0.294 and 0.087 respectively. The value of adjusted R^2 of 0.081 indicated that 8.1% of the variance of KM is affected by the organisation's leadership through transactional leadership behaviours (TA). The valid regression model was found, to have significant F-value of 14.714 at the 0.005 level and a significant t-value of 3.836 at 0.005 level. The results suggested that transactional leadership behaviours (TA) were positively correlated to knowledge management (KM), thus supporting hypothesis H2 of the research.

To examine how transactional leadership behaviours (TA) affect each dimension of the KM construct, a second regression analysis was performed. The results of the regression analyses are presented in Table 6-8, and reveal that the combination of TA factors (CR, MBEA, MBEP & LF) explained and predicted 6.4%, 21.6%, and 14.4% of the variance of IN, SO, and EX respectively. These adjusted R^2 values were found to be significant at the 0.05 level

with a power of 0.80 (Jaccard & Becker, 1997). Additionally, the inspection of *t*-values and p-values revealed that only CR is a significant predictor of KM activities; no statistically significant predicting power was found with the other TA factors. These findings suggested that the transactional leadership behaviours (TA), especially contingent reward (CR), were significant predictors of the knowledge management practices (KM) within organisations.

Table 6-7 Regression model of the relationships between TA and KM construct

Criterion	Constant (*t* statistic)	Predictor Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)	Model Summary				
		TA	R	R^2	Adj. R^2	F	Durbin-Watson
KM	2.189 (10.083***)	0.320(0.083)/ 0.294(3.836***)	0.294	0.087	0.081	14.714	2.062

Notes:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
TA: Transactional leadership; KM: Knowledge management

Table 6-8 Regression model of the relationships between TA and KM factors

Criterion	Constant (*t* statistic)	Predictors Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)				Model Summary				
		CR	MBEA	MBEP	LF	R	R^2	Adj. R^2	F	Durbin-Watson
IN	3.567 (16.388**)	0.156(0.062)/ 0.217(2.521*)	-0.109(0.054)/ -0.162(-2.026)	-0.03(0.072)/ -0.042(-0.414)	0.076(0.077)/ 0.101(0.989)	0.297	0.088	0.064	3.667	1.841
SO	1.724 (7.357***)	0.387(0.067)/ 0.457/(5.811***)	-0.020(0.058)/ -0.025(-0.348)	0.025(0.077)/ 0.031(0.328)	0.032(0.083) 0.036(0.387)	0.486	0.237	0.216	11.773	1.876
EX	1.713 (5.861***)	0.384(0.083)/ 0.38(4.626***)	-0.053(0.072)/ -0.057(-0.741)	-0.053(0.097)/ -0.053(-0.544)	0.102(0.103)/ 0.096(0.988)	0.408	0.166	0.144	7.568	1.803

Note:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
CR: Contingent reward; MBEA: Management-by-exception active; MBEP: Management-by-exception passive
LF: Laissez-faire; IN: Internalisation; SO: Socialisation; EX: Exchange

6.2.5. Testing the Moderating Effect of Organisational Culture

The third and fourth hypotheses derived from the literature review are about the moderating effects of organisational culture (OC) on the relationship between transformational (TF) & transactional leadership behaviours (TA) and knowledge management (KM) within organisation, respectively.

According to Arnold (1982), moderated regression analysis provides the most straightforward method for testing hypotheses in which an interaction term is applied. Therefore, the hierarchical regression analysis with knowledge management as the dependent variable was performed. The main effects of the transformational and transactional leadership behaviours were entered first, followed by the interaction terms of organisational culture. The procedure eliminated the main effect of leadership prior to examining the interaction effect (Stone & Hollenbeck, 1989). Moreover, entering all the interaction terms simultaneously controlled the possible multicollinearity among the variables (Becerra-Fernandez & Sabherwal, 2001). Additionally, in order to further minimize multicollinearity, the independent variables (IVs) were centred and the interaction terms were formed by multiplying together two centred terms (Aiken & West, 1991; Cronbach, 1987; Hair, et al., 2006). The 157 cases in the data file satisfied the minimum sample size of 50 for supporting the case-to-IV ratio of 50 to 1 required by the moderated regression analysis with two IVs (Tabachnick & Fidell, 2007). Multicollinearity was absent from selected models where tolerance values were much higher than 0.1. Evidence of moderation was present when the interaction terms account for significant residual variance in the dependent variable (Becerra-Fernandez & Sabherwal, 2001). Hence the change in R^2 and the F statistic are examined for each step. Throughout the analyses, attention was also paid to the standardised coefficient values to see if the F statistic for that hierarchical step was significant.

As presented in Table 6-9, there was no significant increase in R^2 when the interaction terms (TF x HI, TF x AD, and TF x MI) were introduced, thus indicating that none of these dimensions of organisational culture was found to moderate the effect of transformational leadership behaviours on knowledge management practices within an organisation. Therefore, hypothesis H3 was not supported.

Table 6-9 Result of multiple regression analysis of Transformational Leadership and Knowledge Management with the moderating effect of Organisational Culture

Independent	**Step 1**		**Step 2**					
	TF		TF x HI		TF x AD		TF x MI	
	Beta	*t*	Beta	*t*	Beta	*t*	Beta	*t*
TF	0.404	5.495**	0.416	5.403**	0.398	5.283**	0.411	5.347**
Interaction effect								
TF x HI			0.041	0.532				
TF x AD					-0.53	-0.721		
TF x MI							0.025	0.328
Equation								
ΔR^2			0.002		0.003		0.001	
R^2	0.163		0.165		0.166		0.164	
ΔF			0.283		0.520		0.107	
F	30.193**		15.168**		15.310**		15.063**	

Note::
TF: Transformational leadership behaviours; HI: Hierarchy; AD: Adaptability; MI: Mission
**: Significant at 0.01 level
*: Significant at 0.05 level

As Table 6.10 shows, in the moderated regression of transactional leadership (TA) on knowledge management, the interaction terms of hierarchy (HI) and mission (MI) culture were significant; indicated by the significant increase in the R^2 values when interaction terms were included. However, AD (adaptability) did not moderate the relationship between TA and KM. Therefore, hypothesis 4 was partially supported.

Table 6-10 Result of multiple regression analysis of Transactional Leadership and Knowledge Management with the moderating effect of Organisational Culture

Independent	**Step1**		**Step 2**					
	TA		TA x HI		TA x AD		TA x MI	
	Beta	*t*	Beta	*t*	Beta	*t*	Beta	*t*
TA	0.294	3.836**	0.269	3.487**	0.271	3.487**	0.261	3.378**
Interaction effect								
TA x HI			-0.147	-1.904*				
TA x AD					-0.126	-1.624	-0.171	-2.211*
TA x MI								
Equation								
ΔR^2			0.021		0.015		0.028	
R^2	0.087		0.108		0.102		0.115	
ΔF			3.624*		2.639		4.888*	
F	14.714**		9.293**		8.754**		9.985**	

Note::
TA: Transactional leadership behaviours; HI: Hierarchy; AD: Adaptability; MI: Mission
**: Significant at 0.01 level
*: Significant at 0.05 level

To interpret the effect of the interaction term of HI, according to Aiken & West's (1991) recommendation, the value of HI was chosen to be one standard deviation below the mean (HI low = -0.769), at the mean (HI medium = 0.00), and one standard deviation

above the mean (HI high = 0.769). Simple regression lines were then generated by substituting these values (-0.769, 0.00, 0.769) into the moderated regression with the interaction terms (TA x HI). As a result, three simple regression equations were produced (Figure 6-4), where the influence of HI on the relationship between TA and KM was revealed. The statistical significance of the slopes of these simple regression equations were also analysed and established. The simple regression equations, detailed in Figure 6-4 indicated a significant ($p < 0.05$) positive regression of KM on TA at all levels of HI. The equations support the concept that the lower the HI level, the steeper the slope. This suggests that HI has a negative moderating effect on TA's contribution to KM, thus suggesting that the more bureaucratic the culture, the weaker the positive relationship between transactional leadership behaviours and knowledge management.

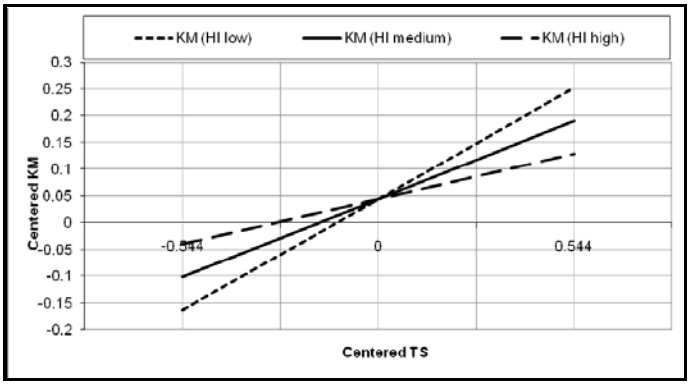


Figure 6-4 Regression of KM on TA on different levels of HI

Following the same approach, the interpretation of the effect of the interaction terms of MI was conducted. The simple regression lines were generated by substituting the value of MI at one standard deviation below the mean (MI low = -0.931), mean (MI medium = 0.00), and one standard deviation above the mean (MI high = 0.931). The results of these regressions were presented in Figure 6.5, indicating a significant ($p < 0.05$) positive regression of KM on TA at all levels of MI. Additionally, the direction of the interaction effect was revealed; those with a greater level of MI experienced greater decline in KM, suggesting that the higher the level of MI, the weaker the positive relationship between TA and KM.

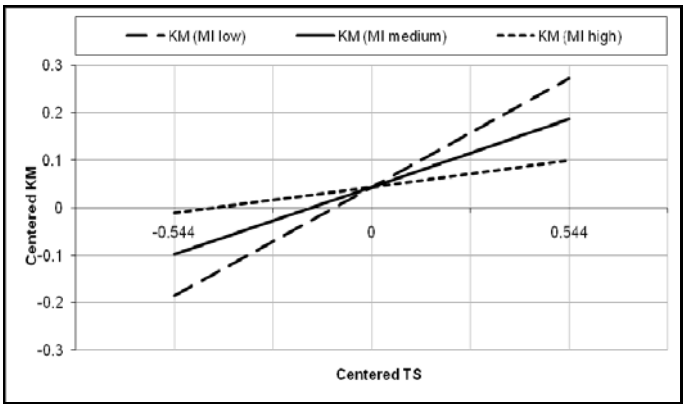


Figure 6-5 *Regression of KM on TS on different levels of MI*

In summary, the moderated regression analyses found no evidence to support hypothesis 3 as represented in the theoretical framework, suggesting that the moderating effect of organisational culture (OC) on the relationship between TF and KM is negligible. The analyses, however, provided statistically significant evidence for hypothesis 4 representing the moderating effect of OC on the relationship between TA and KM. In particular, strong levels of hierarchy and mission culture will attenuate the contribution of transactional leadership to knowledge management practices.

6.3. The Leadership – Organisational Culture Connections

The reviewed literature suggests that organisational culture and leadership are two sides of the same coin: neither can really be understood by itself. Leadership is a consequence of organisational culture, and the culture is a result of leadership (Fairholm, 1994; Schein, 2004). Seen in this way, leadership and organisational culture are intertwined. It is, therefore, essential to further explicate the nature of the leadership-organisational culture to better understand the relationship among leadership, organisational culture and knowledge management.

Correlation Analyses

The correlation analyses showed that all TF factors (CH & IC) were positively correlated with all dimensions of organisational culture (See Table 6-11). The Pearson's correlation *r* values ranged from 0.410 to 0.656, and all are significant at the 0.001

level. These results indicated strong correlations between transformational leadership behaviours and organisational culture.

Similar patterns of correlations were found between transactional leadership and organisational culture. The results of correlation analyses revealed that CR, MBEP, and LF were significantly and positively correlated to all dimensions of organisational culture (HI, AD, and MI). The Pearson's correlation *r* value ranged from 0.478 to 0.630, suggesting strong correlations (Tabachnick & Fidell, 2007).

Table 6-11 Correlations between transformational leadership and organisational culture

	Pearson Correlation		
	HI (Hierarchy)	**AD** (Adaptability)	**MI** (Mission)
CH (Charisma)	0.626**	0.410**	0.632**
IC (Individualised consideration)	0.555**	0.456**	0.527**
**. Correlation is significant at the 0.01 level (2-tailed).			
*. Correlation is significant at the 0.05 level (2-tailed).			

Table 6-12 Correlations between transactional leadership and organisational culture

	Pearson Correlation		
	HI (Hierarchy)	**AD** (Adaptability)	**MI** (Mission)
CR (Contingent reward)	0.633**	0.407**	0.630**
MBEA (Management by exception active)	0.130	0.159*	0.041
MBEP (Management by exception passive)	0.534**	0.454**	0.480**
LF (Laissez faire)	0.428**	0.281**	0.399**
**. Correlation is significant at the 0.01 level (2-tailed).			
*. Correlation is significant at the 0.05 level (2-tailed).			

Regression Analyses

The more detailed picture of the relationships between leadership and organisational culture was revealed by the findings of regression analyses. Using hierarchical regression analysis, the combination of transformational leadership behaviours CH and IC significantly predicted 42.1%, 21.9%, and 41.4% of the variance of hierarchy, adaptability and mission culture explained by transformational leadership respectively (as presented in Table 6-13). The valid regression models were also found as *F*-values and *t*-values were all significant at the 0.005 level. Therefore, transformational leadership behaviours were significant predictors of organisational culture.

Furthermore, the hierarchical regression analyses found that charisma (CH) was the most powerful predictor of organisational culture. Specifically, CH predicted 38.8%, 16.3%, and 39.6% of the variance of HI, AD, and MI cultures, respectively. These findings suggest that high contingent reward leadership behaviours would be associated with hierarchy and mission culture. These findings also imply that people who perceive their leadership as charismatic, are likely to view their organisational culture to be more hierarchical and mission-oriented. Hence, an independent analysis of the charisma behaviours at different levels would minimize the possible biasing effects on the perception of organisational culture.

To examine how transactional leadership behaviours relate to organisational culture, other regression analyses were performed. The results of the hierarchical regression analyses are presented in Table 6-14. These results revealed that transactional leadership behaviours (CR, MBEA, MBEP and LF) explained and predicted of 49.7%, 26.8% and 45.2% of the variance of HI, AD, and MI culture, respectively. All the adjusted R^2 were found significant at the 0.005 level. Additionally, the inspection of *t*-values and *p*-value confirmed that transactional leadership behaviours were a significant predictor of organisational culture.

6.4. Testing the Moderating Effect of Organisational Culture at Different Levels of Charisma

The results of regression analyses found a significant relationship between leadership behaviours and organisational culture, especially charisma behaviours. Additionally, the review of literature suggested that subordinates, who perceive the leaders as charismatic, tend to view their organisation more positively (Ensari & Murphy, 2003; Testa, 2009). Therefore, to further clarify the moderating role of organisational culture on the relationship between leadership and knowledge management, this study also investigated these relationships at different levels of charisma behaviours.

Charisma behaviours were labelled and scaled to low, moderate, and high level. Moderated regression analyses were performed at each level of charisma following the approach discussed in the previous section. The results of moderated regression analyses were presented in Tables 6-15 and 6-16.

The results reveal that when charisma behaviours were scaled low to moderate, the influence of TF and TA on KM were insignificant; R^2 ranged from 0.000 to 0.046 respectively, thus indicating a very low level of relationship between leadership and knowledge management. The results of moderated regression also showed that the higher the charisma behaviours were scaled, the lower the moderating effect of organisational culture (as shown in Table 6-15 and 6-16). Accordingly, when charisma behaviours were scaled high, the moderating effects of organisational culture were almost none, ΔR^2 ranged from 0.000 to 0.043. Additionally, TF was found to predict almost 21% of the variance of KM, while weak association between TA and KM were found with $R^2 = 0.052$.

Table 6-13 Regression model of the relationships between TF and OC factors

Criterion	Constant (*t* statistic)	Predictor Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)		Model Summary				
		CH	IC	R	R^2	Adj. R^2	F	Durbin-Watson
HI	1.716 (9.418***)	0.477(0.084)/ 0.460(5.684***)	0.250(0.080)/ 0.253(3.121***)	0.654	0.428	0.421	57.655	1.677
AD	2.502 (13.268***)	0.179(0.087)/ 0.194(2.060*)	0.290(0.083)/ 0.329(3.503***)	0.479	0.229	0.219	22.933	1.945
MI	1.442 (6.503***)	0.632(0.102)/ 0.503(6.180***)	0.235(0.097)/ 0.197(2.415*)	0.649	0.422	0.414	56.141	1.702

Note:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
CH: Attributed charisma; IC: Individualised consideration
HI: Hierarchy; AD: Adaptability; MI: Mission

Table 6-14 Regression model of the relationships between TA and OC factors

Criterion	Constant (*t* statistic)	Predictors Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)				Model Summary				
		CR	MBEA	MBEP	LF	R	R^2	Adj. R^2	F	Durbin-Watson
HI	1.358 (6.331***)	0.491(0.061)/ 0.509(8.064***)	0.081(0.053)/ 0.090(1.537)	0.288(0.071)/ 0.304(4.067***)	0.033(0.076)/ 0.033(0.439)	0.714	0.510	0.497	39.513	1.782
AD	2.283 (9.902***)	0.261(0.065)/ 0.304(3.992***)	0.098(0.057)/ 0.122(1.724)	0.314(0.076)/ 0.371(4.118***)	-0.079(0.081)/ -0.087(-0.967)	0.536	0.287	0.268	15.300	2.051
MI	1.236 (4.563***)	0.603(0.077)/ 0.516(7.844***)	0.007(0.067)/ 0.007(0.112)	0.288(0.089)/ 0.251(3.223***)	0.061(0.096)/ 0.050(0.641)	0.683	0.466	0.452	33.176	1.835

Note:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
CR: Contingent reward; MBEA: Management-by-exception active; MBEP: Management-by-exception passive
LF: Laissez faire; HI: Hierarchy; AD: Adaptability; MI: Mission

Table 6-15 Result of moderated regression analysis of Transformational Leadership and Knowledge Management with moderating effect of Organisational Culture at different levels of charisma

Independent	Low Charisma								Moderate Charisma								High Charisma							
	Step 1		Step 2						Step 1		Step 2						Step 1		Step 2					
	TF		TFxHI		TFxAD		TFxMI		TF		TFxHI		TFxAD		TFxMI		TF		TFxHI		TFxAD		TFxMI	
	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t
TF	0.017	0.087	-0.486	-1.676	-0.200	-1.082	-0.429	-1.731	-0.004	-0.029	0.012	0.092	-0.030	-0.233	0.004	0.034	0.454	3.812**	0.444	3.036**	0.536	3.949**	0.415	2.827**
Interaction effect																								
TFxHI			-0.615	-2.120*							-0.067	-0.514							0.017	0.117				
TFxAD					-0.466	-2.526*							0.143	1.122							-0.168	-1.239		
TFxMI							-0.595	-2.401*							-0.610	-0.480							0.067	0.455
Equation																								
R^2	0.000		0.127		0.171		0.157		0.000		0.004		0.020		0.004		0.206		0.206		0.228		0.209	
ΔR^2			0.127		0.171		0.157				0.004		0.020		0.004				0.000		0.022		0.003	
ΔF			4.493*		6.381*		5.766*				0.265		1.259		0.230				0.014		1.536		0.207	
F	0.008		2.251*		3.195*		2.887*		0.001		0.133		0.630		0.116		14.532		7.145		8.104		7.267	

Note:
TF: Transformational leadership behaviors; HI: Hierarchy; AD: Adaptability; MI: Mission
**: Significant at 0.01 level
*: Significant at 0.05 level

Table 6-16 Result of moderated regression analysis of Transactional Leadership and Knowledge Management with moderating effect of Organisational Culture at different levels of charisma

Independent	Low Charisma								Moderate Charisma								High Charisma							
	Step 1		Step 2						Step 1		Step 2						Step 1		Step 2					
	TA		TAxHI		TAxAD		TAxMI		TA		TAxHI		TAxAD		TAxMI		TA		TAxHI		TAxAD		TAxMI	
	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t	Beta	t
TA	0.214	1.240	-0.318	-1.128	0.015	0.074	-0.241	-1.009	-0.005	-0.400	0.009	0.070	-0.005	-0.041	0.014	0.112	0.227	1.747*	0.322	2.022*	0.251	1.944	0.302	2.110*
Interaction effect																								
TAxHI			-0.650	-2.309*							-0.108	-0.846							-0.164	-1.031				
TAxAD					-0.339	-1.632							0.004	0.034							-0.209	-1.615		
TAxMI							-0.611	-2.561*							-0.100	-0.780							-0.176	-1.227
Equation																								
R^2	0.046		0.186		0.121		0.213		0.000		0.011		0.000		0.010		0.052		0.070		0.095		0.077	
ΔR^2			0.140		0.075		0.167				0.011		0.000		0.010				0.018		0.043		0.025	
ΔF			5.329*		2.663		6.560*				0.716		0.001		0.608				1.062		2.609		1.506	
F	1.538		3.538*		2.141		4.183*		0.002		0.359		0.001		0.305		3.050		2.058		2.873		2.292	

Note:
TS: Transactional leadership behaviors; HI: Hierarchy; AD: Adaptability; MI: Mission
**: Significant at 0.01 level
*: Significant at 0.05 level

6.5. Testing the Influence of Size of Organisations

In an attempt to investigate the impact of the size of organisations on the relationship between leadership behaviours and knowledge management, the 157 participating organisations were divided into two groups; the first group contains 89 small organisations (less than 100 employees); and the second group contains 68 medium (101 - 500 employees) organisations.

When comparing the regression analyses results between small and medium organisations, the relationship between transformational leadership and knowledge management appeared to be quite consistent. As shown in Tables 6-17 through 6-24, transformational leadership behaviours explained 14.3 and 16.9 percent of knowledge management in small and medium sized organisations, respectively. At factor level, the results of regression analyses reported similar impact of transformational leadership behaviours on knowledge management dimensions in small and medium sized organisation with the exception of IC (as presented in Tables 6-17 through to 6-24). Specifically, regression analyses revealed that while IC was statistically significant predictor of IN in small organisations, IC had no significant predicting power on IN in medium sized organisations.

Regarding the relationship between transactional leadership behaviours (TA) and knowledge management (KM), the results of regression analyses reported a significant increase in terms of the predicting power of TA. As shown in Tables 6-19 and 6-23, TA predicted 2 and 16.9 percent of variance of KM in small and medium sized organisation respectively.

To examine how TA affect each dimension of KM constructs in small and medium sized organisations, further regression analyses at factor level were performed. The findings of the regression analyses are presented in Table 6-20 and 6-24. The findings revealed that the combination of TA factors (CR, MBEA, MBEP and LF) explained and predicted 8.6, 13.6, and 14.1 percent of the variance of IN, SO, and EX respectively in small organisations. These percentages were found to be 11.4, 28.8, and 14.0 percent in medium sized organisations.

These results suggest that, while the influence of transformational leadership on knowledge management was not strongly affected by the size of organisations, transactional leadership was found to be much more effective in medium sized organisations, than in small organisations. Within the TA construct, CR had significant contribution to knowledge socialisation in medium sized organisations. Based on these findings, it is believed that the influence of leadership behaviours on KM were contingent upon a number of contextual factors such as size of organisation, and especially transactional leadership behaviours. Discussions about these findings are presented in the next chapter of this paper.

Table 6-17 Regression model of the relationships between TF and KM constructs in small organisations

Criterion	Constant (*t* statistic)	Predictor Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)	Model Summary				
		TF	R	R^2	Adj. R^2	F	Durbin-Watson
KM	2.002 (7.807***)	0.377(0.095)/ 0.391(3.964***)	0.391	0.153	0.143	15.710	1.841

Notes:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
TF: Transformational leadership; KM: Knowledge management

Table 6-18 Regression model of the relationships between TF and KM factors in small organisations

Criterion	Constant (*t* statistic)	Predictor Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)		Model Summary				
		CH	IC	R	R^2	Adj. R^2	F	Durbin-Watson
IN	3.130 (12.943***)	8.52E-6(0.100)/ 0.000(0.000)	0.301(0.089)/ 0.403(3.394**)	0.403	0.162	0.143	8.343	2.137
SO	1.762 (5.908***)	0.269(0.123)/ 0.263(2.182*)	0.143(0.109)/ 0.157(1.307)	0.374	0.140	0.120	6.985	1.700
EX	1.691 (4.780***)	0.288(0.146)/ 0.244(1.972*)	0.096(0.130)/ 0.091(0.740	0.304	0.093	0.072	4.389	1.760

Note:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
CH: Attributed charisma; IC: Individualised consideration
IN: Internalisation; SO: Socialisation; EX: Exchange

Table 6-19 Regression model of the relationships between TA and KM constructs in small organisations

Criterion	Constant (*t* statistic)	Predictor Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)	Model Summary				
		TA	R	R^2	Adj. R^2	F	Durbin-Watson
KM	2.469 (7.700**)	0.207(0.125)/ 0.175(1.662)	0.175	0.031	0.020	2.763	1.941

Notes:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
TA: Transactional leadership; KM: Knowledge management

Table 6-20 Regression model of the relationships between TA and KM factors in small organisations

Criterion	Constant (*t* statistic)	Predictors Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)				Model Summary				
		CR	MBEA	MBEP	LF	R	R^2	Adj. R^2	F	Durbin-Watson
IN	3.588 (11.677**)	0.224(0.079)/ 0.304(2.831**)	-0.068(0.068)/ -0.105(-1.001)	0.086(0.086)/ 0.130(0.981)	-0.117(0.099)/ -0.157(-1.182)	0.357	0.128	0.086	3.077	1.904
SO	1.889 (5.195**)	0.369(0.094)/ 0.411(3.938**)	-0.019(0.080)/ -0.024(-0.236)	-0.021(0.103)/ -0.026(-0.203)	0.033(0.117)/ 0.037(0.285)	0.419	0.175	0.136	4.468	1.622
EX	1.803 (4.306**)	0.352(0.108)/ 0.340(3.262**)	-0.137(0.093)/ -0.150(-1.475)	-0.131(0.119)/ -0.141(-1.097)	0.200(0.135)/ 0.191(1.479)	0.424	0.180	0.141	4.599	1.784

Note:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
CR: Contingent reward; MBEA: Management-by-exception active; MBEP: Management-by-exception passive
LF: Laissez faire; IN: Internalisation; SO: Socialisation; EX: Exchange

Table 6-21 Regression model of the relationships between TF and KM constructs in medium sized organisations

Criterion	Constant (*t* statistic)	Predictor Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)	Model Summary				
		TF	R	R^2	Adj. R^2	F	Durbin-Watson
KM	2.190 (9.690***)	0.324(0.085)/ 0.426(3.829***)	0.426	0.182	0.169	14.660	1.896

Notes:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
TF: Transformational leadership; KM: Knowledge management

Table 6-22 Regression model of the relationships between TF and KM factors in medium sized organisations

Criterion	Constant (*t* statistic)	Predictor Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)		Model Summary				
		CH	IC	R	R^2	Adj. R^2	F	Durbin-Watson
IN	3.717 (14.592***)	0.216(0.135)/ 0.30191.598)	-0.148(0.136)/ -0.204(-1.084)	0.196	0.038	0.009	1.300	1.857
SO	1.649 (6.766***)	0.273(0.133)/ 0.338(2.058*)	0.176(0.134)/ 0.216(1.314)	0.521	0.272	0.250	12.138	1.892
EX	1.970 (5.952***)	0.426(0.180)/ 0.426(2.369*)	-0.100(0.182)/ -0.099(-0.553)	0.356	0.127	0.100	4.708	1.824

Note:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
CH: Attributed charisma; IC: Individualised consideration
IN: Internalisation; SO: Socialisation; EX: Exchange

Table 6-23 Regression model of the relationships between TA and KM construct in medium sized organisations

Criterion	Constant (*t* statistic)	Predictor Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)	Model Summary				
		TA	R	R^2	Adj. R^2	F	Durbin-Watson
KM	1.928 (6.603***)	0.424(0.111)/ 0.426(3.828***)	0.426	0.182	0.169	14.656	2.085

Notes:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
TA: Transactional leadership; KM: Knowledge management

Table 6-24 Regression model of the relationships between TA and KM factors in medium sized organisations

Criterion	Constant (*t* statistic)	Predictors Unstandardised Coefficient B (Std. error)/ Standardised Coefficient β (t statistic)				Model Summary				
		CR	MBEA	MBEP	LF	R	R^2	Adj. R^2	F	Durbin-Watson
IN	3.492 (11.314***)	0.051(0.103)/ 0.073(0.498)	-0.164(0.086)/ -0.231(-1.895)	-0.152(0.124)/ -0.197(-1.228)	0.336(0.118)/ 0.438(2.834**)	0.408	0.167	0.114	3.149	1.945
SO	1.551 (4.975***)	0.368(0.104) 0.465(3.527**)	-0.040(0.087)/ -0.050(-0.455)	0.121(0.125)/ 0.139(0.965)	0.033(0.120)/ 0.038(0.277)	0.575	0.330	0.288	7.763	1.966
EX	1.683 (3.963***)	0.421(0.142)/ 0.429(2.960**)	0.038(0.119)/ 0.039(0.322)	0.025(0.171)/ 0.023(0.146)	-0.024(0.163)/ -0.023(-0.149)	0.437	0.191	0.140	3.716	1.890

Note:
***: Significant at the 0.005 level; **: Significant at the 0.01 level; *: Significant at the 0.05 level
CR: Contingent reward; MBEA: Management-by-exception active; MBEP: Management-by-exception passive
LF: Laissez faire; IN: Internalisation; SO: Socialisation; EX: Exchange

6.6. Chapter Summary

In this chapter, a set of assumptions for multiple regression analysis were tested and met, and the influence of the outliers was found to be minimal. The multiple regression analysis indicated that both transformational leadership behaviours and transactional leadership behaviours showed statistically significant positive association with knowledge management practices. Consequently, hypotheses H1 and H2 were supported, confirming that transformational leadership and transactional leadership relate positively to the type and frequency of knowledge management practices. In addition, multiple regression analysis at factor level showed that only charisma (transformational leadership) and contingent reward (transactional leadership) behaviours of leadership were found to be significant predictors for the frequency of different knowledge management practices within an organisation.

Furthermore, the use of moderate regression analysis, following Aiken and West's (1991), and Baron and Kenny's (1986) recommendations, proved that the moderating effect of organisational culture on the relationship between transformational leadership and knowledge management is not statistically significant. Therefore, hypothesis H3 is not supported. In other words, the influence of transformational leadership on knowledge management appeared not to be affected by the organisational culture.

The results of the moderated regression analysis did support hypothesis H4, thus confirming the moderating role of organisational culture. The investigation into the change in R^2 value and statistics F when the interaction terms were introduced indicated that two out of three dimensions of organisational culture (hierarchy and mission) were statistically significant to moderate the associations between transactional leadership and knowledge management practices. Further investigation of the slopes representing the direction of moderating effect showed that the stronger the organisational culture, the weaker the relationship between transactional leadership and knowledge management; that is, moderated regression suggested that where organisational culture has been firmly established, the influence of transactional leadership behaviours on the ways people share and create knowledge is likely to be less.

Importantly, the present study revealed that leadership behaviours are significant predictors of organisational culture. Specifically, the results of regression analyses indicated that transformational leadership and transactional leadership significantly explain more than 40% of the variance of hierarchy and mission culture. These findings implied that leadership behaviours can either directly contribute to KM or indirectly adapt and reshape organisational culture to support KM objectives. These findings are discussed in detail in the next Chapter of this thesis.

CHAPTER 7

DISCUSSION & CONCLUSION

The literature review in Chapter 2 discussed several research studies, including: (1) research on the relationship between leadership and knowledge management; and (2) the impact of organisational culture on leadership. Yet, none had examined the impact of organisational culture on the relationship between leadership behaviours and knowledge management. The aim of this discussion and conclusion chapter is to present the major findings and results of this research study. Research limitations and recommendations for future research are also discussed. Finally, this chapter provides the closing statement of the dissertation.

7.1. Revisiting the Research Objectives and Research Questions

It would be useful to revisit the main research objectives and research questions prior to summing up the major findings of the research. The primary objective of this study is to explore the relationship between leadership behaviours and knowledge management practices, and to determine if organisational culture moderates such relationships. In order to achieve the research objective the following two research questions have been developed;

1) How do the transformational and transactional leadership behaviours relate to knowledge management practices?
2) How does the organisational culture moderate the relationship between leadership behaviours and knowledge management practices?

7.2. Major Research Findings Discussion

Although both transformational and transactional leadership have been independently

linked to organisational learning, innovation, and knowledge management in a variety of settings (Castiglione, 2006; Chang & Lee, 2007; Crawford, 2005; Politis, 2005, 2006), previous studies have not fully considered the interactive effects of organisational context and culture on leadership. This study integrated this important interaction to explore how leadership behaviours relate to knowledge management in different types of organisational culture.

Overall, the results of this present study supported many of the proposed relationships. Specifically, it was found that transformational and transactional leadership behaviours were found to be related to knowledge management practices within organisations. The results also demonstrated that whilst organisational culture does not moderate the effect of transformational leadership on knowledge management, transactional leadership appears to be less effective in organisations that are rated high in the hierarchy and mission cultures. These major findings related to with the research hypotheses are discussed as below.

7.2.1. Relationship Between Transformational Leadership Behaviours and KM Practices

One of the primary objectives of this study was to examine the influence of leadership behaviours on knowledge management practices within organisations. Many previous researchers have found that transformational leadership had a significant positive contribution to organisational learning and innovation (Chang & Lee, 2007; Howell & Boies, 2004; Politis, 2002). Consequently, it was reasonably deduced that transformational leadership behaviours have a positive effect on knowledge management practices within organisations. The findings of this present study provide ample support for this proposition at both the construct and factor levels, thus confirming research hypothesis H1.

The results from the statistical analyses indicate a positive and statistically significant correlation between transformational leadership and knowledge management. Additionally, results of regression analyses show that transformational and transactional leadership accounted for substantial amounts of variance of 16.5 percent in knowledge

management (as presented in Chapter 6). These results receive support from Politis's (2001, 2002) and Crawford's (2005) recent contentions that transformational leadership behaviours are positively related to knowledge acquisition attributes and knowledge management inventory. Politis's (2001, 2002) studies found that self-management and transformational leadership are positively related to selected dimensions of knowledge acquisition attributes (behavioural skills and traits). Similarly, among the most specific findings in Crawford's (2005) research findings is the strong relationship between transformational leadership and knowledge management behaviours such as information acquisition, information creation and applications.

In comparison to prior studies in the field, the obtained results further revealed that charismatic leadership behaviours are positively related to two out of the three dimensions of knowledge management practices, namely knowledge socialisation and knowledge exchange. The regression analysis provided strong evidence of the causal nature of the link between these variables. The strong R^2 values associated with these relationships suggest that charismatic leadership accounted for 18.7 percent and 8.8 percent of variance in knowledge socialisation and knowledge exchange practices, respectively. These findings are certainly parallel with prior research in the field of knowledge management and organisational innovation (Chang & Lee, 2007; Coad & Berry, 1998; Lam, 2002). These studies generally suggest that charismatic leadership behaviours contribute to the creation of organisational knowledge and a managerial mindset that promotes the flow of knowledge through an organisation. Therefore, charismatic leadership plays an important role in providing vision and energy for knowledge sharing, and sustains effective knowledge management.

Although charismatic leadership behaviours provided support for knowledge socialisation and knowledge exchange practices, they did not seem to involve followers in embodying explicit knowledge into personal tacit knowledge (personal learning), also known as knowledge internalisation. The results of the present study were inconsistent with Vera and Crossan's (2004) suggestion that charismatic leaders promote the growth of organisational learning by inspiring organisational members within a change-positive environment. One possible explanation is that, in contrast to the focus of Vera and

Crossan (2004) on learning at organisational level, the concept of knowledge internalisation focuses more on the individual level. According to Nonaka (1994), by internalisation, explicit knowledge is read or practiced by individuals and broadens the learning spiral of knowledge creation. Charisma is usually a single-minded dedication to the firm's vision and purpose – a trait that could negatively influence individual-level learning (Nahavandi, 1993), and so charismatic leaders may have little effect on knowledge internalisation. These explanations also receive support from Rafferty & Griffin's (2004) study of 1,398 employees in the Australian public sector, which found that, at an individual level, charismatic leader did not always have a positive influence on followers. The findings of this present study provide a fascinating insight into the complex world of leadership and knowledge management theories because an organisation may be able to "diagnose" a potential leader with charismatic behaviours; however, such behaviour may not be the impetus required to move organisational learning at the individual level forward. They also suggest that while charismatic leaders may play an important role in learning at the organisational level, they may have little influence on how and what an individual identifies as knowledge relevant to one's self within organisational explicit knowledge before converting it into tacit knowledge.

Another interesting finding in this present investigation is that the individualised consideration behaviours of transformational leadership are not a significant predictor of any dimension of knowledge management practices (as presented in Chapter 6). These findings are contrary to the expectation. The classical theories presented in the literature clearly argue that individually considerate leadership behaviours provide individuals with support, mentoring, and coaching, thus creating new learning opportunities and encouraging others to learn (Chang & Lee, 2007; Vera & Crossan, 2004). Several explanations may be posited for this finding. First, individualised consideration refers to leadership behaviours that contribute to followers by advising, supporting, and paying attention to the individual needs of the follower, and thus allowing them to develop and self-actualise (Antonakis, et al., 2003). Hence, while it is possible that individualised consideration behaviours encourage open communication and information sharing within the team; they could also lead to complacency within the team.

Second, highly individualised consideration leaders are likely to create conflict-averse team climate that prioritizes maintenance of peace and harmony (Sarin & McDermott, 2003). Under such conditions, team members are less likely to challenge each other's opinions and ideas, thus lowering the overall level of team learning. In addition, through individualised behaviours of transformational leader, subordinates are encouraged to be independent and autonomous; in turn these behaviours may discourage knowledge socialisation and exchange within organisation. These findings receive strong support of the work of Politis (2002), who found that individualised consideration is negatively related to the personal trait dimension of knowledge acquisition attribute, and had no effect on communications/problem understanding, control, organisation or negotiation (Politis, 2002).

7.2.2. Relationship Between Transactional Leadership Behaviours and KM Practices

The literature has firmly established the role of transactional leadership behaviours for organisational commitment, organisational learning and innovation (Bass & Avolio, 1990; Chen, 2004; Chen & Barnes, 2003; Howell & Avolio, 1993). Therefore, it can be reasonably deduced that transactional leadership behaviours would enhance knowledge management practices within an organisation. The results of this present study support this proposed relationship between transactional leadership and knowledge management, thus confirming research hypothesis H2.

Results of the regression analysis indicate that transactional leadership behaviours are significantly related to knowledge management. Specifically, the R^2 value associated with this relationship suggests that transactional leadership accounted of an amount of variance of 8.7 percent in knowledge management practices (as shown in Table 6.7 of Chapter 6). These results extend support to Vera and Crossan's (2004) contention that transactional leadership behaviours stimulate the flow of learning from the organisation to individuals and groups by assigning a strong value to organisational rules, procedures, and past experiences. Chang and Lee's (2007) findings using a large sample of 1,000 top companies in Taiwan, also revealed that transactional leaders disseminate

existing learning by providing formal systems and training programs. Similarly, transactional leadership and operation of learning organisations have a significant relationship, based on a recent study from Zagorsek et al. (2009).

Notably, in comparison with prior research, the results from the current study revealed that only one component (contingent reward) associated with Bass's (1985) transactional leadership model contributed to knowledge management practices. Furthermore, the results of the regression analyses showed that the contribution of contingent reward leadership on all dimensions of knowledge management practices are slightly stronger than the effect of charisma-attributed behaviours (as presented in Table 6-5 and Table 6-8 in Chapter 6). These findings were somewhat unexpected because the classical theoretical arguments presented in the literature clearly indicate that charismatic leadership is a much more effective type of leadership in various settings and with a wide range of leadership outcomes (Bryant, 2003; Coad & Berry, 1998; Lam, 2002; Politis, 2001, 2002).

Several explanations may be offered for these discrepant results. Knowledge has often been perceived as a source of power, and so people tend to have feelings of 'ownership' and often hoard knowledge (Andreas, 2005). This adds to competition among people which may be heightened a result of reward and recognition. With contingent reward leadership behaviours, employees are motivated and directed to achieve an expected standard of performance in exchange for a promised reward, which could include satisfactory performance, pay increases, praise and recognitions, better work assignment and the like (Yukl, 2006), thus improving the efficiency of organisational learning or knowledge creation. However, leaders should be aware that this type of behaviour may cause unintended consequences due to competition among their employees (Coad & Berry, 1998).

It is also possible that the nature of organisational context in this study required more contingent reward leadership than in previous studies. The effectiveness of leadership may vary across different context (Bass, 1985). Bass further suggested that charismatic leadership would have less impact on followers in organisations operating in more

routine and stable external environments than in organisations operating in more turbulent, unstable environments. In SMEs, the leaders are in many cases the owners who oversee every aspect of their operation and business. Decision-making is generally centralized and the ultimate power of control lies in their hands. Additionally, SMEs have an advantage over large enterprises in respect of their structures in implementing knowledge management (Handzic, 2006). Such conditions may provide transactional leader/managers in SMEs with a better opportunity of becoming role models and to set good example by showing the desired values and behaviours needed for creating, sharing and applying knowledge.

Vera and Crossan (2004) contend that while transformational leaders foster individual and group learning in a context of change, transactional leaders do so within a context of stability. Given the surveyed organisations might have strong emphasis on efficiency, safety and continuity rather than on experimentation, risk taking, and punctuated change, hence the kind of conventional behaviours specified by contingent reward leadership might be relatively more effective. Contingent reward leaders clarify each individual's tasks, responsibilities, and expectations, they find a common meaning as to what is fair and only give reward for fulfilling the requirement; they emphasise goal-setting, give instructions, and clarify structure, and conditions. These qualities were lacking in the transformational leadership. This explanation may also account, in part, for the effect of hierarchy and mission dimensions of organisational culture on transactional leadership effectiveness, which is discussed in the next section.

Additionally, SMEs have an advantage over large enterprises in respect of their structures in implementing knowledge management. They have a simpler, flatter and less complex structure, which will facilitate a change indicative across the organization since functional integration both horizontally and vertically is easier to achieve and fewer complications will be encountered (Handzic, 2006). Such conditions provide leader/managers in SMEs with a better opportunity of becoming role models and to set good example by showing the desired values and behaviours needed for creating, sharing and applying knowledge.

Another interesting finding emerging from this analysis surrounds the relationship between management-by-exception behaviours (as a major part of transactional leadership) and the dimensions of knowledge management practices. Due to the technical nature of some knowledge management practices, it is reasonably argued that effective leaders need to adopt transactional behaviours such as management by exception; however, this study did not find that to be the case. The results indicate that the overall relationship between management-by-exception behaviour and knowledge management did not approach any level of significance. Explanation might be found in the nature of management-by-exception leadership behaviours. The literature notes that these leadership behaviours tend to focus on maintaining a stable organisation and are more attentive to operating within defined constrains (Bass, 1985). Therefore, these leadership behaviours may stifle creativity of knowledge.

Additionally, Avolio, et al. (1999) have suggested that management-by-exception active may be more positively viewed in environments where risk is high and the ability to identify and correct mistakes is critical for survival. These types of context might not be the case in this present study as the leaders were perceived to display management-by-exception behaviours less than most of the other leadership behaviours (as reported in Chapter 4). Therefore, it is possible that the findings for management-by-exception behaviours presented an insignificant contribution to knowledge management due to the current organisational climate and context. These findings, while not surprising, provides further basis for the assumption that knowledge management is more related to active follower-centred leadership. Additionally, further investigation into the influence of contextual factors on leadership effectiveness would be warranted.

7.2.3. Moderating Effects of Organisational Culture

The literature review revealed that organisational culture develops in large part from its leadership, while the culture of an organisation also affects the effectiveness of its leadership (Bass & Avolio, 1993; Block, 2003; Brazier, 2005). Accordingly, the third and fourth hypotheses proposed that organisational culture moderates the influence of transformational and transactional leadership behaviours on knowledge management practices, respectively. The results of the present study, however, did not support hypothesis H3 with regard to the impact of organisational culture on the relationship

between transformational leadership and knowledge management. However, it was found that in lower levels of hierarchy and mission culture, the stronger relationship of transactional leadership and knowledge management would be expected; hence confirming hypothesis H4.

Specifically, the results of moderated regression analyses revealed that the moderating role of organisational culture in the relationship between transformational leadership and knowledge management did not have any level of statistically significance (as presented in Table 6-10 in Chapter 6). These results indicate that, regardless of the organisational culture (hierarchy, adaptability, or mission), the effect of transformational leadership on knowledge management practices appeared to be quite consistent. Although there has been no research exploring the interaction of organisational culture on the relationship between transformational leadership and knowledge management, these results stand in contrast to prior research in the field of leadership and organisational culture. For instance, Bass and Avolio (1993) hypothesised that the effectiveness of transformational leadership differs across organisational cultures. Similarly, the findings from Howell and Avolio's (1993) study indicate that transformational leaders perform better in organisational cultures, as described by followers as innovative.

Several factors may help to explain these unexpected findings of this study. First, the regression analyses results revealed that transformational leadership significantly explained more than 40% variances of hierarchy and mission culture (as shown in Table 6.12 in Chapter 6). It is, therefore, possible that transformational leaders can create or change the culture to support knowledge management, instead of having direct influence on knowledge management practices. These explanations are in agreement with Jung's, et al. (2003) contention that transformational leadership can directly and indirectly enhance organisational innovation by creating a supportive organisational culture. Consistent with this viewpoint, Lim (1995) proposed that culture might be the filter through which leadership influence organisational performance. In this vein, Koh et al. (1991) had previously reported that transformational leadership indirectly affected followers' performance through its impact on such variables as organisational culture

and commitment.

Second, according to the social cognitive theory, the followers' perceptions of the leader's charisma attributes may be the result of the use of leadership protypes (Ensari & Murphy, 2003). Research indicates that in an individualistic cultural context, perceptions of leadership charisma are based on a comparison of the behaviours that employees observe with these leadership protypes, while in collectivistic contexts they are based on the degree to which the group or organisation has positive performance outcomes (Lord, Foti, & DeVader, 1984). Avolio and Bass (1995) mirrored these arguments by positing that what constitutes charisma to one person might appear as interference or paternalism to another. The perceptions of charismatic attributes of leaders are dependent on work environment (the situation) or the culture that he/she has experienced (Avolio & Bass, 1995). Additionally Testa's (2009) study illustrated that culture congruence influence subordinate perceptions of leadership. Therefore, the employees' perceptions of transformational leadership are likely to be biased by different organisational culture and organisational performance. These explanations also account, in part, why the collected data failed to fit the theorised five-factors transformational leadership model proposed by Bass (1985).

At the same time, secondary cultural embedding mechanisms such as organisational structure, existing systems and procedures, and the physical arrangement of works space were not considered in this study. It was noted in the reviewed literature that knowledge management may be hindered by organisational culture that is highly formalized and dependent on standard operating procedures, rules, and regulation (De Long & Fahey, 2000; Schein, 2004). Additionally, Lam's (2002) study found that transformational leadership effectiveness is highly dependent on the contextual factors such as organisational structure, formal arrangement of works and the degree of power sharing. It is difficult to estimate the magnitude of these secondary influences because they were not measured in the present study. However, it is plausible that the insignificant moderating role of organisational culture on the relationships between transformational leadership and knowledge management could be explained as due to overlooking of these secondary cultural influences.

Notably, these discrepant results of the present study contribute to the literature by suggesting that further exploration into the dynamic relationship transformational leadership-culture would be needed in the field of knowledge management. From the findings of this present study, it is also possible to argue that the effectiveness of transformational leadership itself might not be influenced by organisational culture, but by the perceptions of followers' about the transformational leadership behaviours. Moreover, the perceptions of transformational leadership and organisational culture appear to be contingently, rather than independently, related to each other as well as followers' attitudes and organisational performance. Therefore, an independent analysis of the organisational culture and organisational performance would also minimise the possible biasing effects on the perception of transformational leadership associated with collecting data from a single source (i.e., in this study, followers completed both leadership and culture ratings).

The results of this study also demonstrated that the relationship between transactional leadership and knowledge management practices was moderated by organisational culture. This link has not been previously investigated. Specifically, the results of moderated regression analyses have shown a statistically significant increase in the contribution of transactional leadership on the variance of knowledge management, from 8.7 to 10.8 percent after hierarchy had been taken into account, and to 11.5 percent after mission cultures (as shown in Table 6.11 in Chapter 6). The moderating effect is less clear with the adaptability culture; it did not make any significant change in the variance. Moreover, the negative beta values indicate that the higher scores in organisational culture were associated with a lower contribution of transactional leadership on knowledge management practices, with the exception of adaptability culture. These results provide compelling evidence in support of the moderating role of organisational culture on the relationship between transactional leadership and knowledge management. Therefore, the hypothesis H4 was supported.

These findings seem to corroborate Bass's (1985) and Howell and Avolio's (1993) propositions by confirming that the effectiveness of transactional leadership is

contingent upon organisational culture. The results of the present study, however, extend the findings of Bass's (1985) and Howell and Avolio's (1993) studies by revealing the negative impact of hierarchy and mission culture on leadership. These findings, however, are contrary to Burns and Stalker's (1961) proposition that highly centralised, formalised, and standardised organisational culture are favoured by transactional leadership. Nevertheless, the study by Bass & Avolio (1993) found that a strong organisational culture, with values and internal guides for more autonomy at lower levels, can prevent leaders from increasing their personal influence on followers. Consistent with this viewpoint, Kwantes and Boglarsky (2007) posited that aspects of organisational culture, which encourage controlling and competitive behaviours, could negatively affect transactional leadership effectiveness. Masood, et al. (2006) also found transactional leadership was negatively related to hierarchy and market type cultures.

In the field of knowledge management and organisational learning, results of this present study extend the findings of Politis (2001, 2002) and Crawford (2005) by providing a more comprehensive picture about the relationship between transactional leadership and knowledge management. This investigation revealed that although two out of three types of organisational culture moderated the relationship between transactional leadership and knowledge management with negative impacting, adaptability culture was found to exert the least effect. Leaders, hence, should recognise this as they seek to influence employees achieve a successful knowledge management system, for which success can be contingent upon the type of organisational culture being practiced.

Furthermore, transactional leadership behaviours were found to be significant predictors of organisational culture (as shown in Table 6.13 in Chapter 6). This finding, in addition to the above finding regarding the relationship between transformational leadership and organisational culture, further confirms the critical impact of leadership on organisational culture; leaders should, therefore, use this mechanism appropriately in order to establish the forms of thinking and the levels of motivation and behaviours that are important for their organisations. When knowledge management is in focus, leaders must devote time and attention to knowledge activities and issues, and they can do so

through every-day behaviours that send a clear message, something that is particularly important. It is, hence, convinced that in knowledge organisations, one of the main priorities of leaders, should be to start shaping a culture facilitating learning and knowledge sharing.

Notably, although the interaction of organisational culture on the association between leadership and knowledge management was reported as weak in this present study, it is nonetheless real, and lays a foundation for evaluating the impact of contextual contingencies on leadership and knowledge management that could extend the line of research. Research currently focuses primarily on internal organisational factors that affect knowledge processes. Variations among firms will also likely impact knowledge management processes. A firm's strategy, particularly when it pursues either a low cost or a differentiation strategy, will impact knowledge management practices. It would also be expected that the organisational environment including type of business, level of competition, government regulation and rate of exchange in technology impacts knowledge (Boisot, 1998). Future research can more deeply explore the connections between internal and external firm factors and how they impact knowledge management practices. Finally, researchers may want to examine how external factors affect the need for transformational and transactional leadership in managing knowledge. Certain industries may have faster rates of technological change, and higher levels of competition and regulation. It would be also expected that these factors impact the effectiveness of an organisation's leaders.

7.3. Study Contributions

While evaluating the studies of leadership, organisational culture, and knowledge management, it emerged that evidence exists of the links between leadership and knowledge management, and between organisational culture knowledge management, but that a combined study of all three of these concepts has been lacking. Consequently, based on theories which suggest that leadership and organisational culture are linked, it was proposed that organisational culture moderates the association between leadership and knowledge management. In an effort to redress this literature imbalance, the results of a survey were analysed and sufficient empirical evidence found to support this claim.

The results of this study indicate that transformational and transactional leadership behaviours have significant impacts on knowledge management practices within organisations, especially charisma and contingent reward behaviours. It has also been shown that the influence of leadership behaviours on knowledge management was contingent upon the types of organisational culture. The findings of this present study make several contributions and implications to leadership, organisational culture and knowledge management in both research and practice.

7.3.1. Contributions to Existing Body of Knowledge

This investigation has offered insight into the effectiveness of different types of leadership behaviours, and the associated impact of organisational culture on leadership effectiveness in knowledge management practices. The findings contained in this study also have potential to act as a catalyst to direct further research in these areas in a number of ways.

The results of the present study have shown that the conceptualisation or the operationalisation of the transformational leadership model (Bass, 1985; Bass & Avolio, 1997) and organisational culture (Denison & Mishra, 1995) is weak. As such, it is disappointing to note that the results of previous research have not been reproduced in SMEs in Australia. This investigation suggests that the perceptions of transformational leadership and organisational culture might be contingently, rather than independently, related to each other. The findings of this present study also suggested that there might be a number of contingencies such as organisational structure and organisational performance that need attentions, each with implications for both research and management. Future empirical research will be needed to assess the role of these contingencies as variables of the perception of leadership and organisational culture as well as the connection between these two concepts.

While there has been underlying assumptions about the role of leadership in successful knowledge management (Bryant, 2003; Lam, 2002; Sarin & McDermott, 2003; Vera & Crossan, 2004), researchers have not delineated the specific leadership behaviours and mechanisms through which leaders impact knowledge management practices. The present study provides empirical evidence and offers insights into how leadership

behaviours can facilitate and promote knowledge management practices within organisations. Particularly, this study posited that the leaders who are most effective at influencing knowledge management are those who best utilise both charisma and contingent reward behaviours. These leadership behaviours are effective in facilitating knowledge socialisation and knowledge exchange within organisation, albeit in a different culture.

Furthermore, this present study does not simply match transformational and transactional leadership with knowledge management practices as previous studies (Crawford, 2005; Jung, et al., 2003; Politis, 2001, 2002). Importantly, it has also discussed the cultural conditions under which leadership behaviours play a role in knowledge management. The results of the present study are in line with the findings from earlier studies suggesting the impact of organisational culture on the effectiveness of transactional leaderships (Bass & Avolio, 1993; A. Gilley, McMillan, & Gilley, 2009; Yiing & Ahmad, 2009), and makes several contributions to research in the field. First, researchers have criticized transformational and transactional leadership theory for not considering organisational context (Conger & Kanungo, 1994; Yukl, 2006; Yukl & Van Fleet, 1992), so the examination of the culture as moderator addresses this limitation. Second, the present investigation addresses the call for research incorporating context into leadership and knowledge management studies. The findings of this present study suggest that research should continue to investigate culture and other contextual factors in explaining perceptions and behaviours of leaders, as well as leadership effectiveness in the field of knowledge management and organisational learning. In developing theoretical explanation for the role of organisational culture and leadership in the knowledge management field, researchers are encouraged to consider aspects of contextual factors such as organisational structure and performance. Identifying contextual factors affecting the ways in which employees view their leadership and organisational culture seems to be a promising research area.

Furthermore, the results indicate that, the more charismatic the leaders are rated, the less impacts of organisational culture on leadership effectiveness are found. The findings at hand also suggest that leaders can influence on knowledge management directly and

indirectly through such organisational variables as organisational culture. From this perspective, it is believed that leadership plays a crucial role in building and maintaining a supportive organisational culture for knowledge management. This study, hence, encourages further and comprehensive investigations into the dynamic interconnections between leadership and organisational culture in the field of knowledge management.

7.3.2. Implications for Managerial Practices

The research presents several important implications for organisations. The findings of the study suggest that both transformational and transactional leadership behaviours are essential to knowledge management practices. The creation of successful knowledge management system, however, depends on how well leaders can balance transactional and transformational behaviours, authoritarian and participative systems, and task and relationship orientation. Leaders who choose transactional behaviours will work within the current culture and follow existing norms, values, and procedures. In this sense, transactional leadership behaviours reinforce current knowledge management practices. Transformational leadership behaviours, by contrast, allow top executives to adapt the organisational culture and realign it with the new visions, when needed.

Furthermore, the findings of this present study indicate that charisma and contingent rewards are the most effective leadership behaviours for knowledge management practices. Leaders should, therefore, focus on developing these leadership behaviours, depending upon the situation. They should build respect and trust based on working with individuals, establishing and determining agreements in order to achieve specific goals, on clarifying expectations, and providing rewards for the successful completion of tasks. Apparently, a significant number of subordinates or situations call for an instrumental approach for convincing people that knowledge sharing and knowledge creating do pay off – both for the individual and organisation. Only when leaders have built solid transactional foundations that inspire followers they can extend them by adding typical charisma behaviours and exert extra to achieve the shared vision of knowledge management. Importantly, Bass (1985) established that transformational and transactional leadership behaviours can be learned through training programs. This holds an important message for management. Individuals can develop transformational

and transactional leadership behaviours, and as it is argued here, these leadership behaviours can have a positive impact on knowledge management.

This study also highlights the importance of organisational culture. The results indicate that the effectiveness of leadership behaviours is contingent upon the type of organisational culture. On the other hand, it is found that leadership had enormous impact on the culture. Hence, these findings suggest that leaders should use this mechanism appropriately in order to establish the forms of thinking and the levels of motivation and behaviours that are important for the organisation. When knowledge management is in focus, leaders must devote time and attention to knowledge activities and issues, and they can do so through every-day behaviours that send a clear message, something that particularly important.

7.4. Limitations and Future Directions

Despite following an exhaustive research method and rigorous analysis procedure, the findings reported herein should be interpreted in light of several limitations identified during the course of the study. These limitations, along with recommendations for future research directions, are discussed below.

From the methodological point of view, the sample and context are always an issue. Using Australian SMEs as a target population contributed to the research's generalisability, but it was also a weakness. Further expansion of this research to large organisations and other nations (with different national cultures, nations of different sizes, histories etc.) would significantly contribute to understanding the link between leadership and knowledge management.

The second key limitation is the cross-sectional nature of the study. It is possible that at least certain aspects of leadership and organisational culture, and their impact on knowledge management practices will emerge with some kind of time lag. A longitudinal treatment of data might yield additional insights into the impact of leadership behaviours and organisational culture. This study was also unable to actually observe managers interacting with followers. Critics recommend using observational

data to supplement survey measures of transformational and transactional leadership (Howell & Avolio, 1993); It is agreed that such strategies serve to enhance understanding of complex forms of leadership in several different context (Bass & Avolio, 1990). Nevertheless, it is important to note that the results of this study are generally consistent with theoretical predictions based on extant research.

Thirdly, this study used the perceptions of middle managers as its data source. It is believed that these managers have good knowledge of organisational members and holistic view of leadership and culture of an organisation (J. W. Gilley & Maycunich, 2000). As data consisted of self-reports, and it is found little evidence of bias in the data. However, it could be argued that as the data were gathered by a single organisational informant design, this approach may have exposed the study to the common method variance. Although Spector (2006) has argued that it is incorrect to assume that the use of single method automatically introduces systematic bias, it is recommended that future research gather measure of variables from different data sources to minimise the effects of any response bias.

Lastly, although the study reported the interaction of organisational culture on the association between leadership and knowledge management, other moderating variables, such as organisational structure, strategies and other contextual factors, might attenuate this effect. Future research should extend the understanding of leadership behaviours as antecedent to knowledge management practices by involving these moderating and mediating variables. An independent analysis of the context would also minimise the possible bias from a single source (i.e., in this study followers completed both leadership rating and organisational culture).

7.5. Closure

Leadership, organisational culture and knowledge management are major contemporary business topics. They are considered to be the important factors for business survival in this global competitive market environment. Research related to these topics can be found in many professional journals, yet, no research has examined the relationships among leadership behaviours, organisational culture, and knowledge management

practices. This study is, therefore, useful in helping to fill this gap. More specifically, this study aimed at investigating the relationship between leadership behaviours and knowledge management, and interaction of organisational culture on such relationships. To achieve the aims of the study, a research model comprising four concepts transformational leadership, transactional leadership, organisational culture, and knowledge management practices, was developed. The research model and hypotheses were assessed using a series of quantitative techniques, specifically, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and regression analysis. These techniques were conducted based on the data obtained from a questionnaire survey of Australian SMEs.

Underpinned by the research findings mentioned herein, this study sheds additional light on the leadership, organisational culture and knowledge management research by providing empirical evidence with regards to the relationships among these three concepts. More specifically, the results of this study indicate that transformational and transactional leadership behaviours are positively related to knowledge management practices. In addition, strong levels of hierarchy and mission culture would attenuate the effectiveness of leadership. Importantly, the results of this study also suggest that leadership behaviours play a crucial role in building and maintaining a supportive culture for knowledge management. These findings, hence, provides practical implications to managers/leaders by offering a preliminary map that explain the leadership behaviours and organisational mechanisms for enhancing knowledge management practices. It is suggested that leaders must attach a high value to knowledge, encouraging questioning and experimentation through empowerment, build trust, and facilitate experimental learning of knowledge. Finally, this thesis is closes with recommended future research directions which hopefully would help pave the way for researchers willing to enhance and extend the findings of this research study.

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APPENDIX A

SURVEY QUESTIONNAIRE

Griffith UNIVERSITY
Griffith School of Engineering

Hai Nam Nguyen
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Dear Prospective Participant,

I am Hai Nam Nguyen, a PhD candidate at Griffith School of Engineering, Griffith University, working toward a doctorate degree in knowledge management. You are being invited to take part in an exciting research study focused on ***leadership style***, ***organizational culture*** and ***knowledge management practices***.
As a simple token of my appreciation, please find enclosed $2 scratchie card.
To participate, please read the following:

TITLE: The impact of leadership styles and organizational culture on knowledge management practices

PURPOSE: is to provide insights into how specific leadership behaviors could, negatively or positively, influence knowledge management efforts under various organizational cultures.

PROCEDURE: your participation will involve completing the enclosed questionnaire, which comprises some background questions, and statements about your perception of organizational leadership, culture as well as knowledge management practices.

POTENTIAL BENEFITS: your participation will help to further understanding the impact of leadership styles and organizational culture on knowledge management practices in your organization.

CONFIDENTIALITY: confidentiality of the information you provide is assured. The questionnaire forms do not require you to identify yourself, and only grouped data will be used in the research. The information collected will be only used for the purpose of this study.

RIGHT TO REFUSE TO PARTICIPATE: your participation is completely voluntary.

MECHANISM FOR QUESTIONNAIRE DISTRIBUTION AND RETURN: a pre-paid envelope is enclosed for the return of the questionnaire by ***11th October 2008***. Follow-up communications will be sent to all potential respondents after a period of three weeks. As the questionnaires are completed anonymously, the entire research sample will receive a follow-up communication. Therefore, please ignore future communications if you have already completed and returned the questionnaire.

THE ETHICAL CONDUCT OF THIS RESEARCH: This research has been reviewed and approved by the Human Research Committee of Griffith University in accordance with the *National Statement on Ethical Conduct in Research Involving Humans*. If potential participants have any concerns or complaints about the ethical conduct of the research, please feel free to contact the Manager, Research Ethics on (+61) 73875 5585 or research-ethics@griffith.edu.au

CONSENT OF RESEARCH PARTICIPANT: your consent to participate in this research will be indicated by completing and returning the questionnaire. Please detach this sheet/cover letter and retain it for your later reference.

Your cooperation in participating in this research is deeply appreciated.

Yours sincerely
Hai Nam Nguyen

RESEARCH QUESTIONNAIRE

Section 1: Multifactor Leadership Questionnaire – Form 5X-Short [1]

Using the following scale, ***please rate your immediate supervisor/team leader by circling your choice on the following statements***

Not at all	Once in a while	Sometimes	Fairly often	Always
0	1	2	3	4

My team leader/supervisor……

1	Provides me with assistance in exchange for my efforts	0	1	2	3	4
2	Re-examines critical assumptions to question whether they are appropriate	0	1	2	3	4
3	Fails to interfere until problems become serious	0	1	2	3	4
4	Focuses attention on irregularities, mistakes, and deviations from standards	0	1	2	3	4
5	Avoids getting involved when important issues arise	0	1	2	3	4
6	Talks about his/her most important values and beliefs	0	1	2	3	4
7	Is absent when needed	0	1	2	3	4
8	Seeks differing perspectives when solving problems	0	1	2	3	4
9	Talks optimistically about the future	0	1	2	3	4
10	Instills pride in me for being associated with him/her	0	1	2	3	4
11	Discusses in specific terms who is responsible for achieving performance targets	0	1	2	3	4
12	Waits for things to go wrong before taking actions	0	1	2	3	4
13	Talks enthusiastically about what needs to be accomplished	0	1	2	3	4
14	Specifies the importance of having a strong sense of purpose	0	1	2	3	4
15	Spends time coaching	0	1	2	3	4
16	Makes clear what one can expect to receive when performance goals are achieved	0	1	2	3	4
17	Shows that he/she is a firm believer in “if it ain’t broke, don’t fix it”	0	1	2	3	4
18	Goes beyond self-interest for the good of the group	0	1	2	3	4
19	Treats me as an individual rather than just a member of a group	0	1	2	3	4
20	Demonstrates that problems must become chronic before taking action	0	1	2	3	4
21	Acts in the way that builds my respect	0	1	2	3	4
22	Concentrates his/her full attention on dealing with mistakes, complaints and failures	0	1	2	3	4
23	Considers the moral and ethical consequences of decisions	0	1	2	3	4
24	Keeps track of all mistakes	0	1	2	3	4
25	Displays a sense of power and confidence	0	1	2	3	4
26	Articulates a compelling vision of the future	0	1	2	3	4
27	Directs my attention toward failures to meet standards	0	1	2	3	4
28	Avoids making decisions	0	1	2	3	4
29	Considers me as having different needs, abilities, and aspirations from others	0	1	2	3	4
30	Gets me to look at problems from many different angles	0	1	2	3	4
31	Helps me to develop my strengths	0	1	2	3	4
32	Suggests new ways of looking at how to complete assignments	0	1	2	3	4
33	Delays responding to urgent questions	0	1	2	3	4
34	Emphasizes the importance of having a collective sense of mission	0	1	2	3	4
35	Expresses satisfaction when I meet expectations	0	1	2	3	4
36	Expresses confidence that goals will be achieved	0	1	2	3	4

[1] Bass, B.M., & Avolio, B.J. (1997) Full range leadership development: manual for the multifactor leadership questionnaire. Pato Alto, Calif. Mind Garden.

Section 2: Measuring Organizational Culture – Denison Organizational Culture Survey [2]

Using the following scale, ***please indicate to what extent do you agree with the following statements about your organizational culture and the ways your organization operates***

Strongly disagree	Disagree	Neutral	Somewhat agree	Strongly agree
1	2	3	4	5

In my organization……

1	Decisions are usually made at the level where the best information is available	1	2	3	4	5
2	Information is widely shared so that everyone can get it	1	2	3	4	5
3	Everyone believes that he or she can have a positive impact	1	2	3	4	5
4	Working is like being a part of a team	1	2	3	4	5
5	We rely on coordination to get work done, rather than hierarchy	1	2	3	4	5
6	Teams are the primary building blocks of this organization	1	2	3	4	5
7	We constantly improve compared with our competitors	1	2	3	4	5
8	We continue to invest in the skills of employees	1	2	3	4	5
9	The capability of people is viewed as an important source of competitive advantage	1	2	3	4	5
10	Leaders and managers follow the guidelines that they set for the rest of the organization	1	2	3	4	5
11	There is a clear and consistent set of values that governs the way we do business	1	2	3	4	5
12	Ethical codes guide our behaviors	1	2	3	4	5
13	When disagreements occur, we work hard to achieve solutions that benefit both parties	1	2	3	4	5
14	It is easy to reach consensus, even on difficult issues	1	2	3	4	5
15	We often have trouble reaching agreement on key issues	1	2	3	4	5
16	People from different organizational units still share a common perspective	1	2	3	4	5
17	It is easy to coordinate projects across functional units in this organization	1	2	3	4	5
18	There is good alignment of goals across levels of this organization	1	2	3	4	5
19	We are very responsive	1	2	3	4	5
20	We respond well to competitors and other changes	1	2	3	4	5
21	We continually adopt new and improved ways to do work	1	2	3	4	5
22	Customer comments and recommendations often lead to changes	1	2	3	4	5
23	Customer input directly influences our decisions	1	2	3	4	5
24	The interests of the final customer often get ignored in our decisions	1	2	3	4	5
25	We view failure as an opportunity for learning and improvement	1	2	3	4	5
26	We encourage and reward those who take risk	1	2	3	4	5
27	We make certain that we coordinate our actions and efforts between different units	1	2	3	4	5
28	There is a long-term purpose and direction	1	2	3	4	5
29	There is a clear mission that gives meaning and direction to our work	1	2	3	4	5
30	There is a clear strategy for the future	1	2	3	4	5
31	There is widespread agreement about goals of this organization	1	2	3	4	5
32	Leaders of this organization set goals that are ambitious, but realistic	1	2	3	4	5
33	The leadership has clearly stated the objectives we are trying to meet	1	2	3	4	5
34	We have a shared vision of what this organization will be like in the future	1	2	3	4	5
35	Leaders of our organization have a long-term orientation	1	2	3	4	5
36	Our vision creates excitement and motivation for our employees	1	2	3	4	5

[2] Fey, C. F., & Denison, D. R. (2003). Organizational Culture and Effectiveness: Can American Theory Be Applied in Russia? *Organization Science, 14*(6), 686-706.

Section 3: Measuring knowledge management processes [3]

Use the following scale; ***please indicate how frequently each of the following processes and tools are used to manage knowledge within your organization.***

Never	Infrequently	Moderate frequency	Frequently	Always
1	2	3	4	5

1	Learning by doing	1	2	3	4	5
2	On-the-job training	1	2	3	4	5
3	Learning by observation	1	2	3	4	5
4	Face-to-face meeting	1	2	3	4	5
5	The use of apprentices and mentors to transfer knowledge	1	2	3	4	5
6	Brainstorming retreats or camps	1	2	3	4	5
7	Employee rotation across areas	1	2	3	4	5
8	Cooperative projects across directorates	1	2	3	4	5
9	Repositories of information, best practices, and lessons learned	1	2	3	4	5
10	Web pages (Intranet and Internet)	1	2	3	4	5
11	Databases	1	2	3	4	5
12	Modeling based on analogies	1	2	3	4	5
13	Capture and transfer of experts' knowledge	1	2	3	4	5
14	Decision support systems	1	2	3	4	5
15	Pointers to expertise (skill "yellow pages")	1	2	3	4	5
16	Chat group/web-based discussion groups	1	2	3	4	5
17	Groupware and other team collaboration tools	1	2	3	4	5

Section 4: Background Information

1. My name (optional) _____
2. Name of my organization (optional) _____
3. The major business function of my organization is:
   ☐ Finance ☐ Health ☐ Engineering ☐ Education ☐ Services
   ☐ Information Technology ☐ Others_____
4. The number of people in my organization is:
   ☐ 20 and less ☐ 21-50 ☐51-100 ☐ 101-200 ☐ 201-500 ☐ Over 501
5. Number of years worked in this organization is:
   ☐ 1-5 ☐ 6-10 ☐11-20 ☐ Over 21
6. What best describes my position:
   ☐ Senior Management ☐ Middle Management ☐ Line Management
7. In my organization, I mainly work as:
   ☐ Team Leader ☐ Team Member

➤END OF QUESTIONNAIRE◄

Thank you very much for your time and effort
Please return the completed questionnaire in the envelope provided by *11th October 2008*
If you have any comments on this survey, please feel free to write them on the next page

[3] Sabherwal, R., & Becerra-Fernandez, I. (2003). An Empirical Study of the Effect of Knowledge Management Processes at Individual, Group, and Organizational Levels*. *Decision Sciences, 34*(2), 225-260.

COMMENTS

Questionnaire Survey: The Impact of Leadership Styles and Organizational Culture on Knowledge Management Practices

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