

**Study of the impact that style of leadership has
upon innovation within the UAE through
utilisation of the knowledge sharing role**

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Abstract

In the dynamic business environment of the UAE, understanding leadership styles and their impact on innovation, particularly through the lens of knowledge sharing, is vital. As the UAE shifts towards a knowledge-driven economy, the role of leadership in shaping corporate innovation becomes paramount. Among leadership styles, Transformational Leadership (TL) stands out as a pivotal force behind innovation by fostering trust, propelling change, and pushing employees to excel.

Sharing knowledge is key to remaining competitive and fostering innovation. When a company emphasizes knowledge-sharing, it's positioned for success. While the link between transformational leadership, knowledge sharing, and innovation is known, there's limited research on its relevance in the UAE's aviation sector.

This research aims to fill the existing knowledge gap by examining the impact of transformational leadership on innovation, particularly highlighting the importance of knowledge sharing in the United Arab Emirates' General Civil Aviation Authority (GCAA). To obtain a deeper understanding, we conducted surveys and utilized data-driven techniques, sourcing perspectives from employees within the GCAA. By analysing 333 survey responses through Structural Equation Modeling (SEM) with AMOS 26, our findings distinctly reveal the crucial link between knowledge sharing, leadership style, and innovation.

Furthermore, this research not only enhances our comprehension of leadership, knowledge dissemination, and innovation within UAE but also has practical significance. Specifically, for leaders operating in the aviation sector of the UAE, a key takeaway is the value of fostering a knowledge-sharing culture anchored in transformational leadership.

Additionally, these findings make a significant contribution to the broader understanding of how knowledge sharing acts as a mediator between transformational leadership and innovation. They provide profound insights into these intricate dynamics within the aviation industry of the Middle East, with a particular focus on the UAE—an area often overlooked in prior research.

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Declaration

I hereby declare that no portion of this work has been submitted in support of an application for any other degree or qualification at this or any other university or institution of learning. In addition, I hereby confirm that, this thesis is solely my work and all work of others cited in this thesis have been acknowledged.

Signed: *Khusud Ashadid*

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List of Abbreviations

AGFI	Adjusted Goodness-of-Fit Index (Model appropriateness measure)
AMOS	Analysis of Moment Structures (Quantitative data analysis software)
AVE	Average Variance Extracted
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index (Model appropriateness measure)
CM	Change Management
CR	Composite Reliability
DF	Degree of Freedom
ECO	Economy
EFA	Exploratory Factor Analysis
GFI	Goodness-of-Fit Index (Model appropriateness measure)
IS	Information Systems
IT	Information Technology
KMO	Kaiser-Meyer-Olkin (Sampling adequacy measure)
MI	Modification Indices (SEM measure)
MNA	Member of National Assembly
NPM	New Public Management
OD	Organisational Development
ORGCUL	Organisational Culture
PCA	Principal Component Analysis
QC	Quality of Communication
RMR	Root Mean Square Residual (Model appropriateness measure)
SEM	Structural Equation Modelling (Quantitative data analysis technique)
SMC	Squared Multiple Correlations (SEM measure)
SPSS	Statistical Package for Social Science (Software)
SR	Standardised Residuals (SEM measure)
SRW	Standardised Regression Weights (SEM measure)
TEC	Technical Infrastructure
TM	Top Management
VIF	Variance Inflation Factor

Chapter 1 Introduction

1.1 Introduction

This chapter provides a brief outline of the overall study and its purpose, and presents the research aims and objectives. The study problem statement is briefly described, as well as the potential contribution to the world of knowledge. The literature review served to define the existent research related to the impact of knowledge sharing and transformational leadership upon adoption of innovation, especially within an aviation industry context. Further on, the report has a discussion regarding the gaps within the research and the conceptual framework selected for the research is described following with the provision of an outline of the adopted research methodology. As such, there is identification of the research philosophy and approach, the research design and the approach taken towards the process of data collection. Those details are followed by brief account of research instrument development, i.e., the questionnaire, as well as details for undertaking the pilot study in way that ensures questionnaire validity and reliability are ensured. Finally, the report concludes with a research timeline.

1.2 Study background

Nowadays, most organisations within both the public and private sectors are faced with challenges resulting from rapid technological changes and the increasing demands within a competitive global marketplace (Al-Haddad and Kotnour, 2015; Gwaka et al., 2016; Khalili, 2016). Such challenges are clearly prevalent for the aviation sector and, because of the longer industrial chain compared to many conventional industries, it is often the case that the aviation industry requires considerable effectiveness in the management of innovation in order to stay competitive (Zhu et al., 2012). Within the aviation industry, innovation is a central core premise within development and, as such, innovation competency research is vitally significant; it is critical these days for organisational survival and is a primary factor for the achievement of competitive advantage.

The factor that has been identified as the single most important one affecting innovation is the style of leadership since leaders are able to impact upon the setting of specific goals, introduction of ideas and the creation of a work culture that fosters

innovation (Sarrors et al., 2008). Lots of different styles have been investigated within the management field (Saenz, 2011); however, transformational leadership (TL) is acknowledged as being the most important. The TL style results in followers exhibiting behaviour that is more goal directed (Northouse, 2007; DuBrin, 2012); in doing so, an organisation achieves enhanced levels of performance and innovation (Yukl, 2013). With transformational leadership, followers feel respected and have trust in the leader. TL results in followers having a greater willingness to do what is required and expected and more. Greater commitment from subordinates is generated under TL, and that produces greater work quantities and more enhanced creativity in the solving of problems (Northouse, 2007; Hawkins, 2011; Lynch, 2012; Yukl, 2013).

According to Bass and Riggio (2012), there are four behaviours encompassed within TL, i.e., inspirational motivation, idealised influence, individualised consideration and intellectual stimulation. Their explanations showed that with inspirational motivation, organisational goals encourage and impassion followers. They showed idealised influence as involving expression of confidence for the vision of the organisation, with respect and admiration instilled in followers with emphasis given to accomplishments. Through the practise of individualised consideration, the authors noted that leaders are able to build up interactive relationships with subordinates with special attention paid to their particular needs. Lastly, they saw that by intellectual stimulation, leaders look for new problem-solving methods from followers, with motivation for them to question assumptions, rethink old approaches and feel encouraged to be creative and imaginative.

Whilst TL can have a direct impact upon innovation, it has been suggested in previous research that the situation could be too complex for direct effects to be isolated. Knowledge has been recognised as a most significant resource in gaining competitive advantage (Nonaka, 2005; Nonaka et al., 2006; von Krogh et al., 2012) as well as recognised as key for the enhancement of innovation (Saenz et al., 2009; Hislop, 2013). For Drucker (1993), knowledge was a primary resource of production ahead of labour, land and capital. For Abell and Oxbrow (2001), knowledge increases organisational effectiveness and creativity, and leads to reductions in costs and risk levels. Knowledge needs to be managed by organisations well so that performance can be enhanced along with the prospects of survival (Ahmed and Shepherd, 2010). From

a knowledge-based viewpoint, innovation is enhanced by an organisation if its intangible and tangible assets are owned and managed by that organisation (Nonaka, 2005; Berggren et al., 2011; von Krogh et al., 2012). So that organisational tasks can be accomplished, the management of knowledge and associated techniques have great utility (Charles, 2004). Knowledge management (KM) can result in better capabilities in decision-making and reductions in the time involved in the product development cycle (Jantunen, 2005).

KM can include technology, processes and people (Massa and Tsesta, 2009). The creation, sharing and use of knowledge is involved in KM (Andreeva and Kianto, 2011). Uriarte (2008) and Hislop (2009) noted that, in considering KM initiative application, the creation of a knowledge sharing culture is important. Activities included within knowledge sharing (KS) could include those wherein skills, insights and information are exchanged between members of an organisation (Kim et al., 2013). As Hislop (2013) noted, when the knowledge of an individual is shared, there is an increase in the organisational value of that knowledge. Indeed, KS promotion amongst organisational members is a key aspect to the process of learning since, through interaction, it helps in converting tacit knowledge embedded within individuals to explicit knowledge (Nonaka et al., 2006; Tchiijo and Nonaka, 2007; von Krogh et al., 2012). KS was named as being a primary KM focal area by Halawi (2008). Du Plessis (2007) put forward an explanation of a fundamental KM aim being the normalisation of KS within an organisation. It is considered that KS can serve as a useful indicator in the measurement of organisational effectiveness (Tan et al., 2010). It is considered that KS serves to build up efficient performance in private and public environments and plays a central role in enhancement of organisational innovation (Mathew, 2010).

Industrial innovation competency is, at its core, a key influence in the process of innovation, and it is central to organisations in playing a key role in the activities of innovation. However, because of the characteristics of the aviation industry and the complexity and systematic nature of its innovation, there is a heavy reliance upon effective leadership for innovation competency. Since innovation is essential for organisational survival and is a core factor in the achievement of competitive advantage, it has been identified that leadership style is the factor with greatest

importance to impact upon innovation; this is because leaders are able to establish specific goals, influence introduction of ideas and establish a working culture that fosters innovation (Akay and Demirel, 2018). Leaders are able to facilitate the process of innovation through the motivation of followers to go beyond expected levels of performance (Sarrors et al., 2008; Akay and Demirel, 2018).

Whilst lots of different styles of leadership have been investigated within the innovation management field, transformational leadership (TL) has been acknowledged as being the most important. Al-Husseini and Elbeltagi (2016) consider TL as being shown to have significant importance upon innovation resulting in increased levels of goal-directed types of behaviour amongst followers and the promotion of organisational change, as well as trusting spirit and help for followers to go beyond performance expectations. TL enables organisations and individuals in the generation, exploitation, renewal and implementation of knowledge so that the necessary competences can be produced that are vital for organisational development (Khalili, 2016; Akay and Demirel, 2018). Whilst TL can directly impact upon innovation, it has been suggested in previous research that it is potentially too complex for direct effects to be isolated (see Al-Husseini and Elbeltagi (2016) and Akay and Demirel (2018), for example). In that vein, it has been recognised by lots of researchers that KS is, in fact, the resource that has most significance for gaining competitive advantage and is key to the enhancement of innovation (Khalili, 2016; Al-Hussein et al., 2019; Watts et al., 2019).

Based upon the discussion above, it may be observed that TL may impact upon innovation through the promotion of KS behaviour in organisations. However, only a few studies have undertaken investigation of causal links between those 3 constructs; it is especially the case that the aviation sector context is under-researched in that respect. Indeed, to date, there has been no study that has produced evidence favouring the above claims, especially within the GCAA (General Civil Aviation Authority) context within the UAE. This study, then, seeks to provide such an examination of the role in mediation of KS within the relationship lying between innovation and transformational leadership.

1.3 Study purpose

The research aims to provide insights and understanding with regard to the impact that transformational styles of leadership have upon innovation management through mediating the knowledge sharing role within the context of the civil aviation industry context of the UAE. It is known that TL initiates and stimulates strong effects through various initiatives aimed at raising the awareness that followers have of the contributions of other group members in order to sustain competitive advantage. Leaders who are transformational can create suitable climates, set norms and values and create a 'change culture'. Furthermore, such people enhance the performance of organisations through the promotion of innovation (Northouse, 2007; DuBrin, 2012; Al-Hussein et al., 2019). So, the main study aim is to provide an investigation of linkages between KS, innovation and TL so that it can have use in determining methods by which leaders can promote activities for KS and acceptance of innovation amongst employees. Whilst achieving that aim, the study considers the various kinds of transformational leadership behaviour and types of knowledge sharing practice.

Despite the recent research of leadership for innovation, mechanisms for the relationship of it to the process of innovation were not made explicit. Akay and Demirel (2018) consider that there is limited understanding of mechanisms by which transformational leaders influence innovation; as such, it is considered there is a need for researchers to conduct investigations of processes that are intervening in the connections between innovation and leadership so that the indirect and direct effects of leadership upon innovation can be explained. The authors suggest, therefore, there needs to be examination of whether organisational innovation is impacted directly by transformational leadership or whether innovation is indirectly influenced by transformational leadership by way of knowledge management. A few studies have previously tested relationships between knowledge sharing, innovation and transformational leadership in an empirical way; however, those studies have mainly had focus upon medium and small sized enterprises. Furthermore, previous studies were mainly focused upon the education, HR consulting and manufacturing sectors (see Al-Husseini and Elbeltagi (2016), Akay and Demirel (2018) and Al-Hussein et al. (2019), for example. The present study serves to contribute towards existing knowledge through investigation of the impact of transformational leadership upon organisational innovation by way of knowledge sharing effects in intervention within

the GCAA context as a large enterprise example. In practical terms, this study offers help to policymakers and GCAA leaders who face the pressures of having to be innovative; it could enable barriers to be overcome by them so that product development and innovation processes amongst aviation staff would not be prevented, and it could provide strategic ideas that would foster activities for KS amongst them.

1.4 Problem statement

In general, both practitioners and academics alike are in agreement that knowledge sharing, innovation and transformational leadership have importance for organisations. It has been argued within various previous studies that knowledge sharing is enabled by, amongst other factors, effective leadership (Le and Lei, 2017; Abbas et al., 2018; Alzghoul et al., 2018; Lin et al., 2020) and that innovation is enhanced by effective leadership (Sarros et al., 2008; Khalili, 2016; Medeiros et al., 2017; Watts et al., 2019). However, in general, there are not many studies to have tried to establish the causal links that lie between those three particular variables (Al-Hussein et al., 2019). In relation to the aviation industry context, it was emphasised by Vértésy (2017) that the need for investigation of the roles of innovation and leadership is great. Likewise, Kamel (2015) advocated for the aviation industry that it was important for collaboration and knowledge sharing because of the particular aspects of technological complexity and the heavy regulations with legal and safety implications. There has not, however, been development of causal links amongst the 3 variables in the aviation industry. Given the degree of importance for collaboration, innovation and leadership in the aviation industry, with all its complexity, investigation of the relationships amongst those factors is clearly worthwhile.

Knowledge sharing importance for industrial organisations has grown considerably as product architecture complexity has increased and, consequently, the associated industrial organisations have become more complicated. As such, there has been an increasing focus within the literature on strategic management upon definition of the appropriate frameworks for cooperation and collaboration in knowledge sharing to permit innovation to be adopted by companies and the building of joint competencies so that their abilities in value creation can be enhanced (Kamel; 2015; Akay and Demirel, 2018). Since the aviation industry has unique features in its historical evolution, knowledge sharing and collaboration have become key requirements for the

capture and creation of value and innovation (Zhu et al., 2012; Kamel; 2015). In common with other organisations within aviation, the GCAA is dynamic and has strong unions, a long industrial chain and complex requirements in regard to safety and legal matters; as such, there is a need for effective leadership and continual knowledge sharing and communication so that the organisation can cope with ever-growing needs within the industry. In general, at GCAA, there is a tendency for knowledge holders not to exchange expertise as there are little or no opportunities for knowledge to be exchanged amongst people such as managers and fellow employees (GCAA, 2019). The existing situation may be influenced by the local culture and the inclination of experts to protect their job security. For the GCAA to enhance its sustainability and competitiveness, it needs to more efficiently utilise its current knowledge-based instruments and implement robust knowledge sharing practices among its key executives. Indeed, it is essential that resources are used well, and best practices shared effectively so that the organisation can be made a successful and sustainable one. Empirical studies related to the relationships between KS, innovation and TL seem to be lacking; indeed, this study has noted that those relationships have not been examined in a study for the aviation sector field within the context of the UAE. So that, this gap within the literature can be filled, the aim of this study is the development of a structural model that portrays the indirect/direct relationship(s) between KS, innovation, and TL.

1.5 The aim and objectives of the research

The primary study aim within this research project is to provide an examination of the impact of TL upon innovation through the mediation role played by KS within the GCAA context. Based upon that overall aim, the study looks to address following key research objectives, which are presented as follow:

- To determine the effects of leadership and its dimensions (IIN, IM, IS and IC) on Innovation and its dimensions (PRDIN and PROIN).
- To Investigate the effects of leadership and its dimensions (IIN, IM, IS and IC) on Knowledge Sharing within GCAA.
- To establish the effects of knowledge sharing (KS) as a mediator on the relationship between Transformational Leadership (TL) and Innovation.

1.6 Study significance

The industry of aviation is considered a strength within the national economy and, often, it is seen as symbolic of industry of a nation and an essential pillar for its defence (Zhu et al., 2012). There is great political significance in having a powerful and independent aviation industry, and it is viewed as a key pillar for sustainable economic development (Kamel, 2015). However, following the literature review (presented in Chapter 2), it could be noted that empirical forms of research related to the adoption of innovation for the achievement of completeness has mainly, in the past, had a focus upon medium and small-sized enterprises within industry (Al-Husseini and Elbeltagi, 2016; Akay and Demirel, 2018; Al-Hussein et al., 2019, for example). Furthermore, research into the impact of knowledge sharing and leadership upon innovation has, in the main, been qualitative. Therefore, sufficient research data is lacking, especially in relation to aviation and the UAE context, in particular. So, little quantitative support exists to help in the crafting of developmental strategies for the aviation sector.

Innovation represents a premise and a core aspect of development within the aviation industry and so this study, through the use of empirical, quantitative evidence, aims to make a contribution to the literature for the field through the provision of a form of strategic framework for GCAA leaders to help in the promotion of a culture of collaboration wherein innovation is accepted. This study has importance in that it contributes to both theory and practice with a research methodology that is robust. This study provides an examination of TL impact upon innovation through the role of mediation of KS. In theoretical terms, this study makes progress in providing insights into, and understanding of the relationships between KS, innovation and TL; to date, those relationships had not been investigated within the aviation sector, especially one within an Arab world context. Also, the study has utility in its determination of methods that leaders could use for the promotion of KS activities amongst GCAA employees. In practical terms, the study can be helpful for important GCAA policymakers to help in the successful implementation of innovation and the improvement to knowledge sharing behaviours amongst the employees. Furthermore, this study aims to offer support for future developments within aviation which would make significant contributions to the economy of the nation. With the purpose of the study having been outlined, along with its significance, consideration will be given to the existent knowledge related to the impact of KS and TL upon innovation within the

literature review in Chapter 2. Following that, consideration will be given to the methods and strategies for this research study.

1.7 Thesis structure

Within this section, *Chapter 1*, an outline is provided of the thesis contents which are split into eight chapters. This opening chapter introduces the study background and the problem of the study. Following that introduction, there is description of the purpose and importance of the study, the research aim and objectives, presentation of the overall thesis structure and finally, the contents are summarised at the end of this opening chapter. Within *Chapter 2*, the comprehensive review of literature in relation to innovation, KS and TL is introduced. TL theory development is reviewed and there is description of different approaches to KS and KM. Also, within this chapter, there is discussion of TL components, KS processes and innovation types considered within this research project. Within *Chapter 3*, there is conceptualisation of causal relationships between KS, innovation and TL that are developed within this study. There is discussion of the relationships between innovation and TL, KS and TL, and innovation and KS. Consideration is then given the role of mediation of KS within the relationship of TL to innovation. There is then discussion of the role of TL within both private and public sectors. Towards the end of the chapter there is provision of the hypotheses of the research once each of the conceptual framework components has been discussed. In *Chapter 4*, the study methodology is explained along with description of the quantitative, explanatory methods that are used within the research design. There is discussion about the questionnaire, the scales of measurement and the way the quantitative data was collected, with explanation of the procedures employed in the validation of the questionnaire, which is followed by description of the population sample.

Within *Chapter 5*, the quantitative findings are presented. Details are provided of analyses for the demographic respondent data employing SPSS 28, EFA (exploratory factor analysis), testing of model validity and reliability and the multi-group analysis by way of CFA (confirmatory factor analysis) through use of AMOS 28. There is then presentation of the outcomes of hypothesis testing for the causal relationships through use of SEM (structural equation modelling) across private and public and aviation. In *Chapter 6* there is a discussion about the findings garnered from quantitative data and

the implications for TL practice and the relationships between factors. Links are also explored with findings from within the review of literature so that the overall study findings can be provided. *Chapter 7* contains the study conclusion, with study finding summarisation and presentation of the implications for both theory and practice. That final chapter also puts forward recommendations for policymakers, notes the limitations of the research and offers suggestions for potential directions for future research.

1.8 Summary

Chapter 1 has outlined the study background and established the basis for developing the research. Emergence of the study idea was described initially, and attention drawn to the significance of KS and TL for enhancement of process and product innovation in the aviation sector. Given the absence of a model for innovation, KS and TL within the aviation environment context within the UAE, the purpose and importance of the study became clear and led to the establishment of the research aim and objectives. Description of the whole thesis structure was presented for all seven chapters.

Chapter 2

Review of the Literature

2.1. Introduction

A review of literature is presented here within Chapter 2 which is split into 3 sections. A first section relates to the importance of leadership style, and has different definitions related to style of leadership and discusses leadership theories, especially focused upon TL. The following section introduces a number of basic concepts related to knowledge, various knowledge types, knowledge management, the concept and importance of KS, KS within private and public organisations and the enablers of KS. The final section of chapter 2 has a focus upon innovation, with discussion regarding its importance, the different sorts of innovation, and the concepts of product and process and the reasons for taking a focus upon them within this research.

2.2 Concept and Styles of leadership

Leadership, as a multidimensional construct, has been a focal point of scholarly inquiry across various disciplines for decades. At its core, leadership encapsulates the ability to influence and guide individuals or groups toward the achievement of specific goals (Northouse, 2016). While the essence of leadership remains constant—exerting influence—it manifests in various forms depending on the context, objectives, and the individuals involved. Yukl (2012) underscores that the complexities of leadership arise not only from the dynamic interplay between leaders and followers but also from the external environmental factors, which can shape and redefine leadership roles and practices. Therefore, understanding leadership requires a nuanced examination of both the intrinsic qualities of the leader and the circumstantial variables that mould the leadership process. Leadership styles refer to the approach, behaviours, and attitudes that leaders employ when guiding or managing individuals, teams, or organisations. Over the years, various researchers have identified and described different leadership styles. One of the most seminal works in this field was conducted by Lewin, Lippitt, and White (1939), who categorized leadership styles into three primary types: autocratic, democratic, and laissez-faire. The autocratic style is characterized by leaders making decisions without substantial input from subordinates. They direct

tasks, set clear expectations, and closely supervise their team. In contrast, democratic leaders seek input and feedback from their team members and involve them in decision-making. The laissez-faire style, often termed "hands-off", involves leaders allowing their team members significant autonomy in their tasks and decisions.

Transformational and transactional leadership, introduced by Burns (1978), are two other pivotal styles that have been widely researched. Transformational leaders inspire and motivate their followers by setting a vision, encouraging innovation, and fostering a sense of belonging. They go beyond the routine and aim to elevate the morale and performance of their team members. Transactional leaders, on the other hand, are more task oriented. They rely on clear structures, roles, and rewards or penalties to manage performance. While transactional leadership can be effective in many structured scenarios, transformational leadership tends to be more effective when innovative solutions and team morale are paramount.

The field of leadership is one that is discussed often around the world. In all walks of life, from education to social organisations to business, the concept of leadership has gained importance. Whilst administrative forms of leadership have long been subjects of interest, more scientific research focussing upon leadership did not really start until the early years of the twentieth century. Researchers began to discover that the behaviours within leadership were significant determinants for organisational success (Bass, 1990; Saenz, 2011; DuBrin, 2012). Nowadays, organisations require people that have leadership abilities since it is believed that they bring assets and, consequently, success (Northouse, 2007). Good leadership can bring about change related to the environmental demands that an organisation faces (Schermerhorn, 2008). Appropriate leadership is seen as the solution for most problems faced by an organisation (Yukl, 2013). It was noted by Riaz and Haider (2010) that effective leaders can lead organisations on to success through paying greater attention to potential environmental changes and future events. Leadership plays an essential role in the establishment of teams that perform highly; indeed, the leadership is a critical element in enhancement of the performance of an organisation (Northouse, 2007; Betroci, 2009; DuBrin, 2012). There has been identification of leadership as a key factor for the promotion of innovation (Jung et al., 2003).

In the view of Yukl (2010), no general agreement exists on a single leadership definition. Numerous definitions have been put forward over the years, a number of which follow. Leadership was noted by Fiedler (1967) as including the directing and the coordinating of group member work. Burns (1978) noted that there is the exercising of leadership when individuals come together as a group and mobilise resources, including political ones, to arouse, to engage and to satisfy follower motives. For Yukl (1981), leadership is made up of influential processes that have a bearing upon subordinate actions. House et al. (1991) saw leadership as an ability for motivating confidence, support and encouragement amongst organisational members required to reach organisational goals. For Daft (1999), leadership was defined as being an influential relationship occurring between followers and leaders with the aim of making changes that reflect their shared purposes. Schermerhorn (2008) described leadership as a process by which others are encouraged to work well towards the accomplishment of tasks. Robbins and Coulter (2005) considered leadership to be a process including the impacts that individuals and groups have towards goal accomplishment. Oke et al. (2010) also saw leadership in terms of process, considering it a social one taking place within group contexts involving the influence of leaders upon the behaviours of followers so that desired organisational goals can be achieved. Northouse (2007-2012) considered leadership to be a process through which individuals influence groups of individuals for the achievement of goals. Leadership was defined by Dubrin (2007-2012) as being the abilities of leaders in motivating confidence, supporting and encouraging followers who are required so that organisational goals can be achieved. For Yukl (2006; 2010; 2013), the definition of leadership involved it being seen as a behaviour, trait, relationship, or influence occurring between followers and leaders, or as being role relationships relating to an administrative type of position.

Despite the variety of definitions as shown above, most of them address the following: the concept of leadership is seen as 'process', a way through which a leader may impact upon and be impacted by subordinates. The 'influence' of leaders upon followers may be seen as an essential condition, the absence of which means that leadership would not actually be there. The occurrence of leadership is within 'group' situations, and individuals are influenced within the group to adopt the same goal(s)

as the associated leader. Leadership involves ‘accomplishment’ of goals through people within a group being suitably directed. A number of authors, including Daft (1999) added a further element to the notion of leadership with it being described as having inclusion of influence occurring between leaders and followers which leads to outcomes wanted by the leader; as such both followers and leader are involved actively within pursuit of change(s) aimed at the reaching of the goals required. It was argued by Daft (1999) that those elements have connection and may not be separated from leadership process success; see Figure 1.

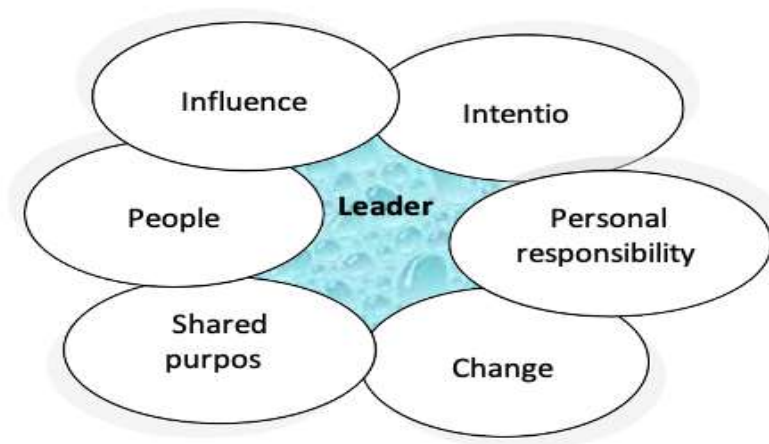


Figure 0.1 The elements of leadership

Source: (Daft, 1999, p.6)

It now seems clear that those who can affect the behaviour of others can be termed leaders, whilst those towards whom leadership is focussed can be termed followers, with the two types of people connected within a process of leadership (Northouse, 2007). Amongst researchers of leadership there seems to be a consensus that management revolves around the very same issues that leadership does. As such, it would be helpful to differentiation between the two terms. Bennis and Nanus (1985) consider management as achievement of actions, key routines, and activities, whilst considering leadership as having a focus upon creation of vision for influence and change.

The distinction between leadership and management was clarified further by

Kotter (1990) in describing management as producing consistency and order through budgeting, planning, staffing, and organising, problem solving and controlling. Leadership, on the other hand, involves production of movement and change through the establishment of direction, alignment of people and the inspiring and motivation of them. Leadership was considered by DuBrin (2007-2012) consider leadership as involving dealings with the more interpersonal managerial job aspects, such as motivation, influence and inspiration, whilst dealing with administrative aspects, controlling, organising and planning. Whilst leadership and management deal with different kinds of activity, it has been argued that they are both essential for organisational success (Northouse, 2007). As such, the terms are overlapping and complementary; whilst managers have concern with affecting groups so that goals can be achieved do practise leadership, leaders also engage in organising, controlling and planning, which are aspects of management.

2.3 Leadership Theories

Over the years there have been numerous studies undertaken into leadership (Stogdill, 1948; Stogdill, 1974; Burns, 1978; Bass, 1985; Northouse, 2007; Yukl, 2010). Indeed, numerous schools of thought emerged regarding aspects such as style and traits within leadership, and situational, behavioural, transformational and transactional perspectives on leadership.

2.3.1 The ‘trait’ type approach

The ‘trait’ approach was an early attempt at explaining leadership within organisations. Within the trait approach, the assumption is made that leaders are in possession of inherent, qualities that puts them apart from individuals who do not lead; expressed another way, it can be considered that leaders are not made, though they are born with the necessary qualities (Northouse, 2007; Yukl, 2013). Various researchers have studied the approach, see for example Stogdill (1948; 1974), and discovered that traits like initiative, intelligence, self-confidence, persistence when dealing with problems, dominance, tolerance, ambition, and cooperation were leadership traits of most significance. Latterly, there has been criticism of the approach for numerous reasons including the emergence of an endless number of different traits and a failure to discover universal traits of

leadership. Also, it has been said that there has been a failure for account to be taken of various situations, including the possession of certain traits in people that could help them be leaders in a certain situation though not within other circumstances. Also, some consider there has been a failure for traits to be viewed in terms of their relationship to the outcomes of leadership such as, for example, job satisfaction and effectiveness; instead, there was just a focus upon identifying traits. Lastly, since traits cannot be changed or taught easily, the approach has little use for development and training (Daft, 1999; DuBrin, 2007; Northouse, 2012).

2.3.2 The 'style' type approach

A 'style' approach has a focus upon leader behaviour rather than their inherent qualities or traits. It aims at explaining what leaders are doing and the way they are acting through concentration on two sorts of behaviour, i.e., tasks and relationships (Betroci, 2009; Yukl, 2010). With regards to task behaviour, followers are helped by leaders in their accomplishment of goals, whilst relationship type behaviour, followers are helped to feel at ease with another and the situation(s) they face. This approach has the main purpose of explaining how those two sorts of behaviour are combined by leaders so that followers can be influenced in their efforts for reaching goals. Several studies are representative of the style approach (Sadler, 2003; Yukl, 2006; DuBrin, 2007; Western, 2008; Betroci, 2009; Northouse, 2012; Yukl, 2013). Three well-known studies are the ones undertaken at University of Michigan, Ohio State University and the study of Blake and Mouton.

The study of Ohio State University noted two leadership style types: a style using consideration, and a style that initiates structure. With consideration behaviour, leaders establish relationships, respect and trust between themselves and followers, with careful listening and expressions of appreciation of work done. Structure initiating style involves organisation of work, with structure added to the context of the work through definition of responsibilities and roles and the scheduling of work activities. The study of the University of Michigan focused more attention upon the influence of the style of leaders upon follower

performance. The conclusion of the study was leaders exhibit two sorts of behaviour: a production orientation and an employee orientation. With employee orientation, human relationships are built by leaders, and they exhibit trust and confidence, paying particular attention to the personal needs of followers, with attempts to understand their problems. That style has similarity to consideration style from within the study of Ohio State University. A production orientation, meanwhile, includes the leadership behaviour giving explanation for production and technical task aspects, with followers viewed as means by which work is accomplished. That type of behaviour has a parallel nature to the style of initiating structure within the study of Ohio State University. The production and employee orientations conceptualised within the Michigan study saw them as being situated upon a single continuum though at opposite ends, with leaders with employee orientations having less of an orientation towards production, and vice versa.

The study of Blake and Mouton is known sometimes as the grid of managerial leadership; introduced back in the 1960s, this study has since undergone numerous revisions (Northouse, 2007; Yukl, 2010). The model took a focus upon the ways in which leaders help their organisations reach goals by way of two factors, orientation of production and orientation of people; by way of intersection of the two kinds of behaviour, five different leadership styles were generated by the model as follows:

- i) Authority compliance. This involves concentration upon work tasks and has less emphasis upon employees. With this style, leaders are often seen as being over-powering, controlling and driving.
- ii) Impoverished management. With this style, the leader offers little care for relationships and tasks and, in having little contact with followers, can seem apathetic and non-committal.
- iii) Management that is 'middle-of-the-road'. This style relates to leaders with an intermediate degree of focus upon people and tasks; they tend to avoid conflict and have an emphasis upon moderation in terms of both production and their interpersonal relationships.
- iv) Country club style of management. With this style, leaders have a focus upon their interpersonal relationships with followers and they try to

generate and provide suitable work climates for them through giving particular attention to both social and personal needs. In doing so, such leaders have a low degree of orientation towards production.

- v) Team management. With this style, leaders have an emphasis on both interpersonal relationships and tasks. They encourage teamwork within their organisations and help make employees feel committed and involved in their work.

Even though theories that have been generated using this approach have had positive application, as with the aforementioned trait approach, there has been a failure to discover a universal leadership style that would have effectiveness in all situations. Also, there was inadequate demonstration of how the styles of leaders have association to the outcomes of performance.

2.3.3 The ‘situational’ type approach

Hersey and Blanchard (1988) developed the ‘situational’ approach, with the implication that the style of leaders is adapted by them to the types of demand that arise within differing situations. It was argued by Yukl (2010) that situational leadership, essentially, involved leaders linking their style with follower commitment and recognising the needs of organisational members and then adapting their particular style to those particular follower needs. The emphasis of the approach is that leadership involves both supportive and directive behaviour. Supportive behaviour assists organisational members in feeling comfortable about the situation and about themselves. Directive behaviour, on the other hand, assists employees in accomplishing goals through the giving of directions, the defining of roles and by demonstrating to them how goals can be achieved. There can be classification of those two styles in 4 different categories, as follows:

- i) Directing. A style that is highly directive and low in support. Such leaders give directions explicitly regarding how the tasks at work ought to be achieved.
- ii) Coaching. A style that is both highly directive and highly supportive. With this style, leaders focus upon the achievement of goals and the meeting of the

socio-emotional needs of followers.

- iii) *Supporting*. A style that is highly supportive though lowly directive. Such leaders focus upon the support of employees through asking and listening and providing feedback.
- iv) *Delegating*. A style that is lowly supportive and lowly directive. Such leaders provide less in regard to both social support and task input.

The second aspect of a situational approach is concerned with development of follower level through promotion of competence and commitment for the accomplishment of tasks. It was noted by Northouse (2007) that the situational approach is limited despite of its usefulness for leadership development and training; for instance, the model conceptualisation is considered ambiguous and there is lack of clarity over how competence and commitment are combined in the formation of four distinct development levels, as well as the model not explaining how commitment and competence are weighted for the various levels.

2.3.4 Contingency theory

Contingency theory seeks to link leaders to appropriate kinds of situation. There is an assumption that leader effectiveness is dependent upon their style; as such, contingency has concern with both situations and styles (Northouse, 2007, Yukl, 2010). Fiedler (1967) was the leading researcher of contingency theory and styles of leadership within it are described as being 'relationship motivated' and 'task motivated' (DuBrin, 2007). Task-motivated style is in reference to the reaching for goals, whilst leaders who are relationship-motivated work at developing close interrelationships. The LPC (least preferred co-worker) scale was developed by Fiedler for measurement of leadership style; within the scale, a high score is in reference to a relationship-motivated leader, whereas a low scoring leader is one that has been identified as being task-motivated. It is suggested by the theory that there are three different situational factors, i.e., task structure, position power and leader-member relations. Task structure is in reference to whether task requirements are clear. Structured tasks tend to give a leader more control, whilst tasks without clarity tend to reduce the influence and control of a leader. Included

within leader-member relations are degree of confidence, loyalty and group atmosphere. If leaders are trusted by followers and there is a positive group atmosphere, then it is considered that there are good leader-member relations. On the other hand, if there is an unfriendly atmosphere, that factor is considered poor.

2.3.5 Path-goal theory

Path-goal theory appeared within the work of House and Mitchell (1974), House (1971-1996) and Evans (1970). The theory has the primary aim of improving and enhancing employee performance through a focus upon their motivation. There is an assumption that leaders can enhance the goal attainment of followers through the provision of rewards within the organisation and by making paths clear towards goals by way of directing and coaching. Path-goal theory notes four sorts of behaviour that may impact upon follower motivation (Daft, 1999; Sadler, 2003; Northouse, 2007; Western, 2008; Betroci, 2009; DuBrin, 2012; Yukl, 2013): those 4 types are directive, supportive, achievement-oriented, and participative. In accordance with a directive style, leaders show followers what is required through organisation, planning, the making of schedules and the placement of performance goals. Also, leaders make sure that the regulations and rules are clear for followers. The directive style has similarity to the style of initiating structure within the study of Ohio State. Supportive leadership involves showing respect to followers and being friendly, with promotion of a team-oriented climate and with followers dealt with as equals. The supportive leadership style has similarity with the style of consideration from the study of Ohio State. Within leadership that is achievement-oriented, leaders aim to perform to a high standard and stimulate the confidence of followers, helping them too to reach for high goals. Lastly, the participative type of leadership involves followers being asked for their suggestions, opinions and thoughts and stimulating them to participate within decision-making. Whilst path-goal type theory is considered to be more advanced when compared to a situational approach, there is a failure of it to adequately describe how leaders may employ a variety of styles in order to assist followers in feeling competent as expectancy theory tenets are incorporated within it, and there is, therefore, the suggestion that there will be motivation of followers if they

have the belief that results will be produced by their efforts (DuBrin, 2007; Yukl, 2010).

2.3.6 Bass theory for transactional and transformational leadership

Burns (1978) initially introduced theory for transactional and transformational leadership in his description of political leaders. The primary aim of the theory is finding relationships between the followership and leadership through description of the process of transformational leadership wherein followers and leaders are related in such a way that they motivate and reason each other to higher performance levels (Daft, 1999; Owen et al., 2004; DuBrin, 2007; Western, 2008; Lynch, 2012; Yukl, 2013). Two leadership types are distinguished in theory, i.e., transactional leadership and transformational leadership. The focus of transactional leadership is upon exchanges that occur between followers and leaders, whilst transformational leadership is representative of interactions occurring between followers and leaders in which the two sides play a dynamic role in influencing the perceptions and actions of the other. The transformational type of leadership has a focus upon follower emotions with the aim of helping them reach for potential goals that they have (Northouse, 2007; DuBrin, 2012).

Whilst the theory of Burn was being posited, a charismatic leadership theory was being introduced by House (1976). Charismatic leadership theory was focused upon leaders that had a particularly strong and charismatic impact on followers; the theory gave the indication that the behaviour of charismatic leaders is quite novel in the particular effects that they have upon followers. It was mentioned by House (1976) that specific sorts of behaviour are displayed by charismatic leaders. Firstly, charismatic leaders act as strong types of role model for the kinds of values, attitudes, and beliefs they wish for followers to adopt. Secondly, followers are shown competence by charismatic leaders. Lastly, followers are set high expectations by charismatic leaders, with them trying to foster confidence in the followers so that they can be helped in the accomplishment of those expectations. In accordance with the theory, there are numerous direct effects from charismatic leadership including the trust of followers in the belief of the leader, emotional involvement within the goals of the leaders, warm expressions

towards the leader and a heightened degree of confidence of followers in the achievement of goals. Burns' theory was developed by Bass (1985) in the mid-'80s for transforming leadership within exceptions of leadership and performance into TL (transformational leadership) through the paying of more attention to the needs of followers rather than those of leaders (Yukl, 2013), and there was expansion of House's theory through the paying of greater attention to emotional charisma factors with the suggestion that, although not an adequate TL condition, charisma can be considered an essential one (Northouse, 2007). Transactional leadership, transformational leadership and laissez-faire leadership are encompassed by the theory, and each of these are discussed within the sections that follow.

Transactional leadership

The transactional type of leadership is representative of transaction exchange occurring between followers and leaders. The exchange relies upon a leader explaining what is required to followers and stating what are the rewards and conditions. As such, it is founded upon an assumption that the motivation of followers requires a reward system involving promotions and monetary incentives on the one hand, and punishment on the other (Bass, 1990; Avolio and Bass, 2002; Antonakis et al., 2003; Bass and Riggio, 2006; Yukl, 2010; Lynch, 2012). It has been argued that the practice of transactional leadership involves three kinds of behaviour, i.e., MBEA (active management by exception), contingent reward and MBEP (passive management by exception). MBEA includes corrective criticism occurring if leaders observe followers, look out for errors, and then look to correct actions. The term 'contingent reward' is in reference to the process of exchange that happens between followers and leaders wherein follower effort is done in exchange for rewards that have been specified. As such, expectations are clarified by the leader and rewards are established that would be given if those expectations are met by followers. MBEP is in reference to negative feedback, wherein a passive style is used by leaders once problems have arisen (Betroci, 2009; Bass and Riggio, 2012; Yukl, 2013).

Laissez-faire leadership

The laissez-faire leadership style represents non-transaction and is in reference to absence of leadership. With laissez-faire style, leadership responsibilities are ignored, and the making of decisions avoided. Followers are not provided with any feedback and leaders make very little effort for helping in the satisfaction of the needs of followers. If important issues arise, such leaders tend to avoid getting involved (Avolio and Bass, 2002; Antonakis et al., 2003; Bass and Riggio, 2006; Northouse, 2007; Yukl, 2010). Having now discussed the Transactional leadership and laissez-faire leadership, the next section explain transformational leadership in detail since this style is focus of the study.

2.4 Transformational leadership

TL was described by Bass and Riggio (2012) as a process within which there is change and transformation of people. TL involves attempts at making changes that would increase the effectiveness of the organisation and enhance follower performance through transformation of the self-concepts and personal values of the followers (Avolio and Bass, 2002; Antonakis et al., 2003; Sashkin, 2004; Bass and Riggio, 2006; DuBrin, 2007; Hawkins, 2011; Saenz, 2011). The assumption upon which the theory is founded is that there is a need for followers to feel appreciated, respected, trusted and admired so that the leader will receive their loyalty, and all will feel they can make a special contribution (Northouse, 2007; Lynch, 2012; Yukl, 2013). If this type of leadership is in existence, then it is reflected in the enthusiasm of subordinates regarding the ideas and opinions of leaders (Schermerhorn, 2008). Commitment from subordinates is generated by TL, and it produces enhanced levels of creative problem solving and greater quantities of work (Limsila and Ogunlana, 2008; Saenz, 2011). TL emphasises the intrinsic follower motivation, ethical behaviour, shared goals and vision and leadership development amongst the members of the team (Bass and Riggio, 2006; Yukl, 2010). So, it addresses values, emotions and ethics and, unlike transactional leadership, TL has a focus upon longer-term goals (Rafferty and Griffin, 2004; Northouse, 2007).

Different behaviours have been suggested by researchers for the practice of TL. Podsakoff et al. (1990), for instance, identified six behaviours, i.e., the identification and articulation of a vision, the provision of a suitable model, the

fostering of group goal acceptance, high expectations of performance, intellectual stimulation and provision of individualised support. Six styles were also proposed by Leithwood and Jantzi (2000), i.e., the building of aims and a vision, the provision of intellectual urging, provision of individualised support, the symbolising of professional values and practices and the demonstration of high expectations for performance. Five TL dimensions were suggested by Rafferty and Griffin (2004): supportive leadership, inspirational motivation, vision, personal recognition, and intellectual stimulation. In the work of Xirasagar (2008) the dimensions that were listed that were considered necessary for the practice of TL in an organisation were idealised influence-attribute, idealised influence-behaviour, intellectual urging, individualised consideration, and inspirational motivation.

Betroci (2009) considered TL as being an ability that was based upon the three elements of intellectual stimulation, individualised attention and charisma. For Bass and Riggio (2006-2012), Antonakis et al. (2003), Avolio and Bass (2002) and Bass (1985-1990), and in alignment with the current study objectives, TL is based upon four different behaviours: individualised consideration, intellectual stimulation, idealised influence and inspirational motivation. The idealised influence behaviour involves followers being set an example to follow and is a style that may be considered in 'behaviour and attributes' terms. It is in reference to charismatic behaviour demonstrated by those transformational leaders expressing a confidence in the vision of the organisation (Antonakis et al., 2003; Northouse, 2007). Such leaders instil respect, pride, admiration, faith and trust amongst organisational members and they are able to foster a spirit of cooperation amongst others (Bass and Riggio, 2006; Saenz, 2011). Followers perceive transformational leaders as having extraordinary levels of persistence, determination and capability (Betroci, 2009; Bass and Riggio, 2012).

If transformational leaders practise an idealised influence style, they can provide followers with an appreciation of the mission and vision. Such leaders put other's needs before their own, they refuse to employ their powers for their own personal gain, and they have a willingness to share risks with followers (DuBrin, 2007; Yukl, 2013). It was argued by Bass and Riggio (2006) that leaders who use that

style demonstrate having purpose and consistently show that they have high standards in their moral and ethical conduct. They may contribute to reducing complexity through managing to get others to rally round in pursuit of performance and innovation. With ‘inspirational motivation’, leaders seek to inspire followers through motivating them to have greater commitment in the vision of the organisation. Members are encouraged to focus more upon the objectives of the organisation, and such leaders can motivate followers through giving a sense of meaning to their work and providing challenges (Avolio and Bass, 2002; Sashkin, 2004; Western, 2008; Bass and Riggio, 2012). It has been argued that leaders imbued with inspirational motivation can build relationships with followers by way of interactive communication. They encourage both team and individual spirit and a sense of collaboration amongst the members of the organisation. They can identify new kinds of opportunity and they encourage followers to have a vision of attractive future conditions (Northouse, 2007; Lynch, 2012). It was noted by Bass and Riggio (2012) that the style could enhance self-efficacy beliefs amongst followers and lead to improvements in their levels of motivation. Such transformational leaders, talk with enthusiasm and optimism and they challenge followers to adopt high standards.

The behaviour for ‘intellectual stimulation’ is the extent to which followers are encouraged by leaders to try new kinds of approach and to challenge and re-examine existing assumptions. Imagination is encouraged by such leaders and they develop innovative approaches for dealing with issues that arise for the organisation (Betroci, 2009; Yukl, 2010; DuBrin, 2012). Transformation leaders that have that style can encourage followers towards innovation and creativity and to challenge the values and beliefs that they have. However, if the ideas of followers are different from those of the leader, they are not criticised (Bass and Riggio, 2006). There is encouragement for followers to reframe problems and seek new solution methods from a different perspective; such leaders are aware that knowledge creation and creativity are the sole way in which competitive advantage can be sustained (Avolio and Bass, 2002; Northouse, 2012).

Leaders that practise ‘individualised consideration’ tend to build interactive relationships with their followers whilst paying particular attention to follower

needs (Avolio and Bass, 2002; Saenz, 2011). They consider the abilities and skills of followers, demonstrate appreciation of their work and, in general, show support and spend time in listening to the needs of individuals (Bass and Riggio, 2006; DuBrin, 2012). Leaders that operate with this style serve as mentors and coaches with consideration and empathy when attempting to help followers become more fully actualised and develop competencies related to their jobs (Northouse, 2007; Lynch, 2012). Such leaders can develop and build up a sense of self-confidence and determination amongst followers (Bass and Riggio, 2012). Leaders practise individualised consideration when there is creation of new learning opportunities in a climate that is supportive. Delegation is used by such leaders to assist in the growth of organisational members by personal challenges and walking around in practise management. Leaders that have this style have awareness of the desires of individuals and see them as a complete person instead of just being a group member (Antonakis et al., 2003; DuBrin, 2007; Hawkins, 2011; Yukl, 2013). Those four patterns of behaviour affect followers positively through their elevation to being their best self and motivated with a desire for self-development and achievement. Nowadays, researchers acknowledge how important transformational leadership is in comparison to laissez-faire and transactional styles. As such, this study only has a focus upon TL.

2.4.1 The Merits of Transformational Leadership: An Exploration

Amongst researchers and scholars of leadership of recent years, TL has gained broad popularity and, indeed, it still has considerable popularity today. Bass and Riggio (2006-2012) consider that transformational leadership may have application within any kind of organisation and at various organisational levels. It was noted by Ismail et al. (2010) that the practice of TL may lead to greater trust being placed by followers in their leaders and that, in turn, can promote improved levels of individual performance. The capacity of employees to achieve is strengthened by transformational leaders through their provision of the resources and knowledge required to do their tasks well (Betroci, 2009). It has been argued that TL power lies within organisation visualisation (Tichy and Devanna, 1990). Transformational leaders look to turn failure and threats linked to mistakes into learning opportunities (Avolio and Bass, 2002).

Transformational leaders are able to cope with ambiguity, uncertainty and complexity (Tichy and Devanna, 1990); indeed, TL is helpful when times are turbulent such as during rapid changing circumstances within the globalised marketplace (Bass and Riggio, 2012). TL increases the level of determination required for overcoming crises and gives encouragement for generation of fresh ideas that are central to innovation (Rafferty and Griffin, 2004). Leadership such as that helps in clarifying situations and helps in the preparation required to face up to future crises (Bass and Riggio, 2006; DuBrin, 2012). TL acts as a driver and transmitter of the diffusion of knowledge and embedding of a culture of innovation, and these qualities help in the provision of the best organisational performance possible (Saenz, 2011). de Jong and Hartog (2007) noted that TL may contribute to creativity of employees and organisational learning. Transformational leaders may encourage the participation of followers within educational programmes and help them develop the skills required for achieving exceptional performance (Northouse, 2007; Yukl, 2013). Leaders that practise TL can enhance the cohesion of teams, and the levels of job satisfaction and organisational commitment (Pataraechachai and Ussahawanitchakit, 2009; Mohammad et al., 2011).

A survey undertaken by Awamleh et al. (2005), involving 194 managers in banks of the UAE, showed that performance, self-esteem and satisfaction of employees are TL outcomes. Likewise, it was found by Yang et al. (2011) that transformational leadership, as practised through individualised consideration, intellectual stimulation, and idealised influence, may have a positive impact upon commitment to change and job satisfaction. The creation of a supportive climate amongst members of an organisation can be created by transformational leaders through facilitation of team spirit, knowledge sharing, trust, and communication networks (Avolio and Bass, 2002; Jung et al., 2003; DuBrin, 2007; Lynch, 2012; Northouse, 2012). Such leaders are able to foster change through the creation of a suitable environment and culture (Bass and Riggio, 2012). Transformational leaders try to effect change that leads to enhanced performance, greater organisational effectiveness, with greater productivity generated and expectations exceeded (Janadghi et al., 2009).

TL has a focus upon social values and becomes apparent within times of distress (Northouse, 2007; DuBrin, 2012). Those types of leaders elevate the personal values of followers and their self-concepts, encouraging the transcending of self-interest for the benefit of the organisation as a whole (Bass and Riggio, 2006; Saenz, 2011). Stress amongst organisational members is reduced through the creation of feelings of identity within a supportive social network (Antonakis et al., 2003; Sashkin, 2004; Yukl, 2013). Transformational leaders attempt to change the strategies, cultures and visions of organisations through promotion of creativity amongst organisational members and the development of relationships between them (Saenz, 2011). Whilst lots of studies have investigated a combination of transactional and transformational leadership, most discovered that the latter was the more effective. For example, it was found by Yang (2007b) that there is more interaction of transformational leaders with their organisational members than is the case with transactional leaders.

Transformational leadership was found by Crawford et al. (2003) to have a greater impact upon personal creativity amongst employees than does transactional leadership. The findings of a study undertaken by Laohavichien et al. (2009), involving 120 managers that were working within US manufacturing companies, showed that TL has a greater impact upon quality management and infrastructure than did transactional leadership. Also, it was shown by Rui et al. (2010) that TL is required for improving quality. It was argued by Erkutlu (2008) that leaders who are transformational have greater proactivity and effectiveness than transactional ones, and they suggested that managers must fully use TL in order for organisations to be successful within an environment that is fast changing. Likewise, it was revealed by Politis (2001) that transactional leadership has less effectiveness for the attributes of knowledge acquisition, i.e., problem understanding/communication, control, personal traits, negotiation and organisation, when compared to TL. It was shown within the meta-analysis undertaken by Lowe et al. (1996) that those leaders that exhibited TL were considered as having greater effectiveness and better outcomes in their work than those leaders that only exhibited transactional leadership. Likewise, both Limsila and Ogunlana (2008) and Boerner et al. (2007) found TL to have a bigger

influence upon the performance of followers and their creativity within problem solving than did transactional leadership. Sabri (2007) undertook a pilot study of IATA (Jordanian International Air Transport Association) that showed that TL is practised more by managers than transactional leadership. Within higher education environments, TL is vital for the development of education (Butcher et al., 2000; Green, 2010). Learning activities can be facilitated by TL and an environment created that is supportive of knowledge (Gunter, 2001). A survey undertaken by Bodla and Nawaz (2010), with 256 faculty members based within Pakistani universities, showed that job satisfaction is increased by TL. In addition, it was suggested by Pihie et al. (2011), in their investigation of Malaysian universities, that TL may enhance the job satisfaction of staff members more than laissez-faire and transactional leadership styles. It was concluded by Pounder (2001-2008) that effectiveness in universities depends upon leaders exhibiting TL aspects. The findings from the work of Mohamad (2012), that involved 160 staff based in private educational institutions within Egypt, showed that TL leads to increases in organisational commitment and job satisfaction. Moreover, several recent studies have suggested TL can enhance the commitment of lecturers to performance and change (Lo et al., 2009; Athalye, 2010; Lo et al., 2010; Neufeld et al., 2010; Sadeghi and Pihie, 2012).

2.5 Knowledge sharing

Numerous philosophers and researchers have focussed their discussions upon the knowledge concept, leading to lots of different views, definitions, and arguments. Nonaka (1994) considered the concept of knowledge to be a multidimensional one. One definition of knowledge is that it is a justified true belief (Nonaka et al., 2006; von Krogh et al., 2012). That definition has a focus upon truthfulness as a knowledge attribute that is essential. In that regard, it was noted by Cook and Brown (1999) that two epistemologies or perspectives on knowledge theory are evident, i.e., that related to practice and that to possession. The epistemology of possession sees knowledge as an object/entity that individuals or people have or possess, and it is in reference to capacity, resources and cognitive aspects that may be employed in improving effectiveness within the workplace (Ichijo and Nonaka, 2007b; Newell et al., 2009). Alavi and Leidner (2001, p.109) are in

agreement with that perspective and they consider knowledge as being “Information possessed in the mind of individuals, which may or may not be unique, useful or accurately related to facts, procedures, and judgments”. In contrast, knowledge is defined within epistemology of practice as a thing that is done by people; as such, knowledge is referred to as being constructed, negotiated, subjective and that is practised within social interaction (Nonaka, 2005; Hislop, 2009; Newell et al., 2009; Hislop, 2013).

It was explained by Alavi and Leidner (2001) that several perspectives can be taken to describe knowledge, e.g., with it being considered a process, an object, a mindset, a capability or a condition involving access to information. The mindset/state of mind viewpoint was described by the authors as factually knowing something, with a focus upon enabling individuals to achieve expansion of their personal knowledge with application of it to needs of the organisation. The assumption with the object perspective is that knowledge may be seen as something that can be stored. The focus of the process perspective is upon application of expertise. With the knowledge perspective considering it as a condition involving access to information, there is the organisation of organisational knowledge so that there can be facilitation of access to content and its retrieval. The suggestion with the capability perspective is that knowledge relates to the capacity for interpreting and using learning, experiences and information within decision-making.

Knowledge was described by Armstrong (2009) as understanding of things, people, theories, concepts and ways in which to do things. It has been argued by other researchers that knowledge may be organised hierarchically. Uriarte (2008), for example, saw knowledge as consisting of data, by which reference was made to facts, raw numbers and images derived by observation rather than analysis, as well as information that is a summarisation of data. Likewise, data was seen by Ellis (2003) as being facts organised for the generation of information. From the viewpoint of Davenport and Prusak (1998), knowledge has complexity and differs from information and data, though is related to them both. In addition, knowledge was considered by Al-Alawi et al. (2007) as having more complication than information, with the latter resulting from the analysis and organisation of data to

a form that is meaningful. Knowledge was also seen by Braganza (2004) as a thing that leads to information which then produces data. It was stated by Vandaie (2008) that data is representative of raw facts that are processed into information, whilst information is a reflection of individual experiences that are considered as knowledge. A broader knowledge definition was given by Ackoff (1989) through the addition of wisdom to the hierarchy peak, with the indication that a knowledge sequence may be arranged into data, then information, then knowledge and then wisdom. It was argued by him that the initial three types address the past, whilst wisdom addresses the future; an illustration is shown within Figure 6.

Wisdom comprises experiences and interacting information; it reflects the criteria and values that are applicable to knowledge, with judgement being its essence (Sarmiento, 2005; Russell, 2007). Knowledge was seen by Tuomi (1999) as being in existence prior to the articulation of information, and information as being in existence prior to data. So, from that view, information, knowledge, and data are inseparable. Smith (1998) agreed with that view and in addition explained that there is a need to understand and translate information so that it becomes knowledge. Information was found by Hislop (2009) as being data that was filtered and summarised, with knowledge being a translation of the meaning of information. From those views and arguments, it follows that four elements are related together within a hierarchical structure: information and data are basic building blocks for knowledge and wisdom whilst, simultaneously, there can be use of knowledge for the generation of data and information. McMurray and David (2002) and Bartol and Srivastava (2002) considered that knowledge was a broad concept that includes values, expertise, ideas and experiences that help in the development of the organisation and people. Knowledge was defined by Davenport and Prusak (1999, p.5) as being: “a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information”. Despite the various knowledge definitions provided above, researchers and scholars are in common agreement that knowledge is a combination of information, skills, experiences and data that are in relation to one another and that can be utilised within decision-making.

2.5.1 Types of knowledge

Different knowledge types have been described within the previous literature. Conklin (1997), for example, made the distinction between informal and formal knowledge. Informal knowledge was seen as being acquired by social interaction and employed in the creation of formal knowledge. Formal knowledge itself is acquired from manuals and books and can be shared easily. Four sorts of knowledge were described by Christensen (2007), namely: professional, object-based, know-how and coordinating types of knowledge. Distinction was made by Fernandez et al. (2004) between procedural knowledge, which includes abilities and skills for doing things, and declarative knowledge, in reference to the beliefs regarding relationships amongst variables. Sometimes, distinction is drawn between conditional (know when), relational (know with) and causal (know why) types of knowledge (Nolan Norton, 1998). Knowledge has been divided by others into social and individual types of knowledge. Social knowledge is in reference to knowledge inherent and created within collective group actions, whilst individual knowledge, also, known as collective knowledge, is that which individuals create (Nonaka, 1994). From the point of view of Mathew (2008), there can be classification of knowledge into situational, social and factual types. Situational knowledge refers to knowledge obtained about particular situations, whilst social knowledge has a focus upon social issues within relationships and social networks. Factual knowledge is in reference to knowledge based upon knowing facts.

It was noted by Lopez-Saez et al. (2010) that knowledge may be either internal or external. Internal knowledge hails from sources that are internal such as a production department, R&D department or from other organisational members, whilst external knowledge may be acquired from suppliers, customers and other institutions/organisations. The knowledge types most used within the literature, however, are explicit knowledge and tacit knowledge; these distinctions are used within the focus of our study. Polanyi (1967) was the first to use those knowledge types, though they have been applied since within organisational contexts by Nonaka (1994). Personal, subjective, and intangible matters are described within

the term tacit knowledge (Nonaka, 1994, Nonaka, 1995, Hislop, 2009). Accumulated through learning, experiences, and study, and developed through workshops, social interaction, job training and conversations, tacit knowledge is embedded within people's minds (Polanyi, 1967; Nonaka and Takeuchi, 1995; Nonaka and Toyama, 2005, von Krogh et al., 2012).

It was explained by Nonaka et al. (2006) that tacit knowledge comprises two elements, i.e., the cognitive and the technical aspects. The cognitive component involves paradigms, values, beliefs, and the mental models of people, whereas the technical element is in reference to personal, informal skills that are applicable to particular contexts, such as craft skills and specific know-how. It is difficult to articulate, transmit and communicate tacit knowledge (Hislop, 2005). It has been argued that tacit knowledge is unconventional and less familiar. It was found by Kim and Ju (2008) that staff members within HEIs acquire that kind of knowledge through either courses of teaching or it results from professional experience. Tacit knowledge includes capabilities for conducting research and abilities for problem solving and may be a source for competitive advantage for organisations (Bryant, 2003; Chen and Edgington, 2005). Tacit knowledge is key for organisational tasks including generation of new products, improvement of procedures and creation of new knowledge and is essential to ensuring things get done; as a result, innovation can be achieved (Seidler-de Alwis and Hartmann, 2008). Explicit knowledge, on the other hand, refers to externalised, captured, objective and articulated knowledge with a format that is more tangible (Yahya and Goh, 2002); this sort of knowledge can be found within databases, models, books, rules, procedures, regulations and policies and saved within documents and, therefore, is shared easily between organisations and individuals. Explicit knowledge, therefore, is more commonly found within workplace settings (Nonaka, 2005; Ichijo and Nonaka, 2007b; Uriarte, 2008; Birasnav et al., 2011; von Krogh et al., 2012).

It was argued by Nonaka et al. (2006) that both rule-based and object-based knowledge are included within explicit knowledge. The term object-based knowledge is in reference to forms of intangible knowledge including numbers, formulas, and words, whereas tangible knowledge is in reference to documents

and equipment. Meanwhile, the rule-based type of knowledge is that which can be translated into routines, rules and procedures for an organisation; as such this can be known as 'know what'. It was explained by Kumar et al. (2013) that this knowledge type is advantageous in that it can be easily shared and reused within the solving of similar kinds of problem. The two knowledge types do have complementarity since explicit knowledge would be hard to understand without tacit knowledge (Uriarte, 2008; Hislop, 2009). It was argued by Nonaka et al. (2006) that personal knowledge may become organisational knowledge by way of interactions between explicit and tacit knowledge through 4 ways referred to as SECI (socialisation-externalisation-combination-internalisation. Socialisation is involved with the transfer from tacit knowledge to tacit knowledge. Here, organisational member experiences are shared by way of indirect and direct forms of interaction or communication in, for example, discussions, seminars, brainstorming, training and informal meetings. There is exchange of personal knowledge here, though it does remain tacit.

Externalisation is in reference to transfer from tacit knowledge to explicit knowledge by way of employment of analogies, metaphors, concepts and hypotheses, wherein technological and written channels are utilised so that knowledge can be created for others. That is considered a core process within the conversion of knowledge since that way knowledge exploitation begins. Combination involves transfer from explicit knowledge to explicit knowledge with social processes for combining knowledge such as within documents and meetings and within various types of conversation such as over the telephone. Here, there is processing and categorisation of knowledge so that new knowledge can be created. It can be documented and distributed easily since the knowledge is both evident and explicit (von Krogh et al., 2012). Internalisation, relating to explicit knowledge going to tacit knowledge, can be achieved by generating new ideas from learning and written documents. It was noted by Nonaka and Toyama (2005) that this process may lead to the creation of understanding and development of a culture of learning; the authors argued that if individuals use tacit knowledge, there is a broadening of the knowledge creation learning spiral.

2.5.2 The management of knowledge

Within the literature on management, KM (knowledge management) has become a key concept in recent years with considerable popularity. Seviby (1997) considered that KM term made its first appearance towards the end of the '80s within the artificial intelligence context. Early research related to the concept had its basis in the use of information technology for supporting individual learning. Following that, the 'knowledge worker' and 'knowledge society' concepts were presented by Drucker (1993) who argued that knowledge had replaced classical production elements such as land, capital and labour. Prusak (2001) noted that 1993 was the year in which there was the first conference that discussed the knowledge concept.

It has been argued that there are three generations of KM. The initial generation related to the processing and transferring of information (Wiig, 1997). The 2nd KM generation has a focus upon the creation and sharing of knowledge (Nonaka, 1994). The 3rd KM generation concentrates upon life cycle evaluation and value creation related to knowledge assets (McElroy, 2003). KM development was discussed by Bollinger and Smith (2001) from both the angle of its being a process and it being a goal. Their claim was that knowledge management had a focus upon benefitting the organisation through the sharing of information. The KM aim was described by Chang and Lee (2008) as being aimed at enhancement of the performance and innovation within organisations. Likewise, it was suggested by Davenport and Prusak (1999) that application of KM within organisations leads to reductions in costs and leads to facilitation of organisational knowledge sharing which aids in problem solving.

It has been argued that the use of KM is beneficial in that it assists decision-making, helps reduce mistakes made within organisational work, it helps in the development of innovation and it enhances the service for customers and the level of satisfaction (Chen and Huang, 2009; Ahmed and Shepherd, 2010). Organisational competencies can be leveraged by KM, and it can help them in achieving competitive advantage through the promotion of innovation and knowledge creation (Wei et al., 2009, Xu et al., 2010, Humayun and Gang, 2013).

KM provides organisations with know-how and expertise and encourages a climate that is collaborative along with continual learning (Du Plessis, 2007). KM is a mechanism of coordination used in the conversion of resources to capabilities which, in turn, serve to improve organisational performance (Darroch, 2005; Hislop, 2009); it is related to knowledge assets being exploited and developed and is essential when adopting new technology (Lin and Lee, 2005). Zaied et al. (2012) undertook a pilot study within various Egyptian organisations and discovered that processes of KM, namely the acquisition, the conversion, the storage and the protection of data, may enhance the performance of organisations. When organisations manage knowledge effectively, they are better in translation of their intellectual capital to innovative services and products (Chen and Huang, 2009; Huang and Li, 2009; Chen et al., 2010a). It has emerged, then, as a leading form of paradigm that is considered essential to the success of an organisation. KM has been described as a knowledge organisation process that makes that knowledge available to the relevant decision makers (Liao and Wu, 2010). KM was considered by Massa and Tsesta (2009) as involving process, people, culture and technology. Also, KM was described by Yang (2011) as a process for the creation, dissemination and application of organisational knowledge so that new opportunities can be exploited and organisational performance enhanced. From the viewpoint of Ipe (2003), KM is considered a set of infrastructures, procedures and managerial and technical tools that serve to facilitate the creation, the sharing and the application of knowledge in an organisation. Likewise, KM was defined by Bollinger and Smith (2001) as those activities that are used for the generation, communication, and exploitation of usable ideas amongst members of organisations for both organisational and personal benefit. The definitions above show no universal KM definition exists because various kinds of knowledge and various methods are used in its management. Most of the definitions do, however, employ KS using different terminology as shown within Table 1. Sharing, for example, has been used within the work of Allee (1997), Bock et al. (2005), Cui et al. (2005), Huang and Li (2009), Massa and Tsesta (2009), Ling and Nasuridin (2010), Andreeva and Kianto (2011), Awang et al. (2011) and Ferraresi et al. (2012). Dissemination was considered in the work of Bhatt (2001), Gowen et al. (2009) and Mehrabani and Shajari (2012). Conversion was considered in the work

of Gold et al. (2001), Liao and Wu (2010) and Allameh et al. (2012), transfer within the work of Yahya and Goh (2002), Kim and Ju (2008) and Uriarte (2008), and exchange within the work of Nguyen and Mohamed (2011); as such, KS is considered a primary, significant process within KM. So, the focus of this study is upon processes of KS, and these are discussed below.

Table 0.1 KM process review

Author	Processes of KM
Allee (1997)	Knowledge creation (acquisition and generation); retention (collection, storage, arrangement, analysis, classification and presentation); sharing (distribution and socialisation), innovation (improvement, changing, deepening and extension).
Bhatt (2001)	Utilisation, dissemination and creation.
Gold et al. (2001)	Application, protection, conversion and acquisition.
Yahya and Goh (2002)	Application, transfer, documentation and acquisition.
Bock et al. (2005); Massa and Tsesta (2009)	Use, storage, sharing and capture.
Cui et al. (2005); Huang and Li (2009); Ling and Nasurdin (2010)	Application, sharing and acquisition.
Uriarte (2008)	Application, transfer, generation and creation.
Kim and Ju (2008)	Use, transfer, storage, capture and generation.
Gowen et al. (2009)	Responsiveness, dissemination and acquisition.
Liao and Wu (2010)	Application, conversion and creation.
Nguyen and Mohamed (2011)	Internalisation, socialisation and exchange.
Andreeva and Kianto (2011); Awang et al. (2011)	Application, sharing, documentation and storage and creation.
Allameh et al. (2012)	Processes of knowledge conversion (externalisation, socialisation, internalisation and combination).

Author	Processes of KM
Ferraresi et al. (2012)	Use, sharing and capture.
Mehrabani and Shajari (2012)	Creation, identification, organisation, collection, application, storage and dissemination.

2.5.3 Principles and Practices of Knowledge Sharing

Within the KM literatures, the importance of the role that KS plays within organisational development has been confirmed by several researchers (Shin, 2004). KS serves as a key KM focal point and is a significant process within the knowledge life cycle (Holsapple and Jones, 2004; Bock et al., 2005; Halawi et al., 2008; Tong et al., 2013). It was indicated by Yang and Farn (2009) that tacit forms of KS amongst organisational members are some of the most significant matters for the success of KM. KS plays a huge role in enhancing competitive advantage for organisations and it is central to the enhancement of creativity (Davenport and Prusak, 1999; Saenz et al., 2009; Tan et al., 2010; Camelo-Ordaz et al., 2011). The argument has been made that effectiveness and innovation are more likely achieved within KM if consideration is given to KS (Cummings, 2004; Zheng et al., 2009). Likewise, it was found by Sohail and Daud (2009) that new knowledge generation is the KS outcome and, therefore, organisational innovation is enhanced. By way of KS, competence and skills can be developed by organisations and, consequently, their value can increase (Renzl, 2008).

It was found by Xiong and Deng (2008) that if KS is effective as it increases organisational knowledge accumulation and leads to development of employee capacity in doing their jobs and increases the self-knowledge of employees. It was pointed out by Bartol and Srivastava (2002) that KS is an important instrument amongst organisational members as it results in increases knowledge utilisation value. Likewise, both Willem and Buelens (2007) and Liao et al. (2004) made the argument that performance within various organisation parts may be enhanced when information is communicated between organisational members, and they share their lessons, experiences and insights. Behery (2008) noted that KS was an effective indicator in measuring efficiency and profit. Through the practise of activities of KS, benefits can be gained by organisations such as reductions in the

time required for the enhancement of services and products (O'Dell and Grayson, 1998; Alavi and Leidner, 2001; Yang and Chen, 2007). Also, it was stated by Song (2002) that KS can be effective in decreasing training costs and reducing uncertainty and risk. It has been argued that, by way of KS, individuals are able to improve their capacities for solving complicated and unstructured problems, increase their learning and reduce their mistakes (Reid, 2003; Kharabsheh, 2007; Saenz et al., 2009; Mughal, 2010).

KS is a channel that is significant in the translation of individual knowledge to strategic organisational resources (Hendriks, 1999). It has been noted that managers find KS crucial as it assists them in the making of decisions and gives encouragement for change culture (Vaccaro et al., 2010; Al-Omari et al., 2013). Moreover, emphasis has been placed in many empirical studies upon positive relationships between KS and several different organisational outcomes. Scholars have, for example, discovered links to the innovation capability of an organisation (Liao, 2006; Lin, 2007; Saenz et al., 2009; Chen et al., 2010a; Yang, 2011; Mehrabani and Shajari, 2012), to the performance of organisations (Darroch, 2005; Kang et al., 2008a; Gowen et al., 2009; Liao et al., 2011; Wang and Wang, 2012; Kim et al., 2013), to the effectiveness of organisations (Pai, 2006; Yang, 2007a; Zheng et al., 2009), to job satisfaction (Tong et al., 2013) and to organisational learning (Yang, 2007a; Liao and Wu, 2009; Massingham and Diment, 2009).

It was asserted by John (2001) that sharing knowledge had importance within institutions of education such as universities. Likewise, it was indicated by Mathew (2010) that innovation can be generated, and educational performance enhanced by knowledge existence and KS culture promotion amongst teaching staff. It was found by Daud et al. (2008) that the exchange of opinions, experiences and ideas amongst faculty staff is essential for the development of the learning process. Also, based upon research of the Malaysian context, it was found by Cheng (2012) that KS is able to enhance the capacity of school learning at the level of the organisation and that of the individual. Likewise, it was argued by Ma and Yuen (2011) that interaction amongst students and promotion of a culture supportive of KS are essential components for their process of learning.

Also, within the Malaysian context, Zaqout and Abbas (2012) found explicit and tacit knowledge enhance performance in education by way of exchange of notes, lessons, projects and experiences within a faculty.

Various terms have been adopted within the KM literature for describing KS, including knowledge exchange (Nguyen and Mohamed, 2011), knowledge dissemination or diffusion (Bhatt, 2001; Gowen et al., 2009; Mehrabani and Shajari, 2012), knowledge sharing (Bock et al., 2005; Cui et al., 2005; Ling and Nasurdin, 2010; Andreeva and Kianto, 2011; Ferraresi et al., 2012), conversion (Gold et al., 2001; Liao and Wu, 2010; Allameh et al., 2012), and flows of knowledge (Gupta and Govindarajan, 2000; Schulz, 2001). The 'knowledge transfer' term has been frequently used within recent KM literature for describing KS (Yahya and Goh, 2002; Uriarte, 2008; Massa and Tsesta, 2009). In that regard, a number of researchers, including Berggren et al. (2011) and Boyd et al. (2007), have made the distinction between knowledge sharing and transfer through the argument that knowledge transfer is in reference to existing knowledge being applied from a context to another context. The assumption is that the main knowledge source is the owner and the knowledge transfer happens in just one direction, i.e., from the owner to the recipient. Meanwhile, the concept of KS is broader and includes interaction, creation and absorption of new knowledge; as such, KS happens between at least two participants and in two directions. There are many ideas and definitions that have been put forward by philosophers and researchers, however, which have led to various KS conceptualisations, as shown within Table 2. For example, some definitions have the assumption that KS is an activity (Dyer and Nobeoka, 2000; Bartol and Srivastava, 2002; Lee et al., 2010; Jahani et al., 2011; Hitam and Mahamad, 2012; Kim et al., 2013). Others consider KS is a process that occurs from one group, firm or person to another (Darr and Kurtzbery, 2000; Argote et al., 2003; Ipe, 2003; Hooff and Ridder, 2004; Masrek et al., 2011). Meanwhile, others considered KS as a behaviour of culture that can happen formally amongst colleagues within the workplace or more informally in social networks and amongst friends (Bock et al., 2005; Lin, 2007; Xiong and Deng, 2008; Sohail and Daud, 2009).

Table 0.2 KS Definitions

Author	Definition
Darr and Kurtzbery (2000)	KS is a process by which people are helped to obtain knowledge through learning from the experiences of others.
Dyer and Nobeoka (2000)	KS is an activity involving work to exchange knowledge between people that enables them to reach their particular individual aims.
Bartol and Srivastava (2002)	KS is an activity by which organisational members are helped to share their information, ideas, data, suggestions and experiences in an organisation.
Argote et al. (2003, p.3)	“Is the process by which one unit is affected by the experience of another”
Ipe (2003)	KS is a process by which knowledge is converted from individuals in possession of it to other individuals who accept it and consequently absorb it.
Hooff and Ridder (2004)	KS is a process within which there is simultaneous exchange and creation of knowledge.
Bock et al. (2005)	KS is in reference to individual’s behaviour in their sharing of their knowledge amongst other organisational members.
Lin (2007)	KS is a social interaction culture that includes exchange of experience, skills and knowledge amongst employees.
Xiong and Deng (2008)	KS is in reference to the communication and exchange of information and knowledge between members.
Sohail and Daud (2009)	KS represents sharing and exchange of the thoughts, experiences and events of people.
Islam et al. (2010)	KS is a social exchange process occurring between individuals, from an organisation to an organisation, and from certain individuals to organisations.
Lee et al. (2010)	KS is in reference to interaction of explicit and tacit knowledge of relevance to the particular task in question.
Jahani et al. (2011)	KS includes activities through which there is transfer of knowledge from one organisation, group or person to another.
Masrek et al. (2011)	KS can be described as the process through which individuals have mutual exchange of their explicit and tacit knowledge and then together generate new knowledge.
Hitam and Mahamad (2012)	KS is in reference to exchange of experience, skills and knowledge amongst organisational members through the various departments.
Kim et al. (2013)	KS is an activity through which skills, insights and information are exchanged between organisational members.

Different kinds of processes of KS have been reported within the previous literature. For example, the distinction was made by Hendriks (1999) between ‘knowledge owners’, who possess the knowledge a.k.a. externalisation, and

'knowledge receivers' in receipt of the knowledge. It was proposed by Ardichili et al. (2003) that KS includes demand for and supply of a new form of knowledge. The discussion of Lin (2007) noted KS as having involvement of a carrier of knowledge and a knowledge requester. From the viewpoint of Kankanhalli et al (2005), processes of KS comprise knowledge contributors and knowledge seekers. It was noted by Weiss (1999) that two processes were involved in KS, i.e., knowledge collection, in reference to recording, accumulating and storing knowledge, and knowledge connection, involving a knowledge seeker gaining access to a source of knowledge and the identification of the knowledge required.

Wei et al. (2009) also splits the processes of KS into knowledge contribution and knowledge seeking. Likewise, it was noted by Chen and Hung (2010) that KS comprises the contribution, collection and utilisation of knowledge. Ipe (2003) was another author who saw KS processes as involving transmission of knowledge and its absorption. It was noted by Kuo and Young (2008) that knowledge transmission includes the sending of knowledge to recipients, whilst knowledge absorption is a reflection effectiveness in the use of knowledge. Hussain et al. (2004) and Davenport and Prusak (2000) make the differentiation between acquisition and possession of knowledge. It was explained by Gupta and Govindarajan (2000) that KS can be considered as including sourcing of knowledge, the transmission and receipt of it, and its absorption. Others such as, for example, Tong and Song (2011) made the distinction between solicited and voluntary knowledge. Solicited KS happens if individuals have been requested by an organisation or other individuals to share some of their knowledge (the receiving), whilst voluntary knowledge involves individuals initiating the sharing of knowledge (the giving). Meanwhile, Reid (2003) saw KS as being a transfer that encompassed the actions of a knowledge buyer and a knowledge seller.

This study, however, is in agreement with the work of Hooff and Weenen (2004) who split the processes of KS into the donation and collection of knowledge; indeed, several researchers have studied those two processes and tested them empirically within different environments (De Vries et al., 2006; Lin, 2007; Lin et al., 2009; Chen and Hung, 2010; Kamasak and Bulutlar, 2010; Alhady et al., 2011; Sandhu et al., 2011; Kim et al., 2013; Tong et al., 2013). Donation of

knowledge is in reference to the process of exchange and the communication of the intellectual capital of a person to others (Hooff and Ridder, 2004; De Vries et al., 2006). It is a reflection of the eagerness and willingness of individuals within organisations to share and give their knowledge to others (Kim et al., 2013). It was argued that a lack of willingness makes it impossible to donate and transfer knowledge to others (Islam et al., 2010). There is reference here to individual capacity for sharing what is known as well as a person utilising what they have learned (Lin, 2007).

The donation of knowledge is in reference to the knowledge owner and involves talking with others, listening and the provision of information so people can be helped in the development of their self-knowledge with enhanced ability to quickly solve problems (Reid, 2003; Cummings, 2004; Lin, 2007). It was noted by Darroch and McNaughton (2002) that the aim of that type of process of KS is the conversion of personal knowledge to organisational and group knowledge. So, organisations that create atmospheres that serve to encourage knowledge exchange of organisational members in their groups are more likely to enhance organisational performance through the development of new ideas (Hooff and Weenen 2004; Nonaka et al., 2006; von Krogh et al., 2012; Hislop, 2013). By contrast, knowledge collecting is in reference to the knowledge recipient who has to consult colleagues by listening, practising and observing so they can be encouraged to share their particular intellectual capital (Hooff and Weenen 2004; De Vries et al., 2006); it is a reflection of the willingness of a person to request, accept and adopt the new know-how and intellectual capital (Kim et al., 2013). It was indicated by Lin (2007) that the process represents acquisition of knowledge and information from external and internal sources.

The collection of knowledge is a key element of the success of an organisation since proficiency in the gathering of knowledge increases the likeliness that the organisation would be rare and unique (Lin, 2007). Collection of knowledge happens when there is a willingness of organisational members to learn from other people (De Vries et al., 2006). It was stated by Senge (1998) that the collection of knowledge involves the learning of it, its absorption and its application. Those two KS processes promote mutual respect and trust in addition to facilitating flow

of the knowledge assets of people for capitalisation for the development of performance (Kamasak and Bulutlar, 2010). It has been argued that the donation and collection of knowledge are related to organisational learning since learning from others may help in the generation of ideas and serve to enhance the performance of an organisation overall (Seba et al., 2012a). Clearly, knowledge donation and collection processes have come to the attention of numerous researchers; however, there has perhaps not been enough attention paid and certainly not within all contexts. So, for the purposes of this particular research, and in accordance with its research objectives, the thesis has a definition for KS as a process that is one-dimensional involving staff members exchanging and sharing their explicit and tacit knowledge. New knowledge is created in daily interactions through process of exchange, donation and the collection of knowledge.

2.6 Knowledge Sharing Dynamics in Public and Private Sectors

There has been growing levels of interest from researchers to undertake study of KM, especially with regard to KS within the private and public sectors. It was argued by Tan et al. (2010) that processes of KS play a very significant role in enhancing competitive advantage. KS amongst employees within public organisations in Korea was found by Bock and Kim (2002) to have a relationship with their positive attitude with regard to KS. It was demonstrated by Cong and Pandya (2003) that the public sector lacks implementation of strategies for KM. Also, McAdam and Reid (2000) undertook studies of strategies for KM within the private and public sectors and their findings showed differences and similarities across sector in respect to various KM dimensions, namely the construction, dissemination, use and embodiment of knowledge. It was shown by Eskildsen et al. (2004) that the systems for KM within the public sector were worse than those in the private sector. It was asserted by Connolly et al. (2005) that leadership is a key factor affecting KS within the public sector. In a qualitative study undertaken by Seba et al. (2012b) of fifteen police officers working within the UAE, it was discovered that the main obstacles to KS amongst employees were organisational structure, trust and style of leadership.

A model comprising 3 constructs was studied by Tong et al. (2013) in public

organisations within Hong Kong; the constructs were job satisfaction, KS and organisational culture. The job satisfaction construct related to the work, supervision, payment, co-workers and promotion. The KS construct encompassed collecting and donating, and the organisational culture construct included uncertainty avoidance, power distance, masculinity and individualism. Their findings revealed that the donation and collection of knowledge served as a lever that lay between employee job satisfaction and organisational culture. Clear strategies for implementation of KM within the public sector were found to be lacking by Cong et al. (2007) when compared with the private sector. Following a survey undertaken by Hitam and Mahamad (2012) of a total of 242 employees working within private organisations in Malaysia, it was shown that the practice of KS increased with implementation of reward systems and IT systems.

The work of Kim and Lee (2004) took a focus upon 2 organisational factors, i.e., reward systems and IT application, along with practices of KS in the public sector; their results showed KS importance and they suggested there was a need for managers to acknowledge those factors within governmental services. With the recent study undertaken by Hock et al. (2009), it was shown that there was a positive relationship of KS with trust in public organisations. It was found in the work of Islam et al. (2010), which studied 355 managers that were working within Malaysian service organisations that the organisational climate, i.e., decentralisation and an atmosphere that was innovative and supportive, was essential for KS. Investigations in private companies within China undertaken in the work of Li et al. (2010) found that organisational factors including innovation, fairness and friendly relationships contributed to the practices of KS amongst employees. The study of Abodulah et al. (2009) showed that culture, reward systems, IT and trust facilitate KS amongst private company employees within Malaysia. Trust in management as well as practices for KS within private companies was studied by Renzl (2008). The suggestion from the findings was that managers ought to support trusting relationships so that flows of useful knowledge within the organisation can be improved.

The findings in the work of Tohidinia and Mosakhani (2010) showed that organisational climate, anticipated reciprocal relationships and perceived self-

efficacy were all KS antecedents in Iranian public organisations. Moreover, both Zawawi et al. (2011) and Al-Shammari (2010) asserted that the predominant barriers with respect to KS within public sector organisations are organisational rewards and technology. Results from investigation of a total of 4486 employees working in private Korean hotels shows that knowledge collecting and donating act as levers that work between organisational performance and social capital, in the form of rational, cognitive and rational capital (Kim et al., 2013). The study of Al-Adaileh (2011) of Jordanian private companies made the suggestion that cultural factors such as managerial practices, collaborative working environment and shared vision constitute a significant aspect of the promotion of activities for KS. The study in India of Chawla and Joshi (2010) revealed that private organisations had better performance than organisations within the public sector with regard to understanding various KM dimensions and using them, i.e., understanding and using KM leadership, KM technology, KM measurement and KM culture. The findings of Liao (2006) showed that KS serves as a type of bridge between learning dimensions within an organisation, i.e., shared vision, commitment to learning, communication and open-mindedness, firm innovation and trust in private companies in Taiwan.

2.7 Enablers of knowledge sharing

KS enablers were described by Lin (2007) as mechanisms that serve to encourage employees in their creation of new forms of knowledge as well as their sharing of it in an organisation. The term KS is in reference to processes including a group of concepts that assist members of organisations to acquire information and data in their organisations (Ipe, 2003). KS is considered a factor that is crucial for the performance of organisations and the gaining of competitive advantage (Srivastava et al., 2006b; Kianto, 2011). As Lin (2007) noted, KS happens at the individual level and the organisational level. At the level of the individual, KS happens when members of an organisational discuss things amongst themselves. At an organisational level, KS represents the acquisition, arrangement, utilisation and sharing of experiences in a manner wherein information residing in an organisation becomes available for others within the organisation (Darroch and McNaughton, 2002).

Whilst it is considered that KS is vitally important for organisations, there will not be achievement of it unless there is a supportive KS culture (Wong, 2005). It was argued by Lee and Al-Hawamdeh (2002) that it is difficult for KS to be achieved since it is an act that is unnatural that will not automatically happen as individuals tend to have a reluctance for sharing their knowledge (Chiu et al., 2006; Coakes et al., 2008). Wong (2005) considered that organisations have to give consideration to KS enablers. It was noted that those organisations that give encouragement to their members for the practice of activities for KS have greater likeliness of generating new ideas and creating opportunities for learning performance improvement which is central to innovation (Darroch and McNaughton, 2002). In that regard, numerous factors have been identified within previous literature that serve to promote a culture of KS amongst employees. For example, four constructs were studied by Lin et al. (2009), i.e., employee motivation, culture, IT and leadership. Employee motivation comprised knowledge self-efficacy, reciprocal benefits, reputation and enjoyment in helping others. Culture involved trust, social networks, learning orientation, rewards and a culture for sharing. IT comprised databases, knowledge networks and the technological infrastructure. The leadership construct encompassed goals and vision, the support of top management, the encouragement of top management and a climate of open leadership. Their study showed that all leadership dimensions are essential to the practice of KS. Leadership style was found by Xiong and Deng (2008) to have greater effectiveness in the development of shared vision and a sense of team spirit than either training or communication factors in the Chinese joint ventures context. In a pilot study that Khalid et al. (2012) undertook, it was shown that IT and the support of top management had bigger impacts upon the donation and collection of knowledge than knowledge self-efficacy, reward systems and enjoyment in helping others within the context of public organisations within the UAE. Likewise, individual factors were studied by Tong et al. (2013), namely knowledge self-efficacy and enjoyment in helping others, and the organisational factors of support of top management and organisational rewards. Top management support was found to be the KS enabler that was most effective. Leadership management and support, culture, strategy and purpose, IT, organisational processes, infrastructure and activities, resources,

motivational aids, human resource management and education and training were studied by Wong (2005). It was revealed by the study that senior management commitment and management support made a greater contribution to successful application of KM than other factors. Likewise, Humayun and Gang (2013) and Long et al. (2012) indicated that top management support is the factor that is most critical for promotion of a culture of KS. A focus was taken by Al-Alawi et al. (2007) upon the link between KS and organisational culture, with the latter comprising leadership style, trust, communication between staff, reward systems, structure and communication between staff in the context of private and public organisations within Bahrain. Their results revealed the significance of the role played by leadership for KS within both sectors. Top management support was found by Sandhu et al. (2011) to be a key barrier to the donation and collection of knowledge in Malaysian public organisations. Based upon the review above and a number of other studies that are listed within Table 3, style of leadership is considered the factor that is most critical for successfully cultivating a culture of KS. So, this research takes a focus upon style of leadership as KS enabler in the sector of higher education, as discussed previously.

Table 0.3 Enablers of knowledge sharing

Researcher	KS enabler
Riege (2005)	Organisational factors – a lack of managerial direction and leadership
Wong (2005)	Organisational factors- support and leadership of management
Lin and Lee (2006)	Organisational climate – support of top management
Pai (2006)	Organisational factors- the leadership of top management
Lin (2007)	Organisational factors – the leadership of top management
Yang and Chen (2007)	Culture – the support of management
Behery (2008)	Transactional and transformational leadership
Kang et al. (2008a)	Top management support
Aulawi et al. (2009)	A culture of management support
Lin et al. (2009)	Leadership (Goals and vision, support of top management, encouragement of top management, climate of open leadership)
Sandhu et al. (2011)	The support of management

Researcher	KS enabler
Al-Adaileh (2011)	Organisational culture – the managerial type of support
Al-Adaileh and Al-Atawi (2011)	Organisational culture - support in supervision
Jahani et al. (2011)	Roles of leadership - mentor and facilitator
Xue et al. (2011)	Style of leadership-empowering type of leadership
Zwain et al. (2011)	Commitment of leadership
Allameh et al. (2012)	Style of leadership-transactional and transformational
Porzse et al. (2012)	Organisational factors-support of senior management
Seba et al. (2012a)	Organisational factors-style of leadership

2.8 Innovation

The organisations of today are increasingly focused upon innovation as having centrality for competitive advantage and success (Damanpour, 1987; Damanpour, 1991; Drucker, 1993; Damanpour and Gopalkrishnan, 2001; Harrison and Samaon, 2002; Schilling, 2005; Schilling, 2010; Tidd and Bessant, 2011). Organisations that are innovative have capacity for improving both organisational and individual performance and for finding solution for problems through effecting change and the creation of opportunities (Redmond and Mumford, 1993; Drazin et al., 1999; Walker, 2007; Varis and Littunen, 2010). It was argued that if organisations are going to be adaptable and responsive to unstable and rapid technological and environmental changes and survive within the current environmental circumstances, then it is essential to have innovative behaviour (Kellermanns et al., 2008; Trott, 2008; Cooper and Edgett, 2009).

Amongst scholars there is an apparent general agreement that, nowadays, innovation represents power for organisations (Kamasak and Bulutlar, 2010). Innovation has great importance and underlies the competitive advantage of an organisation over the long-term (de Jong and Hartog, 2007). It was noted by Lagrosen (2005) that innovation may provide organisations with entry into new markets and enhance their effectiveness. It is a key basis for economic growth and provides organisations with the opportunities for faster growth and the acquisition of profits (Tidd et al., 2005; Trott, 2008; Tidd and Bessant, 2011). Jimenez and

Vall (2011) and Calantone et al. (2002) have indicated that there is relationship between innovation and organisational learning, and organisations become aware of recent developments helping them absorb related and new knowledge. So, organisations with capacity for innovation can respond to challenge and then exploit new market and product opportunities in a quicker fashion than less innovative organisation (Schilling, 2010). There are numerous attributes with innovation including the inputs that are combined to create outputs. Innovation inputs may be tangible; for example, production materials and machinery and technology infrastructure. Innovation inputs can also be intangible; for example, databases, patents, progress in R&D, and organisational skills, knowledge and processes (Damanpour et al., 2009).

2.8.1 Understanding the Core of Innovation

A simple innovation definition is difficult to provide, however several scholars and researchers have paid attention to the concept. It has been defined in various ways and from a variety of angles as either process or consequence. De Jong (2006) believed the innovation concept first appeared within the literature in the work of Schumpeter (1934) in describing innovation as creation of new services/products, processes and brands and the impact they have upon economic development. For Nystrom (1990), innovation could be considered as new services, processes and products within the aim of meeting the changing demands of customers and improving organisational competitive advantage. It was stated by White and Glickman (2007) that the innovation term is in reference to introduction of new devices, methods and ideas. A broader definition was given by Liao et al. (2008) in describing innovation as adoption/generation of novel behaviours and ideas in regard to services, products, production, procedures of operation and strategies of management. Likewise, Herkema (2003) and Daft (1978) both saw innovation in terms of it being adoption of new behaviours, ideas, systems, products, policies, programmes and processes that are fresh to an organisation.

Du Plessis (2007) considered innovation to be in reference to creation of new knowledge, ideas and thoughts in order to make possible certain organisational

outcomes. Vaccaro et al. (2012) also explained innovation as being a process, distribution method or a product that an organisation considers as new. Definitions for innovation have been expanded further by a number of other researchers. Albury (2005), for example, considered it as the creation and implementation of new services/products, procedures, processes and delivery methods to enhance organisational effectiveness. From the viewpoint of Amabile (1998), innovation was in reference to creative ideas being successfully implemented in an organisation. The explanation of Van de Ven (1986) was that innovation was a type of process that included generation of new practices and ideas and their adoption and implementation. Innovation was found to be intuition, adoption and the implementation of new activities or ideas that were utilised in development of work practices, services or products by Chen and Tsou (2007). Further, innovation may be seen as being the development, generation, adoption and implementation of new methods, ideas, policies or programmes for the effective achievement of organisational goals (Kamasak and Bulutlar, 2010; Nusair et al., 2012). Tidd et al. (2005), meanwhile, saw innovation as being in reference to change involving new knowledge creation and commercialisation.

Those definitions give explanations for innovation that see it as a process including multiple phases, stages or patterns, with either the adoption or creation of new ideas. The process of creation is, indeed, different from the process of adoption. The creation process involves activities from the creation of new ideas, their development and then transfer in order for utilisation by others (Van de Ven, 1986). The adoption process, in contrast, involves the initiation, decision to adopt and the implementation (Damanpour and Aravind, 2012). Within innovation-related literature, there are overlaps between conceptualisations of change, innovation and creativity. Invention or creativity refer to generation of appropriate and novel ideas by groups or individuals. It is a component of ideation for innovation and is just thoughts, concepts or collection of thoughts/concepts (Amabile, 1998; Schilling, 2005; Trott, 2008). It is an initial step that is needed for innovation however, by itself, it is not enough (Tidd and Bessant, 2011). It was noted by Schilling (2010) that creativity may occur at both organisational and individual levels. At the level of the organisation, it may relate to individual

creativity in the organisation in question and the various social processes at work (Ahmed and Shepherd, 2010). Innovation relates to personal idea creation (creativity-invention), the commercialisation of the ideas and the application of them for new services/products, devices or processes (Trott, 2008; Tidd and Bessant, 2011). See Figure 9. It calls for the combination of creative ideas with the expertise and resources need for the creative idea to be embodied into a form that is useful (Smith 2009; Schilling, 2010). At the level of the individual, creativity happens by way of intellectual abilities, e.g., knowledge, thinking style and ability to view problems from various angles and then analyse them, and by way of traits of personality, e.g., tolerance of ambiguity, self-delicacy and the willingness to transcend reasonable risks and obstacles.

It is difficult for a simple innovation definition to be provided, however numerous scholars and researchers have been paying attention to the concept. It has been defined by researchers in various ways and from various angles, with it considered either a process or a consequence. In respect to change, all innovation when considering the organisational level is considered as reflecting change; however, as Trott (2008) noted, not all changes are innovation. It has been noted that lots of organisational changes happen without there being intentionality for direct benefits, though can be considered as simple adjustments that are in response to changes within the external and/or internal environment that are routine (West and Farr, 1990).

2.8.2 Kinds of Innovation

It was indicated by Damanpour et al. (2009) that there is importance in identifying different innovation types so that organisations can be understood. Within the literature, there have been various types of innovation reported. Distinction between innovation types may be traced to the early work of Schumpeter (1983), with identification of 5 types: new production methods, new products, new supply sources, new markets and new ways of organising business. Other researchers, such as Daft (1978), Subramanian and Nilakanta (1996), Birkinshaw et al. (2008) and Jaskyte (2011) made the distinction between administrative and technological types of innovation. The technological type of innovation is in reference to

implementing organisational affairs by way of tools including new methods, equipment and concepts, process elements, systems and techniques. It is related directly to primary organisation work activities (Damanpour and Schneider, 2006). Administrative innovation, however, relates to development and the implementation of activities of the organisation, including organisational structure, processes of administration and changes to the social system consisting of the members of the organisation and the relationships between them (Walker, 2007; Schilling, 2010). Administrative innovation may involve aspects of procedure, rules, systems of management and programmes for development of staff (Trott, 2008; Jaskyte, 2011; Damanpour and Aravind, 2012). It was noted by Smith (2009) that administrative innovations have an indirect relationship to organisational work activities. Damanpour (1987; 2009) added ancillary innovations in reference to programmes of community service including development programmes.

The argument has been made by other researchers such as Damanpour (2009), Smith (2009) and Tidd and Bessant (2011) that the achievement of innovation can hail from both process and product. Process innovation can include development of new equipment and tools, whilst product innovation can refer to introduction of new services and/or products. Meanwhile, Tidd and Bessant (2011) and Tidd et al. (2005) classified innovation to process, product, paradigm and position types of innovation; their argument was position innovation included contextual changes wherein there is introduction of products, whilst the paradigm innovation type involves changes to underlying mental models reflecting organisational work. In addition, Schilling (2005-2010) made the distinction between radical and incremental innovation. Radical innovation referred to degree of difference and newness of process or product. It is considered non-linear, discontinuous and essential for long-term success since it includes development of new technology and its application (Tidd and Bessant, 2011). As such, it places an organisation at risk since it is harder to commercialise (Du Plessis, 2007). Incremental innovation, on the other hand, involves the extension and/or modification of the existent processes or products. Usually it is known as market-pull innovation, with opportunities provided for building upon the know-how that already exists

(Trott, 2008). Typically, changes involve improvement of components instead of major change (Ahmed and Shepherd, 2010; Tidd and Bessant, 2011). It was noted by Smith (2009) that incremental innovation may lead to an essential continuous change process that is linear.

It was argued by He and Wong (2004) that innovation may be achieved by way of exploration or exploitation. Exploration involves behaviours characterised by discovery, research, flexibility, risk-taking and experimentation and covers time periods of considerable length. Exploitation is in reference to implementation, efficiency, production and refinement and has a shorter timeframe. Five innovation types were identified by Koch and Hauknes (2005) in service organisations, i.e., delivery, product, system, strategy and process. The authors described delivery innovation as including new ways for service provision and communication with clients, whilst product innovation was considered in terms of its focus upon the design and features of services and products. For them, system innovation encompassed developments to the ways in which communication occurred with others, and strategy innovation included change to the strategy, rationale and mission of an organisation. Lastly, process innovation was in reference to development of procedures, organisational forms and policies. Likewise, innovation was seen by Hamel (2006) as involving process innovation, including in relation to customer services, and logistics, as well as management innovation, including employee assessment, project management and strategic planning.

Both Trott (2008) and Wang and Ahmed (2004) split innovation into process, product, management, organisation, behaviour (including changes that enhance employee behaviour) and commercial (in reference to application of new strategies of marketing such as related to packaging of the product of the firm and the channels for distribution of products to market). The distinction was made by Walker (2007) between expansionary innovation, total innovation (provision of new services for new users) and evolutionary innovation (in reference to delivery of new services to users that already exist). Organisational innovation was defined by Damanpour and Schneider (2006) as a kind of innovation incorporating process, administrative and product innovation. From the above discussion it is

clear that various innovation types exist and they vary in accordance with the researcher viewpoint and their particular research field. This research has a focus upon process and product innovation, and the following sections provides a more fulsome explanation.

2.9 Exploring the Dual Dimensions of Innovation: Process and Product

It was stated by Robbins (2001) that innovation may be used in enhancing organisational performance. It has also been argued that product and process are central to all kinds of innovation (Trott, 2008). It was reported in previous literature that process and product innovation are essential to organisations since they provide capabilities in solving problems, improve performance and add value (Cooper, 1998; Damanpour and Gopalkrishnan, 2001; Schilling, 2005; Ahmed and Shepherd, 2010). It was suggested by Liao et al. (2008) that those two dimensions may determine whether an organisation will fail or succeed; the authors noted that process innovation follows product innovation within the innovation cycle of an industry. Likewise, it was claimed by Tsai et al. (2001) that process and product innovation influence may lead to enhancement of organisational adaptability with regard to environmental change, as well as being present within organisations when creativity and problem solving thrive.

Bi et al. (2006) and Dannels (2002) showed that process and product innovation enabled organisations to achieve competitive advantage. It has been argued that, by way of those types, organisations are able to lower production costs and achieve greater efficiencies (Harrison and Samaon, 2002; Mansury and Love, 2008). It was noted by Chen et al. (2012) that the technical type of innovation encompassing both process and product innovation is able to improve upon the processes of production and distribution. Organisations that have greater capabilities in respect to process and product innovation may achieve better responses from their environment and build up the capabilities required more easily for the enhancement of organisational performance (Jimenez and Vall, 2011). Product innovation is able to respond to environments that are unstable and act to create new opportunities in the development of effectiveness (Matzler et al., 2008). It is a critical success factor in increasing profit and growing organisations (Schilling, 2005-2010).

It was asserted by Liao and Wu (2010) that the two kinds of innovation receiving the greatest attention with empirical studies within innovation literature are process and product innovation. It was noted by Skerlavaja et al. (2010) that understanding of innovation may come through study of process and product. It was argued by Menguc and Auh (2006) that process and product innovation lead to organisations being proactive in exploration of new opportunities as well as managing to exploit current strengths. Moreover, numerous empirical studies have put forward evidence regarding the importance of the effects of process and product innovation upon attributes of performance such as growth, effectiveness and profitability. Morales et al. (2006), for example, discovered that technological innovation (process and product) served as a bridge between performance and leadership in European and American pharmaceutical companies. It was revealed by Vicente-Lorente and Zuniga-Vicente (2012) that process innovation adoption, such as equipment development and new methods, impacted positively upon the workforce in Spanish industrial companies. A survey undertaken in Thailand involving 121 managers working in electronics companies that was conducted by Ussahawanitchakit (2012) revealed that process and product innovation are able to improve performance, profitability and competitive advantage. Also, the study undertaken by Pianta (2005) discovered that managers within organisations felt obligation to come to decisions over product innovation so that the variety and quality of their products could be increased. It was found by Jimenez and Vall (2011) that both process and product innovation affected the performance of a firm. Garrido and Camarero (2010), in studying the European museum context, made the suggestion that social performance could be enhanced by product innovation.

2.9.1 Product innovation

There is embodiment of product innovation within organisational outputs, with it having association to organisational success, allowing organisations to establish dominant positions within the competitive marketplace (Danneels and Kleinschmidt, 2001; Schilling, 2010). Product innovation has been defined within previous literature from various perspectives. For example, it was shown by

Stefanovitz et al. (2010) that the term product innovation is in reference to new product development that helps organisation in their achievement of their goals. Cooper and Edgett (2009) and Cooper (1998) found that product innovation was representative of novelty in new products that were introduced into the marketplace in a manner that was timely. From the viewpoint of Damanpour (2009), product innovation included new services/products introduced in order to meet a market or external user need.

Product innovation is a process through which new products are produced and developed by firms that may lead to the success of an organisation (Valencia et al., 2010). Hage and Hollingsworth (2000) consider product innovation as being in reference to systematic work processes, that draw upon existing knowledge acquired from practical experiences and research, that are directed to production of new products, devices and materials and prototypes. Product innovation was described by Tasi (2001) as introduction of new services or products within the marketplace so that customers can be satisfied. It is representative of changes that organisations offer to the world outside (Damanpour and Schneider, 2006; Schilling, 2010). It was noted by Trott (2008) that product innovation is related to primary organisational activities and may create the organisation opportunities in respect to expansion in new areas. Organisations may be helped in dealing with environments that are turbulent, with product innovation considered a key driver of the success of organisations within dynamic markets (Tidd et al., 2005; Cooper and Edgett, 2009; Damanpour, 2009; Hung et al., 2010; Ooi et al., 2012).

Measurement of product innovation can be done from various perspectives. Tsai (2001), for example, measured product innovation through investigation of the diversity of products and their profitability. In contrast, Murovec and Prodan (2008) focussed upon speed of innovation and number of products. There can be measurement of product innovation through shares of sales for new services or products that have been adopted within the last 3 years (Ooi et al., 2012). Vicente-Lorente and Zuniga-Vicente (2012), on the other hand, studied product innovation through use of number of product innovations that have been introduced into the market. The focus of Prajogo and Sohal (2003) was upon speed, level and number of product innovations. Product innovation in Spanish private companies was

discussed by Bornay-Barrachina et al. (2012) in regard to number of new products and improvements that a company develops.

Product innovation within Turkey was analysed by Gumusluoglu and Ilsev (2009) using an innovation tendency coefficient and consideration of product innovation success. The former criterion was a representation of ratio of generated sales through product innovation to the total sales, whilst the latter represents ratio of generated sales through innovation to the expenditure on the production of those innovations. The number of changed and new products introduced into the market was the focus within the work of Correa et al. (2007). Skerlavaja et al. (2010), Jaskyte and Kisirliene (2006), Faems et al. (2005) and Obendhain and Johnson (2004) all undertook study of product innovation through number of the new products that were introduced by the organisation. The focus of Ussahawanitchakit (2012) was upon new processes and procedures in the organisation that impacted upon flexibility and speed of production and the quality of that production. Product innovation was measured by Pullen et al. (2012) as the products that had newness for the developing organisation and that were new in the market.

2.9.2 Process innovation

It was indicated by Schilling (2010) that process innovation had the aim of increasing effectiveness in organisational processes in order to facilitate production and delivery to customers of services and goods. It was explained by Damanpour and Aravind (2012) that process innovation was internally focused and was, primarily, driven by efficiency. It was argued by Wang and Ahmed (2004) that process innovation was not explicitly discussed often within the literature, even though it was a valuable form of tool that could help the survival of organisations within competitive markets; indeed, it is usual for it to be seen as a technical innovation sub-element (Damanpour, 2009). Process innovation is crucial for innovative capabilities overall and yet less costly and less risky than other types of innovation (Wang and Ahmed, 2004; Hull and Liao, 2006). The approach to process innovation by numerous researchers is shown within following Table 2.4.

Table 0.4 Process innovation

Researcher	Findings
Perri (1993)	Process innovation was defined as introduction of methods that were new in order to facilitate production of services and goods.
Afuah (1998)	The indication of the author was that process innovation referred to introducing new items within the operations of an organisation, such as equipment, input specifications, information and work.
Boer and Daring (2001)	Process innovation is reference to changes to the way that organisations produce their offerings and deliver them.
Wong and He (2003)	Development of new processes of production through the use of new equipment and reengineering of the operational processes.
Jaskyte (2004)	Process innovation is seen as creation of new service and delivery modes.
Wang and Ahmed (2004)	Process innovation was seen as referring to introduction of new methods, production and technologies that are utilised in improving production and new processes of management.
Bi et al. (2006); Tidd and Bessant (2011)	Process innovation covers the new production or methods of delivery that encompass changes to software, equipment and techniques.
Ahmed and Shepherd (2010)	Process innovation can also be considered to involve change to the ways that the tasks and targets of an organisation are undertaken.
Ooi et al. (2012)	Product innovation related to organisational aspects such as improvement to capacities and internal operations.

Various process innovation types have been reported within previous literature. For example, it was noted by Perri (1993) that process innovation could be classified as being either technique or practice-related types of process innovation. Technique-related types of process innovation are those which involve utilisation of new approaches as well as new methods of communication between the members of an organisation. Practice-related types of process innovation include those related to the administration of labour and equipment. The author noted 2 sub-elements for the technique-related classification, i.e., the intra-technique, which was in reference to a new kind of use of the same computer

within member training, and the inter-technique, which encompassed new input introductions.

The distinction was made by Gehlen (1980) between technology process and organisation process types of innovation. The organisation process type of innovation included internal company and new market organisation, whilst the technology process type of innovation was in reference to human artifacts covering machines and instruments. Two types of innovation were identified by Johannessen (2008), namely radical and continuous process innovation. The differentiation between administrative and technical process innovation was made by Damanpour et al. (2009). Administrative process innovations included reward and motivation of the members of the organisation, enhancement of task structure and modification of the management processes of an organisation. Technical process innovation, on the other hand, encompassed new elements, including techniques, tools and equipment introduced within the production system of an organisation. The authors argued that technical process innovation may increase the flexibility of operations and decrease production costs (Daft, 1978; Birkinshaw et al., 2008).

Likewise, the distinction was made between management and operational process innovation by Hamel (2006); the first referred to project management, employee assessment and strategic planning, and the second was in reference to procurement, logistics and customer services. Process innovation was measured by Avlonitis et al. (1994) in accordance with introduction of new methods and machinery. The discussion of Yang (2010) revolved around process innovation level and number of innovations or potential applications. The focus of Ooi et al. (2012) was upon employee productivity and production lead time. Acquisition of new methods and equipment and their improvement were studied by Vicente-Lorente and Zuniga-Vicente (2012). Process innovation within Chinese private companies was discussed by Shu et al. (2012) in relation to improvements within manufacturing, within processes of operation and for resource consumption economy. Likewise, changes to process and new process introduction within industrial organisations in Spain were studied by Jimenez and Vall (2011).

2.10 Innovation within private and public organisations

The significance of innovation has been recognised for both private and public organisations; indeed, it is seen as being a primary force for the survival of organisations (Smith, 2009). It was argued by Tidd and Bessant (2011) that a very significant role in enhancement of competitive advantage is played by innovation. It was found by Shu et al. (2012) that innovation, related to process and product, had a positive relationship to the creation of knowledge and political and business ties in Chinese private companies. In addition, it was noted by Bornay-Barrachina et al. (2012) that the relationships within employment, particularly managerial duties for professionals and associated personal work ethics may lead to introduction and enhancement of new products by way of human capital within private Spanish organisations. In private Dutch companies for medical devices, it was found by Pullen et al. (2012) that network characteristics, i.e., cultural capital, social capital, resource capital and strategic capital, may introduce, and improve upon, new product innovation. Focussing upon a sample from a number of public organisations in Spain, it was shown by Jimenez and Vall (2011) that innovation in respect to both process and product may enhance and encourage organisational learning.

A framework was introduced by Carmen and Jose (2008) that consisted of 3 constructs (innovation, performance and market orientation) so that cultural organisations within Europe could be studied. Innovation was considered as encompassing organisational and technological forms of innovation, whilst performance included social, comparative, and economic performance. Market orientation was seen as including factors related to the competitor, the donor and the visitor. Innovation was found in the study to be pivotal in its role between performance and market orientation. Also, within environments of higher education, innovation has importance and note has been made that universities ought to have a reliance upon process and product innovation (Jaskyte, 2004). It was asserted in the work of Rogers (1995- 2010) that educational institutions could adopt innovation and apply it. The quality of education relies upon both process and product having adaptability to changing environments. It is, therefore, necessary that those two kinds of innovation are studied in higher

education, in both public and private environments (Obendhain and Johnson, 2004). Innovation was found by Albury (2005) as having ability for improvement of provision quality and learning outcomes in education. It was argued that educational system innovations may be able to help in the customisation of the process of education (Brodhag, 2013).

A general consensus exists that education impacts positively upon individual, family and community well-being (OECD, 2009). So, innovation in the sector of higher education is considered as being a key engine for social and economic development. It was noted by Chen and Chen (2008) that innovation within HEIs may be achieved by academic results. It was reported within the literature that different kinds of innovation are apparent within public and private sectors. For example, Chen et al. (2010b) and Hsiao et al. (2009) suggested that innovation is apparent in 7 different areas in technical institutions and public universities in Taiwan, namely: administrative operations, leadership, student affairs, instruction and curricula, professional development of teachers, applications of resources and in the campus. Those authors made the argument that innovation in leadership involves vision, development of campus administration and participation within decision-making.

Innovation in administrative operations encompasses organisational culture, service quality and measure of administration including new policy adoption that may improve the performance of the organisation. Numerous empirical studies were undertaken with the purpose of stimulating innovation in private and public sectors and within HEIs. For example, it was found by Rahimi et al. (2011) that faculty member creativity could be enhanced in Iranian public universities by creation of knowledge, i.e., through socialisation and combination, externalisation and internalisation. It was noted by Su et al. (2009) that technical innovation may provide a significant source for basic scientific knowledge critical for both process and product innovation. In a survey involving 612 employees in Jordanian private universities that was undertaken by Al-Saudi (2012), it was discovered that creative behaviours, i.e., problem solving, ability to change, and attitude towards risk-taking, communication capacity and innovation encouragement, had a positive relationship with organisational climate. In

addition, Youssef et al. (2013) undertook a study of e-skill accumulation and innovative capacities amongst teachers in Tunisian public sector vocational high schools. It was found in the study that internet and computer skills, effective ICT use and the facilities all played key roles within innovative pedagogical usage of ICT. It was found by Bjornali and Støren (2012) that individual competences, i.e., championing and communication, creative and professional qualities and efficiency and productivity, increased the likeliness of higher education graduates introducing innovation in their workplace for the development of educational performance including, for example, their participation within problem-based learning and research projects. Based upon the above discussion, and in alignment with the research objectives, innovation is defined by this study as the acceptance, development and implementation of new processes and products through the development and use of new technologies, sound financial management and continual skill improvement.

2.11 Summary

Despite considerable research in the field of leadership and innovation, a notable gap persists in understanding the nuanced interplay between various leadership styles and their direct impact on fostering an innovative culture within organizations. Recent studies, such as those by Hughes et al. (2018) in the *Journal of Business Research*, have begun to explore the transformational and transactional leadership styles in relation to innovation. However, there is a lack of comprehensive empirical evidence that delineates how different facets of these leadership styles specifically contribute to or hinder the innovation process. Furthermore, emerging research trends, as noted by Anderson et al. (2020) in the *Leadership Quarterly*, suggest that the role of digital leadership in promoting innovation is still in its infancy, with insufficient exploration of how technology-driven leadership approaches intersect with traditional innovation strategies. This gap is particularly pronounced in the context of rapidly changing technological landscapes and the evolving nature of organizational structures in the digital age. Thus, there is a critical need for more in-depth, context-specific research that can provide actionable insights into how leadership can effectively drive innovation in various organizational settings and industries.

Chapter 2 has offered theoretical background regarding KS, innovation and TL. The leadership concept has been studied by researchers for a number of years, and various schools for the theory of leadership have evolved, including contingency, path-goal and situational theory, the style and trait approaches and transactional leadership and TL. The review found that the TL of Bass is suitable for practice within the organisations, especially an academic environment, since the capacity of followers is strengthened for the achievement of goals through providing them with the resources for undertaking their jobs well. TL can be considered the process through which leaders may affect followers, using inspirational motivation, idealised influence, individualised consideration and intellectual stimulation, in order to increase organisational and individual performance. Knowledge is now seen as a key economic resource and an asset that is intangible and, as such, it is distinct from information and data. There is considerable debate within the literature regarding ‘know-what’ (explicit knowledge) and ‘know-how’ (tacit knowledge).

As knowledge is a significant, intangible asset, the notion of KM is essential. Researchers consider that KM may allow expertise to be accessed and it can encourage a climate that is collaborative involving continual learning. It is made apparent within the KM literature that it does not just involve management of tacit and explicit knowledge, though also helps within decision-making and aids in the reduction of mistakes in the workplace. Note was made that, if consideration is given to KM initiative application, it is important for a KS culture to be created. KS is essential since it may increase capacities amongst organisational members in doing their jobs and in enhancing their self-knowledge. Most of the philosophers and researchers considered were in agreement that KS is a social interaction process involving exchange of experiences, skills and knowledge amongst organisational members. As such, it was found that the donation and collection of knowledge were important aspects for both private and public organisations. Several factors were discovered within the literature that were stimulants of a culture of KS amongst organisational members; some factors were organisational, technological or individual factors, however the KS enabler that appeared to be the most important was style of leadership. Lastly, this chapter

reviewed innovation concepts, with the indication that most management studies retain an interest in appreciating why it is that certain organisations show greater innovation levels than others. A debate regarding different kinds of innovation was presented within the review of literature, and fundamental reasons were given for study of process and product innovation, with a focus upon the GCAA within the UAE as innovation users. The need to study innovation in the domain of both private and public sectors was emphasised. Ultimately, this literature review chapter had the aim of providing theoretical background so that a conceptual framework could be developed which is presented within the chapter that follows.

Chapter 3 The study hypotheses and conceptual framework

3.1 Introduction

The literature review findings within the previous chapter do suggest that there is an opportunity to conduct further relevant research. KS and TL were found to be critical factors for enhancing innovation within organisations, especially within a learning environment. The result is such relationships within the GCAA (General Civil Aviation Authority) within the UAE need to be examined. Within Chapter 3, then, the research problem for investigation within this thesis is highlighted and there is description of the conceptual model that is adopted within the study. The relationships are described between TL and KS, TL and innovation, and innovation and KS. Then, the chapter describes TL within private and public organisations and within the GCAA before, lastly, the study hypotheses are outlined.

3.2 Innovation and transformational leadership

It was reported by Eisenbeib and Boerner (2010) that TL serves as a lever in the facilitation of innovation. To enhance process and product innovation, organisations need to have commitment and have to encourage their members to helpfully communicate amongst themselves (Lee et al., 2006). Followers can be encouraged by transformational leaders to act upon the vision of an organisation so that innovation can be fostered (Chen et al., 2012; Si and Wei, 2012). Such leaders possess interactive vision with the capability of encouraging a suitable environment for process and product innovation (Saenz, 2011; Vaccaro et al., 2012). Transformational leaders that have idealised influence can build respect and trust amongst employees, instil commitment and admiration, express confidence for the vision of the organisation, share risks with their followers and place emphasis upon the importance for collective sensibility towards the mission of the organisation (Betroci, 2009; Yukl, 2010). Those characteristics serve to encourage members towards being more innovative and working harder (Bass, 1985; Bass and Riggio, 2012).

Through the practice of inspirational motivation, leaders may motivate surrounding followers in their achievement of the performance required through the creation of a climate for teamwork and collaboration (Sadler, 2003). Such leaders shape vision, acquire optimistic commitment for that vision, encourage a suitable environment for innovation and pay the ultimate attention to the fostering of effective communication and a sharing in of the organisational values (Daft, 1999; DuBrin, 2007; Saenz, 2011). It was found that this leadership style boosted the perceptions of members of the values associated with the desired outcomes and their importance for improving performance (Bass, 1985). Through the provision of intellectual stimulation, the creativity and imagination of followers can be encouraged by transformational leaders, resulting in them re-examining old assumptions and outdated methods. Followers are encouraged to consider old problems, reformulate them and find new creative ways of doing things (Northouse, 2007; Western, 2008). When working under this particular leadership style, followers do not fear criticism if they were to express an opinion that was different from that of the leader(s) (DuBrin, 2012). If there is encouragement for individuals to engage in re-thinking a particular matter, in the knowledge that leaders consider their views as having importance, then there is a greater likeness that innovative ideas will be brought forward that could improve process and product innovation (Shalley and Gilson, 2004; Jung et al., 2008).

Through the use of individualised consideration, individual relationships are built by transformational leaders with followers, with innovation facilitated through consideration being given to follower skills, needs, aspirations and abilities (Bass and Riggio, 2006; Yukl, 2010). Transformational leaders help competence be realised by subordinates through support, feedback and encouragement (Northouse, 2007). The contributions and ambitions of followers is given due consideration by transformational leaders who, being caring listeners, show followers how their goals can be reached (Saenz, 2011). This leadership style may increase a desire in organisational members to take on greater levels of responsibility. If leaders have concern for the personal feelings of followers and offer them encouragement and support, then there is greater likeliness that the followers will respond with innovation(s) (Gumusluoglu and Ilsev, 2009; Khan

et al., 2009; Al-Omari and Hung, 2012).

The link between innovation and leadership has been noted within previous literature. Si and Wei (2012), for example, studied TL impact upon the creative performance of followers within large, Chinese multinational companies; it was found that a climate of team empowerment moderated the relationship linking the 2 variables. It was shown by Al-Omari and Hung (2012) that transformational leaders blessed with high levels of emotional intelligence were able to heighten the levels of organisational innovation. A study involving 416 employees within R&D departments of German industrial companies, that was undertaken by Eisenbeib and Boerner (2013), showed that there was an ability in transformational leaders to promote the creativity of followers. However, creativity decreased if followers were dependent upon the leaders. A framework was introduced by Sookaneknun and Ussahawanitchakit (2012) for enhancement of innovation in Thai companies. There were 4 main constructs within their framework, i.e., TL, enablers of TL, firm performance, and innovation. The construct for TL encompassed inspirational motivation, idealised influence, individualised consideration and intellectual stimulation. TL enablers were considered to be learning competency, emotional intelligence and self-efficacy. The construct for innovation capability included process, product, management, technology, systems and market, to accompany the construct for firm performance. Their study discovered a positive impact between the framework inter-relationships. Of the four TL dimensions, only idealised influence affected organisational performance and innovation.

It was also found by Vaccaro et al. (2012) that those transformational leaders who were able to inspire team success and develop respectful and trusting relationships within Dutch firms were able to enable the firms to enact management innovation changes, primarily with regard to structures, processes and practices. The role of mediation of innovation within the relationship that existed between performance and TL within US pharmaceutical organisations was examined by Morales et al. (2008). The researchers discovered that TL, by way of inspirational motivation, intellectual stimulation and idealised influence, had a direct, positive effect upon performance, and one that was indirect by way

of product innovation. There was also testing of their framework within Austria in the context of SMEs, and it was discovered to be significant for that context (Matzler et al., 2008). The effects in moderation of structure, environment and organisational culture were investigated by Jung et al. (2008) in regard to the relationship that existed between innovation and TL. The construct for organisational culture was made up of climate for empowerment and innovation. The organisational structure construct encompassed formalisation and centralisation. Competition and uncertainty were included as environmental factors. The results of their study gave support to there being a direct impact of TL upon organisational innovation, and it showed that the effect of moderation took a direction that was opposite to the one that had been hypothesised. It was shown by Michaelis et al. (2010) that innovation may be enhanced by TL by way of the promotion of commitment to change.

The role in moderating of the psychological empowerment of followers was studied by Jung et al. (2003), i.e., competence, self-determination, impact and meaning of the relationship that existed between innovative behaviour and TL in Taiwanese companies. It was revealed by the study that there is a positive relationship of TL within innovative behaviour in an environment that has a high level of psychological empowerment. There was later testing of the model within a government agency context within the Netherlands that produced similar results (Pieterse et al., 2010). A survey involving 523 organisational members that were working within Pakistani companies, that was undertaken by Tip et al. (2012), showed the important role played by TL in the development of innovation both indirectly and directly by way of organisational culture. The study of de Jong and Hartog (2007) discovered that leaders who used delegating, consulting and supportive types of behaviour are crucial for generating and applying the ideas of employees. That idea was supported by the work of Zhang and Batrol (2010) which revealed that empowering forms of leadership have an impact upon organisational creativity. It was argued by Sarrors et al. (2008) that forms of leadership that provide individual support and that have vision have capacity for building a climate that is supportive of innovation. Also, it was shown by Al-Yasseri (2006) that strategic forms of leadership, along within organisational

innovation, i.e., ability to problem solve and to make decisions, a risk-taking spirit, willingness and ability for changing, and encouragement for innovation, are vital to performance in Iraqi companies.

A scan of literature shows that there is limited research on the relationship between innovation and TL in the HE environment. An examination was undertaken by Yahchouchi (2009) with regard to the perceptions of transactional and transformational leadership and the impacts of them upon the organisational commitment of employees through a survey of 158 employees working within Lebanese universities. It was shown by the results that the transformational style was practised by the leaders more than the transactional one, and that had a positive relationship to commitment. In a survey undertaken by Alzawahreh (2011) of 200 members of faculties working within a Jordanian public HEI, it was suggested that an important role was played in enhancement of faculty member creativity by TL behaviour that superiors exhibited. It was demonstrated by Moolenaar et al. (2010) that TL was vital for a climate of innovation within elementary schools. An empirical study was undertaken by Sagnak (2012) involving 55 principals and 710 teachers within elementary schools. It was indicated by the results that empowering leadership was able to enhance the innovative behaviour of teachers such as the generation, the diffusion and the application of ideas. Studies undertaken by Chang (2012) and Khasawneh et al. (2012) showed that teacher productivity in vocational schools within Taiwan and Jordan was increased by TL. Those studies, however, focused upon effects of leadership for enhancement of innovation, though had not examined how the four TL behaviour components had specifically affected innovation, especially amongst staff members that were working on process and product development. There has been very little specific research examining existence of those kinds of link within countries in the Middle East (Mumford et al., 2002); indeed, a call has gone out for research in the public sector in that region (Bodla and Nawaz, 2010).

3.3 Knowledge sharing and transformational Leadership

It was indicated by Fullwood et al. (2013) that a key role is played by KS within organisational competitiveness. There is a belief that more effectiveness will come to organisations through the creation, sharing and reuse of knowledge

(Nguyen and Mohamed, 2011). KS makes reference to interactions between explicit and implicit knowledge that have relevance to a task in question (Lee et al., 2010). Bollinger and Smith (2001) consider that organisational culture has a key role in enabling cooperative work amongst organisational members and in enabling their sharing of their knowledge. Also, it has been argued that TL can cultivate and promote values and norms that serve to encourage KS (Bryant, 2003; Eisenbeib and Boerner, 2010). Leaders such as these may create a team environment that is collaborative, and encourage knowledge sharing, negotiation and communication in general (Bass and Riggio, 2006; Northouse, 2007).

Transformational leaders that have idealised influence tend to instil respect, admiration, faith and pride and emphasise how important it is for organisational members to have sense of collectivity towards the mission of the organisation (Bass and Riggio, 2012). Transformational leaders promote emotions like honour, integrity and selflessness amongst followers (Avolio and Bass, 2002; Northouse, 2012). They can encourage their followers in the accomplishment of the work founded upon collective sense of purpose, values and beliefs (Betroci, 2009). It has been noted that the leadership style may inspire loyalty and trust amongst both leaders and followers, and these are core KS components (Hsu et al., 2007; Hock et al., 2009; Shih et al., 2012). It has been discovered by research that employees that work beneath leaders with a focus upon trust and that involve the followers within decision making tend to feel comfortable about sharing their expertise and knowledge within their organisations without a sense of suspicion or fear (Tse and Mitchell, 2010). If members feel their leaders trust their capabilities, have a sense of confidence in them, have a sense of care with regard to their work efforts and appreciate attempts at creating knowledge including their new ideas, then there will be a tendency for them to have greater willingness of giving their opinions and more likeliness that they will share their knowledge (Lee et al., 2010).

Employees that work under leaders that practise inspirational motivation tend to be encouraged in achieving organisational visions since there is creation of spirit in both the individual and the team, and there is inspiration for the employees to lead commitment that is task-oriented through the vision being shared (Saenz,

2011). Transformational leaders display optimism and enthusiasm, and they inspire other organisational members to imagine a future attractive state that their efforts could help achieve (Bass and Riggio, 2006). TL that exhibits that kind of behaviour leads to the building up of a climate amongst members that is collaborative, with followers provided with a sense of energy and direction. Leaders such as these are able to encourage knowledge sharing by way of better communication, negotiation and dialogue (Northouse, 2007). When intellectual stimulation is exhibited by them, transformational leaders can challenge the assumptions of followers, generate different manners of thinking and can help in seeking new solutions for problems from various perspectives. There is more likeliness of KS activities being encouraged by leaders who promote reviews, discussion and open idea sharing (Carmeli et al., 2011).

When facilitating searches for new opportunities along with establishment of common visions amongst employees, transformational leaders help increase the sense of responsibility in employees as well as their sharing of knowledge (Senge et al., 1994; Chen and Barnes, 2006). When using individualised consideration, leaders have awareness of the needs and concerns of followers and also develop follower strengths by way of consulting and coaching and the provision of hands-on guidance and advice to them (DuBrin, 2007). The behaviour of transformational leaders is like that of mentors, with the aim of fostering social interaction along with assistance for followers to help in their development of job-related competencies through demonstration of consideration and empathy (Bass and Riggio, 2012). Self-confidence and self-efficacy are enhanced by them, and so opportunities are provided to them of sharing the knowledge that is unique to them. Support can be provided by such leaders who recognise that the ideas and contributions of their followers have value (Yukl, 2013). When leaders listen to the views of members and give consideration for their unique knowledge, then there is a greater likeness of them being motivated to knowledge share with others (Srivastava et al., 2006b).

Prior literature studied TL in a variety of contexts. A model was introduced and tested by Song et al. (2012), for example, in profit organisations in Korea; the model contained 3 main constructs: work of engagement of employees,

knowledge creation and TL. The work engagement of employees construct encompassed absorption, dedication and vigour. The construct of knowledge creation comprised justifying concepts, creating concepts, cross-level knowledge, building archetypes and KS. The construct for TL included inspirational motivation, idealised influence, individualised consideration and intellectual stimulation. It was found by the study that the work engagement of employees played a mediating role that had significance in explanation of the TL influence upon knowledge creation. Organisational culture impact was examined by Al-Adaileh and Al-Atawi (2011) through consideration of innovation, openness to change, teamwork, trust, information flow, morale, supervision, involvement, customer service and rewards for exchange of knowledge in a context of a telecommunication company in Saudi Arabia. It was suggested by the study findings that organisations need the commitment of supervisors for the creation of an environment that enables employees to share and apply their knowledge.

A survey involving 73 workers within Chinese software development organisations was undertaken by Humayun and Gang (2013) and it found that a supportive form of leadership is able to stimulate employee intentions of seeking knowledge by way of KMS (knowledge management systems). Also, it was detected by Shih et al. (2012), in a study of electronic product manufacturers in Taiwan, that TL may increase the knowledge exchange behaviour of R&D workers by the impact of a climate of trust. Transactional, laissez-faire and transformational types of leadership were studied by Analoui et al. (2013) with regard to the relationship they have with activity of KM in organisations for ICT within the UK. Their study found that transactional and transformational styles had importance for KM application.

Four constructs were introduced by Nguyen and Mohamed (2011) for investigating the organisational culture moderating role upon relationships between KM, transformational leadership and transactional leadership. The construct for organisational culture included mission, hierarchy and adaptability. The variables used for TL were individualised consideration and idealised influence. Transactional leadership construct encompassed contingent rewards, passive and active management through exception and the laissez-faire style of

management. The construct for KM comprised socialisation, internalisation and exchange of knowledge. It was found by the study that contingent rewards and idealised influence leadership behaviour types had a significant impact upon all KM process dimensions. The suggestion was the TL effectiveness was highly dependent upon contextual factors including extent of power sharing and organisational structure. According to the study results, there was a significant organisational culture moderating effect upon the relationship linking KM with transactional leadership. Moreover, it was found by Seba et al. (2012b) that in UAE public organisations, the key barriers to KS activity practice amongst employees were organisational structure, trust and style of leadership.

Meanwhile, the findings of Singh (2008) suggested that the behaviours of consulting and delegating that was exhibited by leaders had positive association with creation and application of knowledge. Knowledge creation and TL were studied, theoretically, by Tse and Mitchell (2010), and they suggested that norms of open-mindedness may make for a supportive environment facilitating the relationship between knowledge creation and TL. Chen and Barnes (2006) undertook a pilot study involving 93 managers who were working within firms of professional services in Taiwan and 72 within the US; the study revealed that leaders that enhance and encourage the solving of problems and that give their employees more attention, have a greater likeliness of improving KS. TL was also found to have greater importance than transactional leadership regarding encouragement for KS activities amongst private company employees within the UAE (Behery, 2008). It was shown by Vera and Crossan (2004b) that individuals are encouraged by transformational leaders to transcend boundaries with sharing of their experiences across and within departments. It was argued by Mathew (2010), meanwhile, that a lack of support from leadership is the primary barrier to knowledge within HEIs; as such, it can be difficult for knowledge to be used and information and data shared effectively.

It was found by Suhaimi et al. (2006) that there is achievement of 80 % of KM through people, especially culture and leaders, whilst there was achievement of 20 % by way of technology. An examination undertaken by Jahani et al. (2011) looked at the effect upon KS activities in Iranian universities that was caused by

reward systems and by styles of leadership, such as mentoring and facilitation of the activities for KS. The results demonstrated that HE requires leaders to play a role of mentoring and reward systems so that staff are encouraged to practise KS-type behaviours. The impact of variables of team climate was investigated by Xue et al. (2011), namely, cohesion, trust, empowering leadership and innovativeness, as well as investigation of empowering leadership including participative decision making, leading by example, informing, coaching, showing concern, and their effects upon knowledge behaviour of team members from a college student sample from within a major university in the US. It was suggested by their findings that empowering leadership and team climate were essential for the practice of KS and in removing barriers to sharing.

It was revealed by Allameh et al. (2012) that TL, i.e., using the talents of employees, the increasing of enthusiasm of employees, transmission of the mission of the organisation and encouragement of entrepreneurship, all increased the processes of knowledge conversion of externalisation, socialisation, internalisation and combination more than transactional leadership within a faculty member sample from within public universities in Iran. Whilst the studies discussed above have looked into the relationship between KS and TL, research related to TL has not undertaken full examination of mechanisms by which the performance and behaviour of employees is shaped by TL (Yukl, 2010); indeed, a call has been made for research regarding how KS is affected by leadership within private and public organisations (Leidner and Alavi, 2006), especially in developing countries (Jahani et al., 2011).

3.4 Innovation and knowledge sharing

A knowledge-based view has the recognition that knowledge forms a resource that is very valuable to an organisation (Nonaka and Takeuchi, 1995; Nonaka and Toyama, 2005). Within investigations of organisational innovation, the roles of KM and knowledge have emerged as key areas (Spender, 1996; von Krogh et al., 2012). When consideration is given for KM initiative application, the creation of a KS culture is an important step (Hislop, 2013). The process of KS includes the sharing and exchange of explicit and tacit knowledge amongst organisational

members. It has been noted that knowledge forms the core innovation component (Goh, 2005). Through the processes of KM, especially KS, opportunities can be created by organisations for the development of innovation and generation of new ideas (Reid, 2003; Lin and Lee, 2005; Willem and Buelens, 2007). Access to knowledge can help the members of an organisation to come forward with new ways of solving problems and engaging in further activities for innovation (Rodan and Galunic, 2004). Process and product innovation have been shown to help in the solving of problems and the improvement of performance (Cooper, 1998; Tsai, 2001). Innovation relies upon the skills and knowledge of employees and experience in creating value (Skerlavaja et al., 2010; Wang and Wang, 2012).

It is critical to have new knowledge for the development of innovative ideas towards new products (Tsai, 2001). It is suggested from a knowledge-based view that organisations must exhibit KS and knowledge creation (Alavi and Leidner, 2001). As individuals have knowledge embedded within them, there is a need for the sharing of that knowledge amongst the members of an organisation so that new mental processes and routines can be established by them that can assist them in solving their problems (Nonaka and Takeuchi, 1995; Nonaka et al., 2006; Cheng, 2012). When tacit knowledge is shared by organisational members and converted into explicit knowledge by collecting and donating, there is the generation of collective learning which, in its turn, leads to improvement in the available stock of knowledge within the organisation (Alavi and Leidner, 2001; Nonaka and Toyama, 2005; Lin, 2007).

It has been argued that the organisations given to promotion of a culture of KS amongst its members are more likely to succeed in generating new ideas leading to process and product innovation (Tsai, 2001; Dougherty et al., 2002; Michael and Nawaz, 2008; Mehrabani and Shajari, 2012). Through knowledge-oriented activities, existing knowledge can be reconfigured and utilised by employees in new ways to change their tasks and develop them which, in turn, leads to generation of new knowledge which may be employed within process and product innovation. It has been reported in previous studies that KS can be considered an antecedent for process and product innovation. With the work of Darroch and McNaughton (2002), for example, it was suggested that processes of KM, namely,

the acquisition of knowledge and its dissemination and responsiveness, could accelerate incremental and radical innovation in New Zealand companies. Jantunen (2005), on the other hand, discovered that there was no significant relationship between knowledge dissemination and innovation, though knowledge application was considered as playing a significant role in the support of innovation. A model was tested by Huang and Li (2009) within Taiwanese firms. The three constructs in the model were KM processes, social interaction, and innovation. The processes of KM were knowledge acquisition, knowledge sharing and knowledge application. The construct of social interaction included communication, coordination and trust. Innovation comprised both technological and administrative aspects. The results from their study showed that social interaction assists organisational members to increase their sharing and application of knowledge and bolster their social capital and these, in turn, help in the development of innovation.

The impact upon innovation performance from knowledge processes was examined by Andreeva and Kianto (2011), i.e., the creation of knowledge, its documentation and storage, the sharing and acquisition of knowledge and its intensity. It was highlighted in the study that knowledge creation may predict marketing, management and product innovation. It was found by Holsapple and Jones (2004) that knowledge acquisition may help firms in the creation of new products. With that same context, it was demonstrated by Ling and Nasuridin (2010) that acquisition of knowledge impacts positively upon product innovation, whilst knowledge sharing, and application are not related with product innovation. A survey involving 327 people working in financial and IT firms in Taiwan was undertaken by Liao and Wu (2010) to examine relationships amongst KM aspects, i.e., its acquisition, its conversion and its application, organisational learning variables for management commitment, openness and experimentation, system perspective, and the strategic, market and product dimensions of innovation. It was concluded by the study that, through organisational learning, KM processes indirectly impact upon innovation. It was found by Liao et al. (2007) that absorptive capacity (motivation and ability of employees) acted as a form of bridge between the donation and collection of knowledge and process and

product innovation in Taiwanese industrial companies. The effect of moderating of organisational climate, made up of supportive climate and innovative climate, was studied by the authors along with organisational structure, i.e., formalisation, the centralisation and the integration, upon relationships between the creation and sharing of knowledge and administrative and technological innovation.

A positive relationship was identified by Chen et al. (2010a) between the creation and sharing of knowledge and innovation within a climate that is supportive that encourages and stimulates knowledge transfer into innovation, whilst the relationship was attenuated by organisational structure. Porzse et al. (2012) undertook a qualitative study in firms of professional service within Eastern Europe and discovered that knowledge had a connection with innovation that was unique, and they suggested that innovation could be stimulated by collective organisational knowledge. Moreover, it was shown by Ferraresi et al. (2012) that the processes of KM of capture, share and application significantly impacted upon innovation by way of strategic orientation in Brazilian companies. It was found by Wei and Xie (2008) that innovation performance in Chinese industrial companies could be improved by KM. Likewise, it was demonstrated by Kamasak and Bulutlar (2010) that the collection of knowledge had a greater impact upon explorative and exploitative innovation both outside and inside departments than the donation of knowledge did within the context of Turkish industrial companies.

An empirical study involving 449 workers within insurance and banking firms within Taiwan was undertaken by Liao et al. (2012). The role of mediating of organisational learning (shared vision, open-mindedness and commitment to learning) was investigated in the study in regard to relationships between knowledge acquisition (external acquisition and internal creation) and organisational culture (supportive, innovative and bureaucratic) as independent variables, and with the dependent variable being organisational innovation (strategic, behavioural, market and product). Their study found that there is a need for an enterprise to learn whilst acquiring knowledge so that organisational innovation can be achieved. The interrelationships between internal KS, product innovation and external knowledge acquisition were examined in Chinese software firms by Yang (2011). The implication of the findings was that the

acquisition of external knowledge can enhance the product innovation of firms to a greater extent than internal KS. Also, in a pilot study involving 209 employees in Chinese high technology firms undertaken by Wang and Wang (2012), it was discovered that the quality and speed of innovation did mediate the relationships between explicit and tacit knowledge and financial and operational performance.

It was indicated by Hung et al. (2010) that the creation and sharing of knowledge and its transfer and application all have positive impact upon the level, amount and speed of innovation through TQM (total quality management). It was demonstrated by Lin and Lee (2005) that firms that were applying strategies such as the sharing of technological knowledge with their competitors were able to achieve higher levels of performance than those firms that were not sharing knowledge. The survey of Aulawi et al. (2009) involving 125 workers within Indonesian telecommunications companies showed that KS serves as lever between technical and social factors and individual capability for innovation.

In the environment of education, there have been very few studies that have looked at the relation between innovation and KS. It was found by Zaqout and Abbas (2012) that tacit and explicit knowledge formed a type of bridge between social networks, ICT, performance and trust within public universities in Malaysia. The findings of Cheng (2009) suggested KS by way of communities of practice and interpersonal interaction is vital for curriculum implementation and improving teaching practice. More recently, a study undertaken by Zwain and Teong (2012) within the context of public universities in Iraq looked at processes of KM, i.e., identification, the acquisition, the storage and sharing and the application of knowledge, in relation with academic performance. Their findings showed that the processes of KM, especially knowledge sharing, are essential for performance in academic terms. Whilst previous research work has investigated the relationship between innovation and KS, few have touched upon the processes of knowledge and the impact of them upon the process and product innovation of teaching staff (Subramaniam and Youndt, 2005). Clearly, research is needed to address practical KS difficulties in relation to process and product innovation, especially within developed countries of the Middle East (Xu et al., 2010).

3.5 The KS mediation effect within the relationship of TL to innovation

Linkages between KS and TL and linkages between innovation and KS have been discussed, with the implicit suggestion that innovation is affected by TL through the affects upon KS. The enhancement of process and product innovation calls for leaders to cultivate admiration, commitment and respect amongst the members of the organisation (Avolio et al., 1999; Bass and Riggio, 2006; Betroci, 2009; Saenz, 2011). Knowledge plays a key role in innovation within organisations. Innovation can be considered a process by which problems are defined and new knowledge created to solve those problems (Nonaka et al., 2006; Damanpour et al., 2009; Ahmed and Shepherd, 2010). Different individuals have their own embedded tacit knowledge and there has to be conversion of it to explicit knowledge. Processes of KS are followed by organisational members to assist them in the conversion of knowledge, creation of new mental models and routines and the solving of problems (Nonaka, 1994; Nonaka and Takeuchi, 1995; von Krogh et al., 2012).

So that the knowledge can be fully leveraged, and the experiences and skills exchanged those lives within individual minds, a KS culture amongst employees can be encouraged by TL through idealised influenced through the instillation of trust, respect, faith and admiration amongst organisational members (Northouse, 2007; Saenz, 2011). By way of inspirational motivation, team spirit can be created by leaders through encouragement for communication and commitment (Tichy and Devanna, 1990; Northouse, 2007; Yukl, 2010). When intellectual stimulation is practised by leaders, there is encouragement for members to look, seek out and think about new approaches that could be taken to old problems. Using individualised consideration, special attention can be paid by leaders to their followers, with encouragement for them to solve problems (Bass and Riggio, 2006; Northouse, 2007).

In accordance with a knowledge-based view, if there can be sharing of knowledge amongst organisational members by way of donation and collection, a stock of knowledge can be made available to help in the generation of new ideas and this, in turn, may lead to improvements in process and product innovation (Liao and Wu, 2010; Ferraresi et al., 2012; von Krogh et al., 2012; Wang and Wang, 2012).

So, the argument of this study is that a KS culture amongst staff members is encouraged by TL through inspirational motivation, idealised influence, individualised consideration and intellectual stimulation. There is conversion of tacit knowledge to explicit knowledge with regard to administrative issues and training operations amongst departmental members through the donation and collection of knowledge leading to innovative ideas for development of the process and product innovation in the organisation. Whilst TL can have a direct effect upon innovation, it has been suggested by previous research that direct effects can have too great complexity for isolation (Srivastava et al., 2006b). Not enough attention has been paid to mechanisms that could explain those relationships; indeed, there is a need for research to address the processes and understand them in respect to ways that TL impacts upon work in relation to innovation. This study, then, has the aim of filling the literature gap through examination of the impact of TL upon innovation by way of the KS role in mediation; see Figure 1.

3.6 TL within private and public sectors

As a management practice, TL is now increasingly dominant within both private and public sector organisations (Walumbwa et al., 2005). The norms of followers can be realigned and changed by TL, along with the promotion of both organisational and personal change within the private and public sectors (Bass and Riggio, 2006; Northouse, 2007; Saenz, 2011). Mixed results have been reported within previous literature from comparison of TL within private and public organisations. Lowe et al. (1996), for example, found TL behaviour is as effective and common within public organisations as it is in private ones. Likewise, it was indicated by Wright et al. (2012) that leadership may increase the clarity of goals amongst public organisation employees. It was found by Mohammad et al. (2011) that leaders that use intellectual stimulation, individualised consideration and inspirational motivation had ability for creating an environment within which job satisfaction was increased amongst employees in private hospitals in Jordan. The relationship between laissez-faire, transactional and transformational leadership and innovative types of work behaviour within private and public banks within Pakistan was examined by Khan et al. (2012). It

was found by the study that managers within public banks were practising TL, whilst those within the private sector had a tendency to employ transactional leadership. Also, findings showed a relationship that was positive between both transactional leadership and TL and innovation, whilst it was found that laissez-faire leadership had a negative impact upon innovative work behaviour.

It was shown by Gilley et al. (2008) that TL practice within private and public organisations has importance for innovation and successful change. Also, it was shown by Riaz and Haider (2010) that transactional and transformational leadership are essential for job success and career satisfaction in Pakistani private organisations. Within a comparative study regarding TL effectiveness in public and private banks within India, that was undertaken by Majumdar and Ray (2011), the same TL level was detected within both sectors. An empirical study undertaken by Al-Mailam (2004), involving 266 employees of public and private hospitals within Kuwait, discovered that TL level increased employee job satisfaction within the private sector to a greater extent than for those that worked within public hospitals. In a study by Janadghi et al. (2009), TL was shown to play a key role in success as well as increasing employee job satisfaction within private companies in Iran. It has been found that TL within the HE sectors encouraged staff to engage with educational programmes for the development of their skills in order to achieve a higher level of performance (Bass and Riggio, 2006).

It has been argued that in academic environments, TL may lead to change to organisational strategies, structures and culture that have similarity to the changes seen within business organisations (Yu and Jantzi, 2002). It was argued by Singh and Lokotsch (2005) that TL may create atmospheres amongst teachers in public primary schools which encourage teamwork and communication, and they suggested that the school principals ought to change their traditional styles of teaching to a TL style. A survey, undertaken by Lo et al. (2010), involving 458 teaching staff that worked within Malaysian public universities, was done to examine the impacts of a variety of TL dimensions, i.e., idealised influence, intellectual stimulation, individualised consideration and inspirational motivation, upon the commitment for change as measured by capacity belief,

context belief and personal goals. Their study discovered that intellectual stimulation and idealised influence had significant relationships with commitment to change. Likewise, the findings of Khasawneh et al. (2012) suggested there was a need for TL for commitment amongst vocational teachers working in governmental schools within Jordan. A pilot study involving 154 teaching staff working in public and private universities in Malaysia, undertaken by Nawaz and Bodla (2010), discovered there to be no differences within the practices for TL exhibited by faculties in those two sectors.

As the above shows, there has been the undertaking of previous research on TL within both private and public environments. However, very few studies have taken a focus that looked at differences between the practices for TL employed within those two sectors. Also, this study examines sectoral differences within relationship patterns involving KS, innovation and TL. Since knowledge of differences, if there are any, between private and public is critical since those differences ought to be considered in the development of strategies of management that will be the most appropriate for each of the sectors. Whilst many studies have examined innovation, KS and TL, as Chapter 2 discussed, empirical studies are lacking with regard to TL impact upon innovation and KS and KS impact upon innovation. To the knowledge of the author, no study has previously compared predictors and levels of KS and TL and their impacts upon innovation within the environment of GCAA within UAE.

3.7 Research hypotheses and framework

The framework of research is the visual or written presentation that explains, in either narrative or graphical form, the key issues that are to be studied, i.e., the key concepts, factors or variables and presumed relationships between them (Huberman and Miles, 1998; Maxwell, 2005). Frameworks have utility since they assist researchers in their organising and incorporation of diverse research problem aspects into a consistent and simple approach, thereby ensuring that the pursued outcomes can be attained in a sound fashion (Montagna, 2005). Al-Hussein and Richard (2013) noted that a framework of research has to demonstrate that relevant concepts and theories, to the aim and question of the research, are understood and that they relate to broader knowledge areas under

consideration. Also, the research framework is used in limiting scope of the data of relevance through taking a focus upon specific variables and the defining of the particular viewpoint by which the researcher is to adopt in taking on the analysis and interpretation of the gathered data. The framework also served to facilitate understanding of variables and concepts to the definitions give, and new knowledge is built through the validation or challenge to the theoretical assumptions (Trochim, 2006; Al-Hussein and Richard, 2013). A key step during the initial research process stages is the review of theories, assessment of their relevance for the question of the research and the formulation of hypotheses for investigation (Al-Hussein and Richard, 2013). This section explains how a conceptual framework and the hypothesis is developed for the research. Furthermore, description is given of relationships between KS and innovation, TL-KS and TL-innovation. There is also discussion of the mediating KS role within the relationship of TL-innovation. Lastly, the relationships hypothesised are presented within Figure 1.

3.8 The relationship of innovation (INN) and TL

There is agreement amongst many scholars that leadership is a factor that is key in the facilitation of innovation and that leaders play pivotal roles in the formation of spirit for new projects (Yukl, 2013; Zhang et al., 2018; Al-Hussein et al., 2019). When a team has transformational leadership, there can be the formation of a deeper appreciation and understanding from all members of the team since they impact team member proactivity and foster active engagement of them in creative or developmental activities (Zhang et al., 2018). Such leaders possess a vision that is interactive along with the capability of encouraging an environment that is suitable for process and product innovation (Al-Hussein et al., 2019). The respect and trust of employees can be built by transformational leaders who have idealised influence, an express confidence to employees in the vision of the organisation and emphasise to them the importance of there being a collective sense focused upon the mission of the organisation (Yukl, 2013). Through the practice of inspirational motivation, leaders are able to motivate followers for the achievement of the objectives required through the creation of a working environment that is collaborative. Through the provision of intellectual

stimulation, TLs can encourage their followers to be creative so that they may adopt fresh new ways in their work (Yukl, 2013; Akay and Demirel, 2018; Al-Hussein et al., 2019). Through the use of individualised consideration, TLs build up the individual relationships that they have with followers and give consideration to their abilities, aspirations and needs in such a manner that innovation becomes facilitated (Yukl, 2013; Al-Hussein et al., 2019).

A number of empirical studies, including those of Al-Hussein et al. (2019), Zhang et al. (2018) and Akay and Demirel (2018), have given support to the notion that positive impacts upon organisational innovation are ensured by transformational leadership. Whilst the studies above established relationships between innovation and transformational leadership, the examination of the links between them have mainly be done at the level of firms of small and medium size. So, an examination is worthwhile, then, of the relationship between innovation and transformational leadership in an organisation of a larger size, especially within the aviation industry context. As such, within this study, the presence of a relationship that is positive between innovation and transformational leadership is proposed within the settings of the UAE aviation industry. So, given the evidence, both empirical and theoretical, this current research puts forward a first hypothesis, as follows:

H1: Organisation innovation is directly and positively influenced by transformational leadership

It was established from the review of literature that innovation has two key elements (process and product) and four key TL components (inspirational motivation, idealised influence, individualised consideration and intellectual stimulation) (see Section 2.2); so, eight sub-hypotheses were also formulated, as listed below:

H1a: Product innovation is directly and positively influenced by idealised influence.

H1b: Product innovation is directly and positively influenced by inspirational motivation.

H1c: Product innovation is directly and positively influenced by intellectual

stimulation.

H1d: Product innovation is directly and positively influenced by individualised consideration.

H1e: Process innovation is directly and positively influenced by idealised influence.

H1f: Process innovation is directly and positively influenced by inspirational motivation.

H1g: Process innovation is directly and positively influenced by intellectual stimulation.

H1h: Process innovation is directly and positively influenced by individualised consideration.

3.9 The relationship of innovation and knowledge sharing

Organisations are enabled by knowledge in attaining competitive advantage and, thus, knowledge is safeguarded by organisations through the implementation of effective management schemes (Yukl, 2013; Yadav et al., 2018). Likewise, it was explained by McBeath and Ball (2012) that knowledge is an organisational resource that is critical that may assist organisations in the achievement of competitive advantage within dynamic economies. Knowledge sharing in an organisation is, however, essential from the perspective of knowledge management. Knowledge sharing behaviour can be defined as an approach that effectively maintains organisational competitiveness (Geri et al., 2017). There is a positive association of effective knowledge management within innovation, cost reduction, new product development, organisational performance and team performance, as shown in the work of McBeath and Ball (2012) and Yadav et al. (2018). New knowledge is vital for the development of innovative ideas and/or new products. It was found by Storey and Kelly (2002) that a lack of knowledge was a key barrier to innovation within service firms. Likewise, numerous researchers, McBeath and Ball (2012), Yadav et al. (2018) and Al-Hussein et al. (2019) for example, discovered that knowledge sharing was a driver in the formation of innovative cultures. To summarise, knowledge sharing is considered

a key component that impacts on innovation because of its unique and ambiguous nature to firms (Yadav et al., 2018). Overall, the continuous collection and integration of new knowledge results in innovativeness, and there is enhancement of innovation and creativity in an organisation when employees share their accumulated knowledge and tangible experiences between them (Yadav et al., 2018; Al-Hussein et al., 2019). So, knowledge sharing is considered essential for both process and product innovation. As such, the hypothesis and the sub-hypotheses that follow were formulated:

H2: Knowledge sharing has a direct and positive impact on organisational innovation.

H2a: Knowledge sharing has a direct and positive impact on product innovation.

H2b: Knowledge sharing has a direct and positive impact on process innovation.

3.10 The relationship of knowledge sharing and TL

Leadership and knowledge are considered primary sources of the competitiveness of the organisations of today (Yukl, 2013; Navimipour and Charband, 2016; Geri et al., 2017). Sources for competitive advantage and the nature of competition for a firm rely heavily upon the degree to which there is sharing of knowledge between individuals and the extent to which leaders support employees and encourage them to achieve the goals of the organisation (Han et al., 2016). So, in the world of today, knowledge and leadership have become topics for organisations that have become greatly important. The literature on strategic management and organisational development shows that knowledge sharing behaviour amongst employees is promoted by TL (see Yukl, 2013; Han et al., 2016; Yadav et al., 2018, for example). The sharing of knowledge is essential for improving organisational performance since an entire set of essential knowledge and skills is provided so that individuals can do their work more efficiently and better achieve organisational goals (Son et al., 2020).

Several scholars have made the argument that KS is essential for all kinds of organisation; however, it may not be easy for individual knowledge to be turned into organisational knowledge since there is a tendency for employees to have

reluctance to share valuable expertise and knowledge, since they fear a loss of knowledge power and advantage when compared to others (Han et al., 2016; Son et al., 2020). So, in order for the sharing of knowledge to be effective, numerous factors ought to be considered, the most significant one being leadership (Anderson et al., 2017; Al-Hussein et al., 2019; Kleefstra, 2019). In essence, leaders have responsibility for the promotion and establishment of a culture that creates loyalty to the organisation, reinforces knowledge sharing and that has an overall respect for knowledge.

Various approaches may be employed in motivating people and in implementing future organisational plans. Transformational leadership can be influential in the creation and sharing of knowledge and its exploitation (Yadav et al., 2018). In practice, the leadership brings forward opportunities for potential to be acted out within an organisation. A key ability for transformational leaders is their giving to employees the opportunity of getting involved in various organisation activities so that they can know and understand them and can become better motivated towards mastery of their tasks and better performance (Son et al., 2020). In accordance with the work of Al-Hussein et al. (2019) and Mohammadi and Boroumand (2016), leaders can be considered as having a strong bearing upon the knowledge sharing within an organisation in positive ways through their being instructors and innovators. Likewise, it was highlighted by Le and Lei (2019) that within challenging times of change along with the adoption and implementation of innovation, a supportive climate for working is created by TL with the provision of sufficient resources for the facilitation of activities for KS amongst employees. The justifications above reveal the key role played by TL with regard to KS activities. Within the aviation industry context, it is, therefore, suggested that the following hypothesis and its four sub-hypotheses are considered:

H3: KS behaviour is directly and positively influenced by TL.

H3a: KS behaviour is directly and positively influenced by idealised influence.

H3b: KS behaviour is directly and positively influenced by inspirational motivation.

H3c: KS behaviour is directly and positively influenced by intellectual stimulation.

H3d: KS behaviour is directly and positively influenced by individualised consideration.

3.11 The KS mediation effect

Consideration is also given in this study to the mediation effect that KS of employees has in the relationship between innovation and TL. In justification of that mediating role, there needs to be the meeting of two conditions: firstly, innovation has to be both related to KS and to TL and, secondly, a direct connection between KS and TL ought to be established. The sections above, especially the section dedicated to the review of literature, have established that those conditions have, indeed, been met. Further, the links between KS and innovation (H2), and between KS and transformational leadership (H3) do suggest that transformational leadership impacts upon innovation through the effects it has upon knowledge sharing. So, for effective implementation of process and product innovation, there is a need for leaders to promote the behaviour of knowledge sharing and to create a culture wherein people readily share their knowledge. Whilst transformational leadership can directly impact upon innovation (H1), it has been suggested by research that, often, the direct effects have too great a complexity for them to be isolated (Haque et al., 2019). Also, it was argued by Al-Hussein et al. (2019) that mechanisms that could explain the mediating role played by KS within relationships between innovation and TL have been paid very little attention and, thus, there is a need for research that addresses and understands processes by which innovation is influenced by transformational leadership. So, in alignment with advice given in the work of Al-Hussein et al. (2019), this particular study has the argument that KS has a mediating role within relationships between innovation and transformational leadership; see Figure 1. As such, the hypothesis that follows and the associated sub-hypotheses are put forward for this study:

H4: The TL impact upon innovation is positively mediated by KS.

H4a: The TL impact upon product innovation is positively mediated by KS.

H4b: The TL impact upon process innovation is positively mediated by KS.

Based upon the relevant literature, the conceptual framework proposed, as shown in Figure 1, puts forward the hypothesised key variable relationship in relation to innovation, TL and KS. There is an expectation that the conceptual framework will achieve the objectives of the research through exploration of the KS mediating role in, as well as identification of, the direct relationship for innovation and TL.

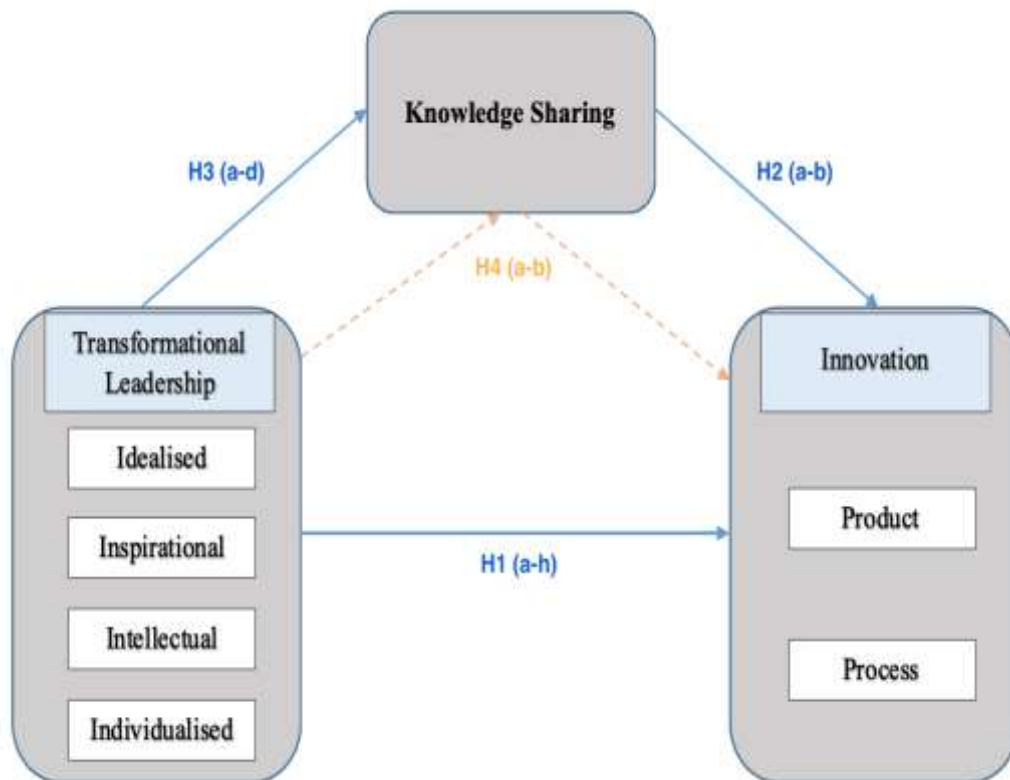


Figure 0.1 The Proposed conceptual research framework

Source: Adopted and adapted from work by Al-Hussein et al. (2019)

3.12 Summary

Numerous studies have explored the links between KS, innovation and TL in isolation as this chapter has presented. Critical evaluation of those studies clarified that empirical studies are lacking in regard to the KS role as a variable of mediation between innovation and TL within private and public environments within countries in the Middle East. Furthermore, no comprehensive research has

been undertaken previously that has concentrated upon those topics in GCAA within the UAE. Policy makers have begun to make considerable efforts within both the private and public sector towards reforming and enhancing the performance of the sector and to emphasise the significance of innovation for organisations, especially within the environments of the GCAA within UAE. Initiatives for KS and TL presence do have potential for helping the sector of the GCAA in enhancing innovation and helping it have greater competitiveness. So, there is development of a specific model for the study within this chapter consisting of 3 constructs, i.e., KS, innovation (including both process and product types) and TL (inspirational motivation, idealised influence, individualised consideration, and intellectual stimulation). The model has the aim of examining TL impact upon innovation by way of the KS mediating effect in the GCAA within the UAE. The research methodology and methods are presented within Chapter 4 which follows.

Chapter 4 The methodology and the research methods

4.1 Introduction

Within Chapter 4 there is discussion and justification regarding the research methodology and methods adopted within this research in order to collect and analyse data so that the study objectives can be achieved. In essence, the chapter is concerned with selection of an appropriate methodology, and the methods that are associated with it, by which there can be measurement of research validity. So, chapter 4 shows clearly how the research is to be conducted, along with associated justification, and it shows the reasons for the selection of particular data collection instruments rather than others. The research project development was based on a relevant literature review, the nature of the problem and the research objectives. The overall purpose of the research study was the provision of an examination of understanding with regard to adaption of a system for organisational learning capacity and extension overall of the associated body of knowledge. Based on a review of the published literature, a conceptual model was developed and hypotheses regarding knowledge sharing (KS), innovation and transformational leadership (TL).

So that there could be examination of key determinants of innovation, KS and TL, participants were to be asked for responses to numerous survey questions measuring various constructs included in the proposed theoretical model. This chapter outlines the data collection methods and explains the methods of statistical analysis employed in the research. This researcher employed a quantitative data collection method through use of a survey approach to the data collection from the staff targeted in GCAA (General Civil Aviation Authority) within the UAE. So that reliability and validity may be ensured, there was creation of a questionnaire survey based on previously validated survey instruments and scales. The wording of items, included within the questionnaire survey measuring the proposed model constructs, was adapted where considered necessary. The amendments were based on the review of published literature and the words used

were suitably amended so that they were appropriately fitting for the particular context of the study.

Utilisation of SEM (structured equation modelling) was undertaken so that data analysis could be performed on the conceptual model (final version) by employing the latest version of AMOS (Analysis of Moment Structure) software. The primary intent of the statistical approach was to allow relationships to be modelled by the researcher and for them to be predicted among constructs within the hypothesised manner. This chapter begins in Section 4.2 with discussion regarding the philosophical research standpoint. Then, in Section 4.3 there is discussion around the positivist research approach and in Section 4.4 discussion around the interpretivist approach and their associated research strategies. The following four sections have detailed discussions related to the research methods employed for acquisition of the data that would be evaluated. Section 4.9 then has description of the statistical tests employed in the analysis of the collected data. Ethical considerations of the researcher, when conducting the research project, are clarified in Section 4.10. Finally, a brief chapter summary is offered in Section 4.14.

4.2 Philosophical type perspectives

Philosophy is considered by Saunders et al. (2012) as a way in which arguments and reasoning are used for seeking truth and knowledge and, as a framework, serves to put forward guidance because scientific research should be conducted. Smith et al. (2008) noted there were several advantages to the study of philosophical matters when undertaking research. Firstly, such study can help researchers to clarify their research designs. Secondly, considering philosophical stance can help in guiding researchers to identify and create appropriate research designs that would, potentially, have been beyond their previous experience. Thirdly, philosophical considerations help researcher to recognise if a particular design would probably work or not. Moreover, Saunders et al. (2009) argued that researchers that work in the social sciences need to start on their research designs by acknowledging their assumptions, both theoretical and philosophical, that are underpinning their specific investigations. So, a research philosophy is considered as a belief regarding the way the data (that is related to a particular phenomenon)

should be collected and analysed and, ultimately, utilised.

Generally, the research paradigm presents a limitation set, and there is an expectation that the researcher has respect for those limitations in the way the research work is undertaken; as such, the research paradigm offers an overarching viewpoint that serves to guide a researcher (Guba and Lincoln, 1994). It is important, then, that research project foundations are fully understood from a philosophical point of view since that results in enhanced abilities of researchers to select methodologies that are suitable for the job in hand (Holden and Lynch, 2004). Guba and Lincoln (1994) noted that the basis of research paradigms are their epistemologies, their ontologies and their methodologies. As pointed out by Carson et al. (2001), the epistemology and ontology are, respectively, terms defining reality's nature and the ways that such reality should be captured if research is to be credible. Clark et al. (2008) defined epistemology as a field of philosophy that focuses upon finding answers to 'How would it be appropriate for researchers to acquire the knowledge sought?' and 'What does knowing actually mean?'. The term 'epistemology' was viewed by MacKay (2014) as being in reference to the type(s) and degree(s) of proof needed so that it would be accepted that something is true.

Ontology, on the other hand, is considered by Sekaran (2003) as being in relation to what exists and the way in which reality is considered, whilst epistemology relates to theory for dealing with the way that knowledge in relation to external reality is acquired. In social science, the ontology term refers to principles primarily held by individuals regarding the considered matter's nature (Kaufmann and Clément, 2015). In conclusion, the ontology can be seen as the reality that the researcher investigates whilst, by contrast, the epistemology refers to the relationship existing between that reality and the researcher(s).

Reality may be seen as being objective and absolute in nature with singular truths. Meanwhile, the world could be considered by some as having multiple realities and truths. Given the plethora of existent social constructs, and the reliance on subjective interests, there is a need for researchers to make their standpoints clear and apparent. The researcher attempted to have objectivity in this research project

by keeping a detached distance from the subjects (research participants) under observation; as such, there was the aim of having an inquiry that was objective in order to make it possible to make time and context-free generalisations later on (Nagel, 1986). Moreover, the researchers have tried to keep stances that were disinterested whilst the inquiry was being conducted so that bias could be eliminated, emotional detachment maintained and also to avoid being too involved with the objects of study.

Regarding the methodology, there are two prominent key research approaches, i.e., an interpretivist approach and a positivist approach (Hussey and Hussey, 1997; Aliyu et al., 2014). An interpretivist approach involves qualitative, non-positivist approaches. Positivist approaches, on the other hand, are well known and scientific in nature and that are quantitative. Although the concerns of the two philosophical approaches are primarily the same, they both have positive and negative aspects depending on the various contexts in which the research is conducted (Bryman, 2001). To select an approach that is appropriate for undertaking the research project, there is first a need to understand and explain both approaches. As such, in the following section, both approaches are discussed with accompanying rationale for choosing the research philosophy for this study.

4.3 The positivist approach

A researcher that takes an approach that is positivist adopts a standing viewing that evidence or occurrence causes are sought by natural scientists without much regard being given for states that are subjective (Hussey and Hussey, 1997). By its nature, positivist research is deductive, with it perhaps including fact-finding surveys and questions of various kinds with the researcher controlling the subjects or variables under investigation by using closed questions. However, to obtain further details and opinions from participants, it is quite normal to include a number of open-ended questions. A controlled and structured approach is adopted for undertaking research by positivist researchers by outlining the topic of the research, formulating suitable hypotheses and adopted a suitable methodology for the research. Also, there is maintenance of a standpoint that is neutral between the phenomena under investigation and the researcher by clearly noting the distinction between reason and feelings (Carson et al., 2001).

Historically, there has been a successful association between the physical and natural sciences and positivism. Often, however, positivism has been criticised as it is perceived as lacking the sound consideration of human characteristics and elements that can impact on an organisation; as such positivism is perceived as being rather incomplete or unrealistic (Aliyu et al., 2014; Uduma and Sylva, 2015). From the positivist school of thought, disinterest must be maintained by researchers throughout by resisting bias and through the maintenance of an emotional detachment from the participants and objects of the study. So, when a positivist approach is adopted by researchers, they traditionally maintain a type of neutrality and use a style of writing that is formal, that includes terminology of a technical nature and that is expressed with a passive and impersonal voice (Tashakkori and Teddlie, 1998). The research methods that are used in positivist approaches were originally developed in the natural sciences to study natural phenomena. The most used quantitative methods regarding information systems for management are survey methods, laboratory experiments, formal methods and numerical methods (Orlikowski and Baroudi, 1991). The quantitative research approach is based on deductive reasoning; a priori postulation occurs followed by data gathering so that the validity of hypotheses can be tested.

4.4 The interpretivist approach

An approach that is interpretivist hails from an anti-positivist school of thought with an implication that usually there is adoption of a philosophical stance that is empathetic that seeks to understand the milieu of the research subjects based on their own particular and personal viewpoints (Saunders et al., 2007). In philosophical terms, interpretivism takes the view that phenomena are studied in their own natural environment and contends that only an interpretation that is subjective can reach a fuller appreciation of reality (Hudson and Ozanne, 1988; Thanh and Thanh, 2015). Although more significance is being attached to perspectives that are interpretivist in social research, they have also been criticised to a certain degree. Several arguments have been put forward from a view that false consciousness can be involved to concerns regarding the paradigm having a relativist nature (Aliyu et al., 2014). Instead of attempting neutrality as do positivist researchers, those researching using an interpretivist approach believe

that reality is multiple, complex, continuously changing and, ultimately, subjective in nature (Collins and Hussey, 2009; Creswell, 2014).

Interpretivist researchers assume that only interpretation of reality that is subjective and intervention would enable a researcher to fully understand reality (Davison, 1998). Unlike positivist researchers, interpretivists do not hold that there are distinctions for facts that are black and white; instead, interpretivists consider values to be various shades of grey with them interlinked in some way. Within positivism, people and their interpretations and perceptions, and their meanings and understandings are considered as being primary sources of data. Interpretivist approaches naturally promote the importance of qualitative data in the development of knowledge (Kaplan and Maxwell, 1994). So, for a researcher that is interpretivist, a sound appreciation of the nature of an organisation can only be acquired in a subjective way using qualitative techniques (Uduma and Sylva, 2015). The two paradigms of positivism and interpretivism clearly different perspectives on reality and so they necessitate differing methodological choices. However, the correct methodological paradigm needs to be chosen to more fully appreciate the decisions and methods that could, potentially, be controversial. Table 4.1 below provides a summary for the main differences between interpretivism and positivism.

Table 0.1 Summary of key differences between positivist and interpretivist approaches

Paradigm	Positivism	Interpretivism
Ontology	Reality is considered objective and singular, with natural laws governing knowledge.	Reality is considered subjective and multiple, with knowledge seen as being socially constructed with the involvement of personal interpretations.
Methodology	An experimental approach is adopted whereby research questions and/or hypotheses are put forward in advance before being subjected to empirical investigation.	An investigative approach is taken by the researcher with individual constructions elicited before being hermeneutically refined with the aim of generating constructions that have an apparent substantial consensus.
	The researcher adopts a deductive approach and uses a predetermined research design before trying to position the research so that it can be generalised.	The researcher adopts an inductive approach, with a topic studied within its own particular context and with the utilisation of a design with its emergence.

Source: Based upon the work of Guba (1990)

In conclusion, it may be stated that a positivist approach involves a belief that truth has concrete existence independent from an observer, and reality is separate from the individual(s) that may be considering/observing it. In contrast, within an interpretivist approach, it is believed that an observer shapes or influences a construct representing truth, and reality is seen as being a concept that is relative and that is not separate from the observer. Positivist approaches also rely on experiments and empirical evidence in discovering truth. Interpretivist approaches, however, rely upon observations that are subjective with meaning obtained from interviews so that perceived truths may be described.

4.5 Selection of research philosophy for this research

The key driving forces lying behind the choice of philosophical paradigm of the research are the main research questions and the objectives of the study. The primary purpose of the study is to identify factors that impact upon innovation and KS and to explore relationships between those factors and with TL. Based on the various theories and models related to innovation, KS and TL, there was development of a hypothesised model. In order for the hypotheses of the proposed model to be tested empirically and tested, a positivist (quantitative) approach was employed in the study as it was considered consistent with the topic. In fact, the suggestion was made by Hussey and Hussey (1997) that, firstly, with a positivist approach, it is normal to study literature that is relevant so that a suitable theory can be established, and then to construct related hypotheses.

Following careful consideration of the study nature, the study objectives and apparent characteristics from a variety of other paradigms, the decision was made that the appropriate domain for the study was a positivist approach rather than one that is interpretivist. Various considerations helped in arriving at the decision that there ought to be a positivist stance for this study. Firstly, an intense review of the literature related to the fields of innovation, KS and TL, hypotheses were formulated, and the decision was made that testing of them would be done through collection of data by way of self-administered questionnaires. It was considered, then, that adoption of a positivist approach was the most appropriate way. Secondly, since deduction is utilised within positivism, the process of the research starts with theory and leads to drawing of inferences for the support or revision

of the hypothesised model (Al-Jalahma, 2012). This is an objective for this study. Also, since deduction was established as the approach to be used in the research project, a positivist stance is, justifiably, considered more suitable. Thirdly, in accordance with Creswell (2009), a positivist paradigm is considered to have applicability when there is no connection between the researcher and the reality; indeed, the study findings should have replicability regardless of the researcher who undertakes the study.

A neutral position is maintained by the researcher during all of the research process and so, it was considered appropriate to adopt a positivist research paradigm. Finally, the research approach was considered as being appropriate since it allowed for study of the attitudes and behaviour of a population that is sizeable. The structural equation modelling technique was considered appropriate for analysing data sets that were sizeable, and it will be used in hypothesis testing and causal model development; as Straub et al. (2005) noted, it is normal for this sort of statistical measurement to be employed within a positivist approach.

Employing a positivist approach and the collection of data via surveys or questionnaires to investigate the relationship between leadership and innovation is grounded in a strong methodological rationale. The positivist paradigm, with its roots in empirical and observable phenomena, is particularly apt for this area of study, as it focuses on quantifiable data and objective analysis, which are crucial in understanding complex organizational dynamics. This is in line with the assertions of Bryman (2016) who emphasized the value of positivism in business and management research for its reliance on statistical and empirical evidence. Surveys and questionnaires, as suggested by Creswell and Creswell (2017), are effective tools for capturing a wide range of data across different leadership styles and innovation metrics, facilitating a comprehensive analysis. This method is not only scalable but also allows for a consistent and standardized approach to data collection, ensuring reliability and validity in results, a point echoed by Saunders et al. (2019) in their discussion on research methods in business studies. By leveraging these techniques, researchers can apply robust statistical analyses, such as regression or correlation, to identify patterns and draw substantive conclusions about the leadership-innovation nexus, thereby

contributing to the existing literature with empirical rigor and clarity.

4.6 The research approach

The two cited research approaches that are most commonly utilised within adaptation studies are the deductive approach and the inductive approach. Both approaches are associated with different epistemological standpoints (positivism or interpretivism), and they both can be utilised within quantitative or qualitative methods of inquiry (Creswell, 2014). Normally, a deductive approach is one that has association with positivism whilst, on the other hand, an inductive approach is usually associated with interpretivism (Bryman and Bell, 2011). Deductive research advocated theory testing by use of empirical observation. Deduction is made up of logical conclusions being deduced from a set of input propositions as well as other information that is available. The group of propositions may be assumptions under investigation or that the researcher believes (Bryman and Bell, 2003; 2007). Deductive reasoning is associated with positivism and natural science models of quantitative and social research (Bryman and Bell, 2003). Often, deductive content analysis is used in cases where a researcher wishes to undertake a re-examination of existent data in a different or new context (Elo and Kyngas, 2008). Deductive approaches, then, are top down; this can be explained as developing hypotheses that have been derived from pre-existing theory which is then followed by formulation of the research strategy for application to the hypothesis testing (Wilson, 2010).

Within this study, a conceptual framework was developed for testing to gain a better appreciation of factors for successful adoption of implementation of methods toward innovation, KS and TL. Based on the characteristics of the deductive approach that have been outlined above, that stance will be employed in this study. In an approach that is inductive and bottom-up, however, the researcher aims to collect data following which theory is developed founded on the findings (Lodico et al., 2010). As opposed to a deductive approach, in inductive research an emphasis lies on defining events as forms of narrative and there is consideration of importance of description of contexts and consideration is shown for personal views of those impacted by phenomena as they attempt to assign them with meanings. It is considered, then, that an inductive approach is

most appropriate for use in the study to acquire in-depth information in respect to issues and so that fundamental perceptions, feelings, values and motives in regard to those issues can be unearthed (Hair et al., 2004). To conclude, it may be stated that inductive studies are by their nature interpretivist, and they try to investigate new phenomena by using qualitative data. Since it has been established that this study is quantitative in nature, it is believed that it would have been inappropriate to select and use an inductive approach.

4.7 The research strategy

A research strategy is the general plan through which established objectives within a research project can be achieved. Choosing a strategy to follow depends upon the problem nature within research (Noor, 2008). Saunders et al. (2009) argued that 6 different research strategies can be used in a particular design of research, i.e., ethnography, the experiment, the survey, the case study, grounded theory and action research. The sub-sections that follow describe each strategy in turn with justification for preferred strategy for adoption in this research project.

Ethnography

Ethnography has concern for scientifically describing human culture, and so it is firmly rooted within research approaches that are inductive. The aim of ethnography is to explain social worlds. It can involve work over extended time periods and so is considered a time-consuming research strategy. Therefore, there is a need for a lot of adaptability and responsiveness so that changes and new patterns can be reflected in such a study. Participant observation is the main method of data collection in ethnography; it involves a researcher becoming a full member of the working group under investigation (Collis and Hussey, 2003).

The experimental strategy

Experiments are those kinds of study that are conducted within designed and controlled environments which normally involved various groups receiving treatment(s) so that precise relationships can be contrasted amongst specific variables (Galliers, 1991). It is important when undertaking an experiment to address external validity (generalisability relating to findings) and internal

validity (degree that findings can be attributed to the intervention method of the study). There is employment of experiments in exploratory and explanatory research to answer questions of a ‘how?’ and ‘why?’ nature. Those critical of experiments argue that since the setting of a laboratory is abstract and unrealistic with fewer dimensions than settings in real-life, the findings that are acquired from the context of the laboratory cannot be utilised to predict real world behaviour. As the instigation of this research project cannot be done within an environment that is controlled, an experimental strategy will not be adopted.

The survey

The survey is a commonly used data collection method and research strategy in management and business research (Mathers et al., 2009). The survey allows collection of a large data volume from a population that is large by way of the highly economical and efficient use of data collection instruments such as the interview (oral) and the questionnaire (written). Researchers commonly use surveys since considerable data volumes can be collected through the highly efficient and effective investigation of large numbers of subjects; as such, generalisability of research findings to the entire population is facilitated (Sekaran, 2003; Saunders et al., 2012). This research employed a survey since the design helped to deal with the feelings, opinions and thoughts of respondents in a way that was more direct, especially in respect to collecting information related to attitudes and beliefs (Yin, 1994; Zikmund, 2003). The survey method also offers the chance to evaluate information more accurately with respect to the sample of the population; as such, the researcher is permitted to reach their own conclusions regarding generalisation of findings acquired from the sample (Creswell, 1994). Moreover, the survey method is efficient, quick and economical, and can be easily administered to a large sample (Churchill, 1995; Sekaran, 2000; Zikmund, 2003). Also, surveys are commonly used when there is empirical testing of hypotheses, if the extent of the researcher involvement is minimal and if the assumptions of the study are founded on methodologies that are positivist and that are, in the main, quantitative (Creswell, 2008).

Case studies

With case studies, phenomena can be explored at depth in their context, with consideration also given to the perceptions of those people involved. Yin (1984) described the case study as a group of methods usually associated with qualitative types of study. In case study-based research, data is typically collected from a small number of organisations through use of interviews that are in-depth and from observational and longitudinal studies. In case studies, particular individuals, events or programmes are investigated in depth over a defined period of time.

Grounded theory

The method of grounded theory research was originally introduced by Glaser and Strauss (1999). It has the aim of gathering data and analysing it in ways that are systematic so that there can be development of theory grounded in that data. Data collection starts without the formation of hypotheses or the putting forward of initial frameworks of theory. Instead, theory is developed within grounded theory studies from the collected data by way of observation in the initial stages of the research. The findings are then tested using further observations with constant referral back to the data to develop the final shape of the grounded theory. As this research has a study approach that is deductive (top-down), it is not considered suitable to employ grounded theory to test the conceptual framework that was developed in the above chapter.

Action research

Collier (1945) developed the 'action research' term in reference to manners of understanding and managing relationships between theory and practice. Researcher involvement in the social system being investigated within this type of approach; it is used in studies that are qualitative. There is an interactive and iterative process that the action research strategy passes through from diagnosis, the planning, and action taking to the evaluation. This type of strategy is useful for addressing questions of a 'how?' nature. No testing of theories or variables is involved in the method for the generalisation of the findings (this is the primary

purpose of this study). Usually, action research can be time-consuming and rather expensive, and whilst it aims to integrate theory and practice, this study will not employ the action research approach.

So, as numerous model hypotheses need to be tested, and generalisations found, it is justifiable to use a survey approach instead of any of those other types of approach noted above.

4.8 Selection of research methods to employ in collecting data.

The survey approach is particularly well-suited for investigating the relationship between leadership and innovation in the UAE's aviation sector due to its effectiveness in gathering extensive data across a diverse and complex industry. As Saunders et al. (2009) highlight, surveys allow for the collection of standardized data from a large sample, essential in capturing the varied nuances of leadership styles and innovation practices within this dynamic sector. This approach aligns well with the recommendations of Bryman (2012), who notes the efficacy of surveys in business and management research for generating quantifiable data that can be statistically analysed for patterns and correlations. The aviation industry in the UAE, known for its rapid growth and technological advancements, presents a unique context where a survey can effectively capture broad perspectives from multiple organizations and levels of management, providing a comprehensive understanding of the leadership-innovation dynamic. Furthermore, as Creswell (2014) suggests, surveys are advantageous in exploring complex relationships in specific industries, offering the scalability and generalizability needed to draw meaningful conclusions that can inform policy and practice in the fast-evolving aviation sector.

Creswell and Clark (2011) asserted that researchers can employ two main methods of undertaking a research project, i.e., qualitative methods and quantitative methods. Quantitative research is linked to a research philosophy that is positivist and involves the use of numerical data of an objective nature. Quantitative research has the aim of theory testing by way of examination of the causal relationships existing between variables (Bryman, 2012; Saunders et al., 2012). Normally, there is association of quantitative research with a positivist

standpoint, a deductive, top-down approach, a survey strategy, and types of study that are correlational. There is a tendency for quantitative research to employ observable and pre-determined methods that have highly structured data collection techniques for testing hypothetical generalisations (Hoepfl, 1997; Creswell and Clark, 2011). Since this study had the main purpose of investigation of the impact that transformational leadership had upon innovation and KS, and since it was based on the characteristics mentioned above, it is seen as appropriate to have quantitative methods as an integral methodological aspect for employment in the study for the testing of the hypotheses posited and the generalisation of the study findings.

The key advantages to employing the method described included the generalisable nature of the results of the quantitative research, and there could be measurement and employment of the findings in the development of theories of significance that were robust in statistical terms. However, a wide range of naturalistic and interpretive approaches are methods are involved within qualitative research that are concerned with understanding the meanings that people attach to decisions, values, beliefs and actions in real settings within the social world (Ritchie and Lewis, 2003). Qualitative research is associated with an interpretivist research philosophy with involvement with collection of a variety of empirical methods in order to interpret particular phenomena, events, problems, occurrences, behaviours, experiences and so on.

The aim of qualitative research is to capture wealth of experiences that people have in respect to their own peculiarities and personal terms. Within this kind of research, no statistical techniques are employed, however this approach is used often when research topics are relatively unknown. Comprehensive investigation if research problems are sought by qualitative research by studying numerous perspectives upon the matter in question. Also, qualitative methods include face-to-face interview and observations of behaviour. In order to develop a robust and statistically significant causal model, the qualitative approach is not considered to have primary appropriateness for this particular study, So, there will not be use of qualitative data within this study. To conclude, there is employment of a quantitative data collection method for our research project, as well as a survey

approach to obtain data regarding acceptance/adoption of the conceptual framework. Table 4.2 below presents that overall approach taken to the research.

Table 0.2 Approach taken overall in the undertaking of this particular research project

Philosophy of the research	Positivist
Approach of the research	Deduction
Strategy of the research	Quantitative
Data collection method	Questionnaire survey

Source: Developed by the researcher

4.9 The design of the questionnaire design and research instrument employed.

Measurement is a research aspect that is fundamental. Saunders et al. (2012) noted that there are open questions and closed questions. Questions that are open-ended or open are useful to researchers when they seek detailed answers that may require words and/or numbers to be written down. Although this type of question allows respondents to provide answers in keeping with their own style, if the researcher leaves too much space, that element may be off-putting to some. Closed-ended or closed questions allow for an answer to be selected from several alternatives that respondents are guided towards. The answers could have a range negative scoring to positive scoring with, perhaps, a choice between no and yes, or alternative answers with several options, perhaps 7 or more, 5 or 3 to select from. This nature of question is easier and quicker to handle for respondents.

It was noted by Collins and Hussey (2009) that researchers that seek to gather opinions and feelings from a large sample, yet at a relatively low cost, tend to develop questionnaires involving carefully structured and pre-tested lists of questions. In regard to this study questionnaire, in undertaking a review of literature related to change management, the researcher discovered that a common research practice for many scholars working in the particular field was to employ previously validated scales of measurement (Madsen et al., 2005; Holt et al., 2007; Shah, 2009; Zheng et al., 2010). Moreover, Bryman and Bell (2011) highlighted that, through employing questions posited by other researchers, the

research may usually develop a more credible instrument of research that offers greater validity and reliability in respect to the results acquired. So, an instrument was employed in this research that had been validated previously so that an investigation could be undertaken into factors impacting upon KS, innovation and TL amongst employees of the GCAA within the UAE.

Within an early stage in the design process, the researcher developed a preliminary pool of measurement items for all research model constructs that was founded on information gleaned during the literature review. During the following stage, these items were initially screened with consideration taken of UAE cultural characteristics. In accordance with the advice of Easterby-Smith et al. (2012), the research has an aim that was three-fold. Firstly, there was an aim to ensure the selected questions for inclusion had appropriateness for UAE culture. Secondly, there was an aim to confirm questions were directly related to the key research questions so that acquired data would, indeed, answer those questions. Thirdly, the aim was to ensure all questions had clarity, were unambiguous, free of complexity and did not use terms that were unfamiliar or too technical; in this way, it could be ensured that the measurement of answers would be done in a manner that was effective and straightforward.

Within the latter questionnaire development process stages, there was incorporation of appropriate items for all of the research constructs within an initial draft to be reviewed by 4 experts who were academics based within the UK within LJMU, and managers based in the UAE within the GCAA); that review ensured clarity for the statements in the questionnaire and that the scales of the measurement were comprehensible. A detailed brief and clear instructions were included in the questionnaire, with arrangements made to facilitate ease of response. Respondents were advised of the nature of the research, the researcher background, and reasons for undertaking the study by the information letter. Participants were given assurance of privacy and confidentiality and given the opportunity to receive copies of the research once completed. The participants were also informed that their questionnaire completion would just take up about 15 or 20 minutes of their time. Questionnaire development was originally undertaken in English, without it being considered necessary to have a translated

version into Arabic since most of the respondents that worked within the oil and gas sector had a grasp of English that was sound.

4.10 The structure of the questionnaire

As was noted above, the basis for all of the measurement scales used in the study questionnaire was a combination of previously validated instruments taken from various studies in relation to leadership and learning organisation from literature related to business, adoption and management. The five-point Likert scale was the primary questionnaire instrument employed in exploring if participants agreed with the statements or disagreed with them. The Likert scale is often used in questionnaire surveys for the measurement of attitudes (Miller and Brewer, 2003). To align with advice given in Oppenheim (2009), a Likert scale was adopted in the survey partly because they allow for bigger answer ranges from respondents and, also, because of the tendency of Likert scales to have a good level of reliability. In addition, as suggested by Bryman and Bell (2011) the questions that were shorted and most straightforward were placed at the beginning of the questionnaire. The structure of the questionnaire was designed so that various opportunities for responses were presented, and the arrangement was split into two primary sections as explained briefly in the following pages.

Part ‘A’ of the questionnaire: Personal attributes/participant demography

The initial main questionnaire section is in respect to information regarding participant demography, so that information could be provided that was concerned with participant personal attributes (see Appendix 5). Indeed, demographic information is the focus for the initial four questionnaire items, No.1 to No. 4. Variables of age, gender, education level and the number of years spent in post have applicability as interventions that may impact upon results related to questionnaire survey implementation. Many similar researchers are known for having investigated multidimensional constructs for organisational learning, such as Zagoršek et al. (2009) and Santos-Vijande et al. (2005); they sought knowledge of individual contexts by way of application of demographic factors.

Part ‘B’ of the questionnaire: Critical factors related to TL impact in GCAA

The second main questionnaire section had regard for critical factors related to TL impact on the GCAA. In this section, respondents were asked to indicate whether they agreed or disagreed with the presence and the degree of importance in relation to factors (independent variables) linked with recent initiatives of attitude based on the implemented leadership. The theoretical constructs were operationalised by using items that had been validated previously in relevant research. Adapted items were validated and wording changes were done to tailor the instruments for the purposes of our particular study. Level of disagreement/agreement was put forward within this section; a scale from 1 to 5 rating was done, with 1 being representative of strong disagreement and with 5 being representative of strong agreement. There was division of the theoretical construct element into three key sections, namely TL, KS and the innovation. Those key sections are briefly described below along with the listing of the items that are associated with them.

Part ‘C’ of the questionnaire: Transformational leadership (TL)

As noted in Chapter 2, TL context focuses on the manner in which leadership attitude characteristics can impact on innovation and KS. In this first section, factors that are fundamental in relation to TL are listed, i.e., the constructs of the idealised influence, the inspirational motivation, the intellectual stimulation and the individualised consideration. Each of these are briefly described below along with associated grouped items in relation to the relevant construct.

(a) Idealised influence

The construct of idealised influence, referred to as II, comprised seven items employed in determination of the extent to which respondents were in agreement or disagreement with statements regarding adaption of the new framework of the study. The items were adopted from the research of Day and Antonakis (2012b), Densten (2002), Avolio et al. (1999), Bass and Avolio (1994) and Bass (1985).

(b) Inspirational motivation

The construct of inspirational motivation, referred to as IM, comprised five individual items employed in measuring degree that participants were of the belief that the study survey was user-friendly, easy to use and necessitated a minimal degree of effort. The items were adopted from the research work of Day and Antonakis (2012b), Densten (2002), Avolio et al. (1999), Bass and Avolio (1994) and Bass (1985).

(c) Intellectual stimulation

The construct of intellectual stimulation, referred to as IS, comprised five items that were adapted from the work undertaken previously by Day and Antonakis (2012b), Densten (2002), Avolio et al. (1999), Bass and Avolio (1994) and Bass (1985).

(d) Individualised consideration

The construct of individualised consideration, referred to as IC, comprised four items that were adapted from the studies that were undertaken previously by Day and Antonakis (2012b), Densten (2002), Avolio et al. (1999), Bass and Avolio (1994) and Bass (1985).

Part ‘D’ of the Questionnaire: Mediating Factor and Dependent Variables

Part D of the questionnaire includes items related to knowledge sharing (mediating factor) and Innovations (dependent variables). The items of the said constructs are adopted from previous sources whose detail is provided below.

Knowledge Sharing

Hooff and Weenen (2004) had an original instrument that consisted of thirteen items proven to be valid and reliable. Indeed, there has been widespread use of those items within numerous previous research (see, for example, Liao et al., 2007; Lin, 2007; Behery, 2008; Kamasak and Bulutlar, 2010; Tohidinia and Mosakhani, 2010; Alhady et al., 2011; Abdallah et al., 2012; Cheng, 2012; Kim et al., 2013; Tong et al., 2013). There was derivation of those items from the authors and modification of them so that they would be appropriate for use within the environment of the GCAA.

Innovation

As mentioned within the previous sections, innovation will be used in this study as dependent variable comprising 13 items as adopted from the work of Bass and Avolio (2000), Skerlavaja et al. (2010) and Al-Hussein et al. (2019). The two constructs of process innovation and product innovation were used as dependent variable. Process innovation reflects utilisation of new service delivery methods through development and employment of new technology. Product innovation is in reference to the extent that GCAA employees accepted new products and developed and implemented them.

4.11 The pre-testing and pilot study

It can be advantageous to undertake a pilot test so that instrument weaknesses can be identified before the instrument is more fully administered to actual intended populations (Saunders et al., 2007). Pilot studying and pre-testing are considered by Sekaran (2003) to be essential design aspects for a survey questionnaire; they must be conducted prior to the main survey and/or initial data collection phase to enable the validation of the instrument and to ensure there are no errors or doubts about the questionnaire survey. Moreover, a pilot study has the function of ensuring an instrument can collect the required data for the answering of the research question. The implication, then, is that the usefulness and efficiency of the questions that have been formulated, and the administration procedures, have been appropriately tested (Herbert et al., 2015). As such, pre-testing and a pilot study were done prior to the use of the questionnaire survey in the main study; the purpose of these was to avoid confusion and misinterpretation by participants as well as the detection and identification of any errors or ambiguities. Similarly, there was pre-testing or piloting of a questionnaire so that it could be ensured that the questions were worded correctly, with a logical flow to them and accompanied by instructions that were clear and adequate for the job.

4.11.1 The data collection of the pilot test

In alignment with advice from the work of Arain et al. (2010), there was inclusion of a small sample of 40 respondents from within the total population. So,

following review and revision of the questionnaire, it was distributed amongst sixty GCAA employees accompanied by a participant information sheet (see Appendix 6). The cover letter fully briefed participants regarding the study importance and its purpose. Participants were given information and instructions regarding completing the survey and given assurance that the responses would be kept confidential. Also, participants were asked for their completion of the questionnaire and provision of feedback regarding its style, content, and clarity. A total of fifty participants gave their responses with participation within the pilot study; there were just forty questionnaires, however, that were completed fully and therefore usable. So, the sample of the pilot study comprised forty respondents. On average, participants took fifteen to twenty minutes in answering the questionnaires. It was notable that no significant complaints were made regarding understanding the language and instructions of the questionnaire. There were, however, a number of comments and suggestions made for improving the questionnaire for the further stages of the data collection. As such, based upon those suggestions, a number of minor modifications were done to the questionnaire.

4.11.2 Validity and reliability

It is important to give due consideration for the reliability and validity of survey instruments. Generally, validation for the questionnaire (the survey instrument for our study) demonstrates that accumulated information provides evidence that is suitable for inferences to be made regarding the population, based on the types of statistical analyses used (Creswell, 2009). The researcher can assess the validity of the survey tool by checking the contents of it, the criteria of it and the constructs used. An assessment can be undertaken by reference to the existing literature regarding instrument validation or through face validity that involves instrument validity determination with assistance for an appropriate expert panel (Pallant, 2001; Creswell, 2009). The ‘reliability’ term refers to the measurement of the consistency of the instrument (Heyes et al., 1986). There is employment of pilot study results to test the reliability and validity of the questionnaire (Pallant, 2001).

As the section above noted, to ensure the reliability and validity of the instrument (the questionnaire), only previously validated items and constructs are used. There can also be used of several reliability tests for the confirmation of consistency in the instrument output. Cronbach's Alpha is also a widely recognized statistical tool used to assess the reliability, specifically the internal consistency, of a survey or questionnaire. It measures how well a set of items (or questions) measures a single latent construct. When the Alpha value is high (generally above 0.7), it suggests that the items consistently represent the underlying concept, enhancing the reliability of the instrument. This is crucial in social science research, as noted by George and Mallery (2003), who assert that Cronbach's Alpha is pivotal in ensuring that a set of items reliably measures an intended construct. Tavakol and Dennick (2011) further emphasize its importance in educational and psychological studies for determining the internal consistency of a test, making it a standard tool in research methodology. By employing Cronbach's Alpha, researchers can confidently ascertain the consistency of responses across survey items, thereby ensuring the validity of their findings and strengthening the overall quality of their research.

As mentioned above, the method that is used most widely by academics to measure reliability is through internal consistency checking; examination of that may be achieved through use of the reliability test for inter-item consistency, with an ideal alpha scale greater than 0.7 (Nunnally, 1978; Ghauri and Gronhaug, 2002; Sekaran, 2003; Field, 2009). As such, in order to assess internal consistency of measurement items in the questionnaire, the Cronbach's alpha test was performed on the data by using SPSS software. In our research project by using all 37 variables, the Cronbach's alpha coefficient had a value of 0.961; this indicated that the instrument of measurement (the questionnaire) had good internal consistency for all the constructs, therefore it could be considered reliable. Moreover, the Cronbach's alpha values for each construct investigate lay above the 0.70 level of acceptability. The final coefficients for reliability are shown in Table 4.3 for the questionnaire pilot study.

Table 0.3 Cronbach’s alpha test results in relation to questionnaire construct reliability

Constructs		No of items	Cronbach’s alpha	Comments
Transformational leadership	Idealised influence (IIN)	7	0.753	Accepted as > 0.7
	Inspirational motivation (IM)	5	0.883	Accepted as > 0.7
	Intellectual stimulation (IS)	5	0.703	Accepted as > 0.7
	Individualised consideration (IC)	4	0.929	Accepted as > 0.7
Knowledge sharing		13		
Innovation	Product innovation (PRDIN)	5	0.782	Accepted as > 0.7
	Process innovation (PROIN)	8	0.712	Accepted as > 0.7

Source: Created by the author

4.11.3 Questionnaire sampling strategy

The concept of the sampling is considered as the taking of a portion of a population and then the creation of observations with respect to that selected smaller group and then the generalisation of findings to a larger population (Burns, 2000). A sample may be defined in terms of any population section whether considered representative or not. The population definition is that is considered the entire set of all of the cases from which the samples are acquired (Saunders et al., 2012). Sometimes it can be impractical to collect data from an entire population using a survey method; as such, there is selection of a sample that is a subset or fraction of the total population under investigation. The concept of sampling is intrinsic for research surveying as it serves as the starting point for the planning of the fieldwork. Since there is an association of large data volumes with research surveying, sample selection from the entire population being investigated may prove to be the much more economical approach.

The technique used in the selection of the sample impacts critically on the validity of a survey, both in external and internal terms (Bryman, 2010). The sample selected must be representative in order for the generalisation to the larger population to be sound. The sampling methods may involve probability or representative sampling or non-probability or convenience sampling (Bryman,

2010). With probability sampling, each of the particular cases in a population may be selected or each case has an equal chance or probability of inclusion in the sample. Types of probability sample include stratified, systematic, simple and cluster sampling (Saunders et al., 2012). Non-probability sampling means that each of the particular cases within a population has an unknown probability of selection (Saunders et al., 2012). Types of non-probability sampling include quota sampling, convenience sampling and snowball sampling (Bryman and Bell, 2011).

In our particular research project, the study is considered a large scale survey since the defined population equates to all employees working in the various GCAA company departments based in the UAE. Therefore, it is clear that it is not possible for all the members of the research population to be assessed, especially since resources are limited in respect to finance, researcher effort and time. So, this study used a sample and probability sampling was employed so that external validity could be enhanced. It is considered by Tashakkori and Teddlie (2010) that external validity relates to the finding of generalisability hailing from a population study of a quantitative nature, the settings of the research, its time horizon and so on. Patton (2002) noted the aim of probability sampling is to choose many cases that are considered to be representative of the population being investigated, with the result being that there is breadth to the information gathered. As has been noted above, any of the employees working within the GCAA could have been targeted to be included within the study; so, the sampling strategy within this research project involves the probability sampling technique that is used most often, i.e., simple random sampling. Within the following section, explanation is given for the sample size used within this study.

4.12 The size of the sample

The sample size is an essential aspect to all types of statistical analyses. It was considered by Luck and Rubin (1987) that the greater the sophistication of statistical analyses, the larger the sample size that is needed. So, the sample size deemed necessary for this particular research was based upon the technique selected for the statistical analyses, i.e., SEM. As with other types of technique of statistical analysis, SEM requires a suitable size of sample to obtain reliable

estimates (Hair et al., 2006). Gorsuch (1983) suggested that there ought to be 5 participants at least for each construct and for each particular data analysis there ought to be no fewer than 100 individuals. Kline (2005) and Hair et al. (2006) proposed that a minimum size of sample ought to be at least 200 in order to guarantee robust structural equation modelling. In view of the above assumptions and recommendations, the concerns of the primary researcher were to acquire at least 200 usable responses. With an assumption that the rate of response would be a very conservative one, 850 questionnaires in total were distributed to potential participants to try and ensure that the required size of sample could be achieved.

4.13 Statistical analysis techniques used within the study.

A primary element of a research study is preparation for the analysis of the data, with a dependence upon whether the data collected will be qualitative or quantitative (Collis and Hussey, 2003). In this particular research project, there was utilisation of data collected from questionnaires in order to perform quantitative analyses of it. Once there was collation of the responses, they were then coded. Once coding was completed, the data was entered into SPSS. The hard copy of the data was entered by the researcher and the process completed within a month. Four steps were considered as being essential by Watling and Dietz (2007) for ensuring successful analysis of results, i.e., an available statistical tool, utilisation of conditions for all types of tool, knowledge in respect to the manner in which statistical calculations are performed, and acquisition of meaning from the result of the statistics. Both parametric and non-parametric types of statistical testing were given consideration. Field (2005) considered there to be numerous conditions for use of parametric tests as follows:

- Data should be obtained from one or more population(s) that have distribution that is normal;
- An apparent variance of the same level should be within all of the data, meaning that there should be a stability of variance of the variables at other level types as well;
- There should be measurement for the data interval level, i.e., the equal distance

lying between points upon the scale of attitude;

- Participant data ought to be kept separately from each other to avoid the responses impacting on one another.

While parametric statistical tests necessitate a normal distribution of data, the Central Limit theorem has suggested that normal sampling distributions are present with large samples even when it is considered that raw scores are not normal (Tabachnick and Fidell, 2007). As such, there was employment of parametric tests in this research and, because of the decision to do such, descriptive and analytical statistical analysis methods were chosen with them given priority. Moreover, the proposed framework was validated using techniques of SEM known to be popular for model testing. Before the SEM techniques are used, confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) were employed. A summary is provided in Table 4.4 below showing the analyses that were used in the research project. More details are provided in Chapter 4 in regard to the data analysis procedures used.

Table 0.4 Statistics summary

Statistics	Software employed	Utilisation purpose
T-test	SPSS	The determination over whether there is a significant difference in the means of the 2 groups.
ANOVA	SPSS	The determination if significant statistical differences exist between the means of 2 or more independent (unrelated) groups.
Correlation	SPSS	To investigate the existing relationship between 2 quantitative, continuous variables.
EFA	SPSS	To identify underlying relationships existing between measured variables.
CFA	AMOS	To test whether there is consistency in construct measures with the researcher's understanding of the factor in question.
SEM	AMOS	To analyse structural relationships existing between measured variables and latent constructs.
Frequency test	SPSS	To calculate the mode, mean and median so that the user can be helped in the analysis of results and in arriving at conclusions.

4.14 Consideration of research ethics

The 'ethics' term is in reference to the moral values and principles that form a basis for specific codes of conduct. In investigations like ours, the research ethics relate to the manner in which research is to be conducted and results reported (Collis and Hussey, 2014). A significant role is played by ethical considerations when research is conducted amongst people as the subjects. It was noted by Neuman (1995) note that researchers have to guide participants, seek to protect the human rights of them and to ensure matters are supervised in ways that serve participant interests. It was noted by Bryman (2012) that core ethical considerations in research include addressing any potential unethical research practices so that harm to participants can be avoided and to be sure that informed consent is given, privacy is not invaded and there is avoidance of any kind of deception. Busher (2002) also considered ethical codes vary between people and between cultures and from within one specific context or another. One particular manner can be acceptable within one specific setting whilst considered unethical

and/or unacceptable in another setting. Moreover, there may be trade-offs in ethical decision making wherein researchers should adopt a comprising attitude.

In this research, privacy matters have association with the use of the acquired participant information (Denier and Crandall, 1978). Confidentiality has involvement with issues of ensuring the safeguarding of the identity of participants (Cohen et al., 2000). There has been due consideration of all ethical requirements through the various study stages. The participants were informed of the aim of the study, the importance of it, and the reason why their participation was considered necessary. Participants were also given assurances that involvement was on a purely voluntary basis with their withdrawal possible at any point in the study. Also, participants were given assurances that matters would remain confidential and that there would be protection of their anonymity. Before the questionnaire was distributed and the data collected, an application of a research design was prepared and presented to the university Ethics Committee for approval during August of 2020. The research was conducted to accord with the prescribed guidelines, including observance of confidentiality during the undertaking of the research. The consent form and the letter to inform the research participants may be seen within Appendix 6.

4.15 Summary

The aim of this chapter has been to discuss methodologies and choose a suitable one before having discussion over the statistical techniques for utilisation in this particular research project. There is a recognition that, in the domain of methodologies, there are two, highly appreciated primary research approaches, i.e., an interpretivist approach and a positivist one. It is widely known that a positivist approach is one that is scientific that is quantitative by nature. An interpretivist approach is known for being more qualitative by nature. Both philosophical approaches impact upon the different contexts of research in one way or another, either positively or negatively; there are primary concerns, however, that are the same. Careful discussion was put forward in detail in this chapter regarding the approaches, along with sound justification for the particular methodology chosen for use in this particular research project. A quantitative (positivist) approach was adopted for this research as it was considered as having

consistency for consideration of the matter in question. Previous research has suggested that a normal process if undertaking research employing a positivistic approach is to undertake a literature review to establish the appropriate theory and to construct hypotheses that are suitable. As such, this research project sits in the domain of positivist approaches, instead of interpretivism, because a hypothesised model was developed once the literature had been explored thoroughly; as shown within Chapter 2, that approach enabled determination of the acceptability of the model that was adapted.

A quantitative and cross-sectional approach was employed by using a survey tool to collect the data. The survey method was used as a design was used to allow the accommodation of opinions, thoughts and feeling of respondents in a way that was more direct; this was especially relevant for the collection of information regarding attitudes and beliefs. Moreover, a survey approach put forward a way of evaluating information that was more accurate with respect to the sample, as well as letting the researcher reach his own conclusions regarding generalisation of the findings of the sample to the broader population. Also, surveying methods are quick, efficient and economical and can be easily administered to a large sample. In this chapter, details have been included from statistical analyses related to internal reliability, in addition to consideration of the need for validity, replicability and reliability, in general. Lastly, consideration was given for ethical matters within data gathering. In the chapter that follows, detailed analyses are presented in respect to the quantitative data that was acquired from the questionnaire surveys.

Chapter 5 Findings of the Quantitative Data

5.1 Introduction

The preceding chapter outlined the research methodology and dedicated considerable attention to the employed research methods. As this study primarily utilized quantitative methods, data was gathered through a survey, which forms the foundation of this investigation. Various statistical techniques were deployed to analyse the quantitative data with the aim of fulfilling the research objectives. Primarily, IBM SPSS Statistics software version 26.0 was leveraged for preliminary data analysis (IBM Corp., 2019).

This chapter is divided into three major sections. The first section details the findings of the descriptive data analysis, beginning with data management and data screening. It conducts an initial reliability check for key constructs and discusses the demographic profiles of participants. The second section utilizes factor analysis, presenting findings through exploratory factor analysis (EFA) (Child, 2006). Consequently, the processes and findings related to the validation of the measurement model, as well as the causal relationships among the proposed model variables, are reported. Based on the hypothesis test results, an alternative structural model developed through Structural Equation Modelling (SEM) is presented. Lastly, hypotheses are tested using path analysis and results are presented (Glass & Hopkins, 1996).

5.2 Data Collection, Preparation, and Preliminary Analyses

The quantitative data collection activity took place from August to November 2022. The survey questionnaire was distributed via post, email, and personal visits to 503 randomly selected General Civil Aviation Authority (GCAA) employees. However, only 333 employees participated in the study. The sample encompassed a diverse group of employees, differing in pay grades, education levels, and experience. The researcher commenced the procedure by soliciting a randomly selected sample's participation, addressing any questions regarding the instrument

and privacy (see Appendix 2). The data collection procedure, as described by Robson (1993), minimised potential bias as participants were not coerced to complete the questionnaire at a specific time or place.

Prior to any statistical analysis, the data underwent rigorous checking and preparation to ensure the reliability of results (Hair et al., 2010). This preliminary analysis encompassed screening for unacceptable values, missing values, and outliers. The survey response data were coded and integrated into a spreadsheet, with a review of the original data revealing minimal errors.

The data collected were reviewed and coded for data entry. Quantitative data were analysed using IBM SPSS Statistics version 27. The data was meticulously coded for ease of identification across the data editor. In line with the advice of Kline (2011) and Hair et al. (2010), the data underwent a thorough screening and cleaning process to ensure the accuracy of the statistical techniques used. Despite the exhaustive nature of this process, it is essential for avoiding inaccuracies and ensuring the appropriate fit of the model. Further, this study confirmed the data by screening for missing data, normality, linearity, and reliability before drawing conclusions from the data.

5.2.1 Missing Data

Handling missing data is a critical step in preliminary data analysis. Instances where survey respondents do not provide answers to certain questions are indicative of missing data. This nonresponse to items can arise due to multiple factors such as stress, distraction, general fatigue or exhaustion with the survey, lack of knowledge, confusion, or reluctance to respond to sensitive queries. Consequently, missing values can lead to a reduction in the sample size or introduce bias into the analysis. A substantial amount of missing data is problematic, potentially impacting the reliability, validity, and interpretation of the data (Tabachnick & Fidell, 2001). Approaches to managing missing data rely on the quantity missing and whether the missing responses are random or not. IBM SPSS Statistics includes a 'Missing Values Analysis' (MVA) procedure that statistically determines whether missing values are random or non-random by examining the distributions of missing data for potential systematic patterns (IBM

Corp., 2019).

Regardless of a researcher's efforts to acquire a complete dataset or design an impeccable experiment, nearly all research endeavours experience missing data, as noted by Scheffer (2002). Hair et al. (2010) emphasize that missing data compromises the statistical analysis of the original dataset by diminishing the power of the statistical techniques to identify relationships in the dataset and by introducing bias into the parameter estimation process. Ordinarily, if missing values constitute less than 5% of the sample, listwise deletion (removal of all cases with one or more missing values) is permissible (Nunnally & Bernstein, 1994). Nevertheless, data imputation—substituting missing values with probabilistic values—is the favoured technique as it generally minimizes estimation bias (Little & Rubin, 2002). Research suggests that if less than 1% of any variable's values are missing, it is typically considered negligible and unimportant, 1-5% can be handled by many statistical methods, 5-15% necessitates more sophisticated techniques, and more than 15% missing values could severely distort any further data interpretation (Acuna & Rodriguez, 2004; Cohen et al., 2013).

Out of 333 responses, 20 were deemed incomplete. In accordance with Hair et al.'s (2010) guidelines, surveys with missing data were excluded from further analysis, constituting a minor percentage (6.25%) of total responses. This practice of removing missing data is known as case-wise deletion (Malhotra et al., 2013). Therefore, the final dataset comprised 313 completed questionnaires, a count deemed acceptable for this study (for detailed results, see appendix 2).

5.2.2 Outliers

After treating the missing values, the next logical step was to consider outliers (univariate and multivariate) representing those cases with odd and/or extreme scores from other dataset observations. Errors in data entry, erroneous sampling techniques, missing values in calculation, and extreme responses on multi-point scales are among the many causes of outliers. It is likely that some respondents may not have taken the survey seriously or were in a hurry to finish or simply wanted the incentive. According to Hair et al. (2010) and Kline (2011), outliers

can negatively affect the results; particularly for multivariate analysis such as exploratory factor analysis (EFA), and correlation analysis it is essential to take care of potential outliers.

In this study, all variables are on five-point Likert scales; thus, compared to an ordinal scale, there is a high possibility of extreme value outliers. To check for the presence of univariate data outliers, a box plot was examined for each variable. Using the original data, no univariate outliers were found. Five cases were found to be multivariate outliers using Mahalanobis distances outside the cumulative chi-square criteria ($\chi^2 = 68.0$, $df = 36$). In order to improve the reliability and validity of the results, these were removed.

5.3 Assumptions in Multivariate Analysis

Estimation methods in SEM are predicated on normally distributed, continuous data, with independent observations and linearly related variables (Kline, 2010). For the current study, all participants answered survey questionnaires individually, resulting in independent observations. Normality and reliability of the data distribution are considered as one of the most important assumptions underlying various multivariate analysis tools such as factor analysis and SEM. Each of the assumptions is explained briefly below to highlight their importance and demonstrate how these conditions have been satisfied for the current study.

5.3.1 Reliability

The reliability of a measurement instrument refers to the extent to which it yields accurate, consistent and stable responses over time. When the result is consistent, a conclusion can be drawn that the results are not affected by chance (Field, 2009; Saunders et al., 2009). It is worth mentioning that an internal consistency test was performed at this early stage of data analysis to ensure that all constructs had acceptable Cronbach's alpha scores before applying any further statistical techniques (Factor Analysis, SEM, etc.). Therefore, in order to assess the internal consistency of all measurement items in the survey (all scale measures), Cronbach's alpha test was performed by running the data using SPSS 27. The results shown in following Table which indicate that Cronbach's alpha scores for all individual constructs are in the range of 0.756 to 0.971, the overall score being

0.830. Hence, all were above the recommended level of 0.7 (Nunnally, 1978; Sekaran, 2003; Field, 2009; Hair et al., 2010). Consequently, it could be said that no internal consistency problem was revealed up to this stage of data analysis.

Table 0.1 Cronbach's Alpha Test Analysis

Constructs		No of items	Cronbach's alpha	Comments
Transformational leadership	Idealised influence (IIN)	7	0.853	Accepted
	Inspirational motivation (IM)	5	0.783	Accepted
	Intellectual stimulation (IS)	5	0.813	Accepted
	Individualised consideration (IC)	4	0.921	Accepted
Knowledge Sharing		13	0.923	Accepted
Innovation	Product innovation (PRDIN)	5	0.882	Accepted
	Process innovation (PROIN)	8	0.753	Accepted

5.3.2 Normality

Not adhering to the assumption of normality can significantly impact data analysis and how well the proposed model fits the data (Kline, 2011). Before assessing multivariate normality, univariate normality is typically examined. Techniques to check for univariate normality include histograms and skewness and kurtosis measures. Skewness reflects the distribution's symmetry, while kurtosis measures the distribution's peak or flatness relative to a normal distribution (Hair et al., 2010). A normal distribution should have skewness and kurtosis values of zero. Skewness or kurtosis values more or less than +/- 1.00 could indicate potential problems, while extreme values are often identified as those reaching at least 2.0 for skewness and 7.0 for kurtosis (Yuan and Bentler, 1999). However, some researchers propose more lenient limits, suggesting skewness under an absolute value of 3 and a kurtosis index under an absolute value of 8 do not signify significant normality issues (West et al., 1995; Doornik and Hansen, 2008; Kline, 2011).

Multivariate normality is often evaluated using the Kolmogorov-Smirnov (KS) goodness-of-fit test. However, it's worth noting that with large sample sizes,

significant results can often be obtained even with minor deviations from normality. If the data is not normally distributed, a non-linear transformation could be advantageous.

In the current study, histograms were used to assess each univariate study variable, and measures for skewness and kurtosis were collected. All the univariate distributions had skewness and kurtosis values within acceptable limits, with a few showing borderline values (absolute values between 1 and 2). The KS test was significant, as expected with a large sample size (n=313). Histograms displayed mostly normal distributions, with two composite variables (MSPSS significant other, MHLC God) showing negative skews. The use of non-linear transformations (square) reduced the skew but increased the kurtosis - which poses more issues for analysis than skewness. Hence, the transformed variables will not be used. Any departures from normality in the study dataset were minimal and infrequent (for details see normality result in Appendix 2).

5.4 Demographic Profile of the Study Sample

The results relating to part one of the questionnaire, i.e., demographic data, are now presented and described. Frequency distributions in respect of demographics are used to shed more light on the study sample characteristics.

Demographic characteristics of the participants as summarised in the above table show that:

Table 0.2 Demographic Characteristics of the Participants

Demographic Variables	Categories	Frequencies	Percentage
Gender	Male	259	77.8%
	Female	74	25.2%
Age	21-30	89	27.1%
	31-40	99	29.7%
	41-50	72	21.4%
	51-60	73	21.7%
Level of Education	High School	21	6.3%
	Diploma	30	8.9%

Demographic Variables	Categories	Frequencies	Percentage
	Bachelor	144	43.1%
	Master	135	40.5%
	PhD	3	0.9%
Experience	5 or Less	103	30.9%
	6 – 10	70	21.0%
	11 – 15	99	29.7%
	16 – 25	44	13.7%
	Over 25 years	14	3.5%
	Prefer not to say	3	0.9%

Gender

A total of 333 GCAA employees participated in the study. Gender analysis of participants shows that 259 (77.8%) of respondents were male and only 74 (25.2%) females. This is generally expected, given the fact that most of the organisations in the UAE are largely dominated by males and the aviation sector is no different. Women are generally underrepresented in the civil aviation industry. In this regard, the chosen sample largely reflected the actual population.

Age

In terms of age, participants of different age groups were included in the study. However, most participants – 57% (n=188) – are 21-40 years old. This result reflects the on-the-ground reality of GCAA where the minimum recruitment age is 21 and the age of retirement is 60.

Education Level

Regarding qualifications, most of the participants were educated, i.e., bachelor's degree or above. This is because the aviation sector is encouraging educated people to join. The demographic table above indicates that 135 participants hold master's degree and 3 were PhDs. This further shows that educational level is very high in the UAE's aviation institutions. The high level of education amongst the chosen participant also serves to enhance the quality of the findings of this

study since most participants were able to understand the questionnaire.

Experience

In terms of experience, participants from different levels of experience were included in the study. The participants represent different pay scales, organisations and years of experience. This is a good indication that the researcher included participants from various backgrounds, as shown in the above table.

5.5 Inferential Analysis through EFA, CFA, and SEM

The subsequent sections delineate the inferential analysis results, including Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and hypothesis testing through Structural Equation Modelling (SEM). The opening segment examines data reduction and factor extraction via EFA, followed by the unveiling of the CFA findings and a discussion on the measurement model validation processes. The final section elucidates the structural model and evaluates the hypothesized causal relationships between the variables proposed within the model.

EFA operates as a precursor to CFA in research analysis (Schumacker & Lomax, 2004), providing a means of reducing extensive survey items to a manageable selection of components. Its principal function is to unveil latent dimensions underpinning data set variables and identify unfit variables for the model (Galib, Hammou, & Steiger, 2018). It further facilitates the evaluation of items with the strongest relationships to a given factor (DiStefano et al., 2009). Thus, factor analysis seeks to assemble intercorrelated variables under a latent factor while explaining variance in the observed variables in relation to the latent factor. This not only enhances data understanding but also enables its application in subsequent analysis, such as testing of structural models (Field, 2000; Rietveld & Van Hout, 1993). This study initially employed EFA, followed by CFA and SEM, to confirm correlations and causal relationships between factors. The process entailed the following steps:

5.5.1 Procedure for EFA Implementation

The EFA process necessitated determining and justifying the factor extraction

method, factor rotation method, factor retention criteria, and interpreting the resulting factor loadings. It involved setting up the most appropriate factor extraction method to ascertain the minimal number of factors that best represent the set of variables associations (Pallant, 2013).

Extraction Methods

There exist several extraction methods such as principal components (SPSS default setting), principal axis factoring, generalized least squares, unweighted least squares, among others. However, the best extraction method in social sciences, lacking a universal extraction method, is one that reduces a large set of variables or scale items to a smaller factor number (Pallant, 2011; Robertson et al., 2014). For instance, when a researcher aims to reduce a large set of items to a manageable number, Principal Component Analysis (PCA) serves best. Thus, owing to the need for data reduction in this study, PCA served as the primary method of factor extraction.

Rotation Methods

Brown (2009) identified five rotation methods widely used in SPSS: Varimax, Direct Oblimin, Quartimax, Equamax, and Promax. Three are orthogonal (Varimax, Quartimax, and Equamax), and two are oblique (Direct Oblimin and Promax). Field (2000) advised testing both rotation types to select the most suitable data analysis method. Orthogonal rotation methods presume uncorrelated factors, while oblique rotation methods assume correlated factors (Field, 2009; Gorsuch, 1983; Pallant, 2013). Costello and Osborne (2005) argued against the suitability of orthogonal rotation in social science contexts where factor correlation is generally expected.

To choose between orthogonal and oblique rotation, Tabachnick and Fidell (2013) advised testing the data set with oblique rotation (Direct Oblimin or Promax from SPSS) and checking the factor correlation matrix for correlations exceeding ± 0.32 . If met, this warrants oblique rotation instead of orthogonal rotation due to the significant overlap in variance among factors. In this study, EFA was performed using IBM SPSS Statistics 27 to reduce research variables

for easier management. Both orthogonal and oblique rotation methods were employed, with most factor correlation matrix values from the Promax method exceeding ± 0.32 . The results of the component correlation matrix, showing correlations between extracted factors, are displayed in Table 5.3.

Table 0.3 Component Correlation Matrix Analysis

Component	1	2	3	4	5	6
1	1.000	.541	.323	.028	.343	.407
2	.541	1.000	.309	.139	.365	.430
3	.323	.309	1.000	.199	.379	.440
4	.028	.139	.199	1.000	.239	.259
5	.343	.365	.379	.239	1.000	.486
6	.407	.430	.440	.259	.486	1.000

Extraction Method: Principal Component Analysis.
 Rotation Method: Promax with Kaiser Normalization.

From a theoretical angle, Vogt (1993) said the method of choice by a researcher should attempt to relate the factors under investigation to theoretical entities. Resultantly, since Promax showed the clearest, simplest interpretable result and retained the most factors underlying the theoretical justification of this study, Promax, an oblique rotation and principal component extraction method, was found suitable. The findings of the various exploratory factor analyses carried out are presented and justified in the next section.

The EFA employed for the purpose of data reduction involved the elimination of any unrelated items and ensured a hypothesised grouping of the study variables. Since the measurement scales in the study comprised mainly of individual items that were previously used and validated in different studies in leadership and innovation context, the role of the EFA was to confirm the grouping, by the researcher, of the 34 measurement items into 6 variables, and to find solutions to cases where such confirmation was not possible.

5.6 EFA Results

The EFA employed for the purpose of data reduction involved the elimination of any unrelated items and ensured the hypothesised grouping of the study variables. Since the measurement scales in the study were comprised mainly of individual items that had been previously used and validated in different studies in a technology acceptance context, the role of EFA was to confirm the groupings made by the researcher of the several measurement items into six variables, and to find solutions to cases where such confirmation was not possible.

The principal component analysis (PCA) was run with eigenvalues exceeding 1 and a maximum of 25 iterations for convergence. Table 5.4 shows these results together with the total explained variance. This resulted in the identification and confirmation of six components, which accounted for 80.33% of total variance in the dataset. The first 6-factor solution emerged from PCA when applying Kaiser's criterion 'eigenvalue-greater-than-one' rule. It is also clear that the first factor contributed 36.37% alone, while the remaining five factors fluctuated in their contribution, from 14.55% for the second factor to only 5.74% for factor number 6.

Table 0.4 Percentage of Variance

Component	Initial Eigenvalues		Cumulative %	Cumulative %
1	7.276	36.379	36.379	36.379
2	2.911	14.556	50.935	50.935
3	1.973	9.867	60.802	60.802
4	1.542	7.709	68.511	68.511
5	1.215	6.077	74.588	74.588
6	1.148	5.742	80.330	80.330
7	.648	3.241	83.570	
8	.600	3.000	86.570	
9	.492	2.458	89.029	
10	.452	2.260	91.289	
11	.355	1.774	93.063	
12	.327	1.636	94.699	
13	.269	1.347	96.046	
14	.204	1.022	97.068	
15	.184	.921	97.989	
16	.145	.726	98.714	
17	.099	.496	99.210	
18	.081	.404	99.614	
19	.051	.254	99.868	
20	.026	.132	100.000	

Extraction Method: Principal Component Analysis.

Accordingly, Kieffer (1999) asserts that it is important to examine more than one factor retention method, since different retention methods may generate conflicting results. Therefore, a scree plot was also used to determine the final number of constructs.

According to William et al. (2010), inspection and interpretation of a scree plot involves two steps:

1. Draw a straight line through the smaller eigenvalues where a departure from this line occurs. This point highlights where the debris or break occurs. (If the scree is messy and difficult to interpret, additional manipulation of data and extraction should be undertaken.)
2. The point above this debris or break (not including the break itself) indicates the number of factors to be retained.

An inspection of Cattell's scree test plot (see Figure 5.1) also reveals a clear break after the 6th component and confirms the Kaiser's criterion result. In addition, the factors on the curve of the plot line prove the accuracy of the earlier 'eigenvalue greater-than-one' rule.

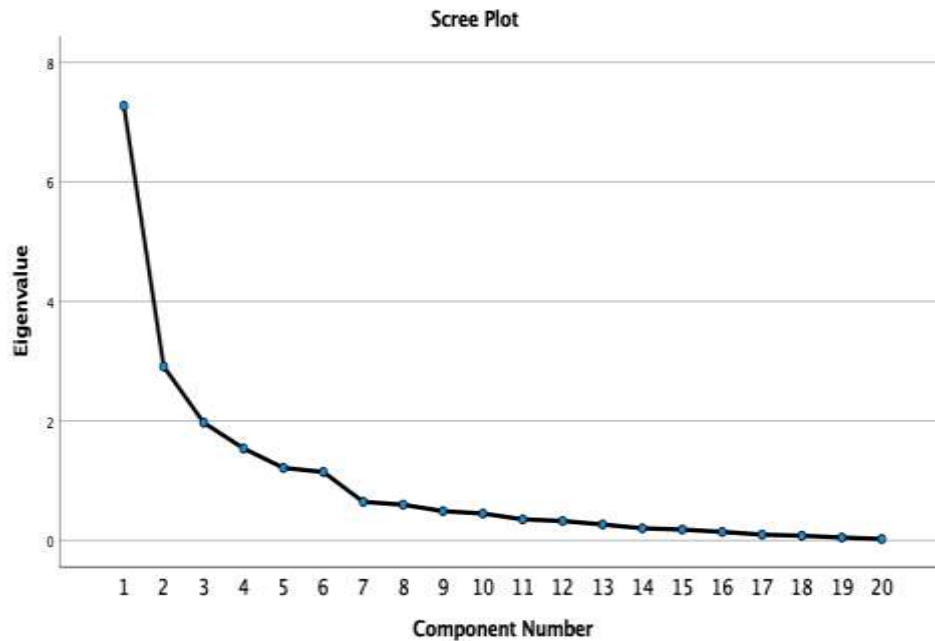


Figure 0.1 Scree Plot

After factors have been extracted, it is essential to identify to what degree variables load on them by rotation technique. PCA/EFA literature defines rotation as performing arithmetic to obtain a new set of factor loadings (Jennrich, 2006; Yamamoto and Jennrich, 2013). Rotation is thus important for improving the interpretability and scientific utility of the solution. Moreover, it is used to maximise the significant correlations between factors and variables and minimise weak ones. Similarly, it is commonly used to rotate the factors to formulate a better solution that is more interpretable (Kieffer, 1999). Different techniques can be used to develop factors from variables, but the rotation method is the most important to arrange them in more meaningful order (Field, 2006). There are two major rotation strategies available for researchers: orthogonal and oblique rotation (Kieffer, 1999; Field, 2006). However, the most commonly used method is varimax rotation of orthogonal techniques. Since, in many situations, it is unnatural for factors to be orthogonal to one another, a number of oblique rotation

methods have been developed (Yamamoto and Jennrich, 2013). However, Tabachnick and Fidell (2014) assert that different methods of extraction give similar results with a suitable dataset; in addition, different methods of rotation tend to provide similar results if the correlations pattern of the data is objectively clear.

Employing varimax as one of the orthogonal rotation strategies has several advantages. First, the factors are inherently easier to interpret and remain perfectly uncorrelated with one another. Secondly, according to Kieffer (1999), the factor structure matrix and the factor pattern matrix are equivalent; therefore, only one matrix of association has to be estimated. This means that the solution is more parsimonious and thus, in theory, is more replicable. However, orthogonal rotation of factor solutions may oversimplify the relationships among the factors and the variables, and may not represent these relationships accurately (Kieffer, 1999). Nevertheless, in studies related to social sciences, varimax orthogonal techniques are most commonly used for rotation (Alexander and Colgate, 2000). Therefore, the researcher decided to use the varimax rotation technique for this study. The varimax rotation technique was developed by Kaiser (1960); it produces factors that have large pattern/structure coefficients for a small number of variables or very low pattern/structure coefficients with the other group of variables (Kieffer, 1999). According to Hair et al. (2014), the purpose of varimax rotation is to maximise the variance of factor loading by highering the high loadings for each factor and lowering the small ones.

Tabachnick and Fidell (2014) suggest that if the factor loadings cut-offs from +0.50 or greater are considered highly significant and can be used for further analysis. Principal component analysis revealed that 20 of 34 items had factor loadings of more than 0.60 in six components. However, some components had cross loadings or only had one item loaded. In addition, a few items such as IS3, IC4 and PROIN4 did not load at all. Thus, problematic items/variables were identified and excluded from the rotation process. After removing the problematic items, a clean rotated component matrix with high loadings and fewer items was achieved, as shown below (Table 5.5).

Table 0.5 Principal Component Matrix

	Structure Matrix					
	Component					
	1	2	3	4	5	6
PROIN2	.935					
PROIN8	.913					
PROIN3	.792					
PROIN1	.737					
PRDIN2		.853				
PRDIN4		.841				
PRDIN3		.828				
PRDIN1		.752				
IM5			.981			
IM4			.953			
IM3			.945			
IIN2				.989		
IIN6				.954		
IIN5				.933		
IC3					.913	
IC2					.913	
IC1					.823	
IS2						.953
IS4						.934
IS1						.797

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

The result of the final matrix shows the six factors with fewer but highly correlated items, and 20 items that were subject to further analysis. These final factors and their items are further tested using confirmatory factor analysis.

5.7 Application of Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis (CFA) serves as a statistical method to verify the theory-driven relationships through a multivariate technique. In contrast to exploratory factor analysis (EFA), CFA is employed to evaluate the fit of the model and to test the convergent and discriminant validity of each construct. The constructs are permitted to correlate freely with other constructs, albeit without an establishment of causal relationships between them (latent variables). CFA affords a plethora of information beneficial in evaluating the comprehensive model fit and in verifying the convergent and discriminant validity of the scales. These tests will be elaborated on in the forthcoming sections.

Leveraging the findings of the exploratory factor analysis, CFA was utilized to substantiate the foundational structure of the study's principal constructs, scrutinize the reliability of the measurement scales, and evaluate the factorial validity of the theoretical constructs. AMOS 27 software was employed in this study to form the measurement model depicted in Figure 5.3, drawing upon the EFA outcomes.

In the diagram, latent variables are represented as ovals while observed variables are represented as rectangles. The dual-headed connections signify covariance among constructs and the single-headed connectors denote a causal trajectory from a construct to an indicator. The diagram also showcases how errors impact each question, though they don't exert influence on the latent variable(s). Structural Equation Modeling (SEM) furnishes numerical estimates for each parameter (depicted as arrows) in the model to indicate the robustness of the relationships. It is important to note that the following SEM model only includes the independent variables. The dependent variable (product and process innovation) will be included in the next round where hypotheses will be tested using path analysis.

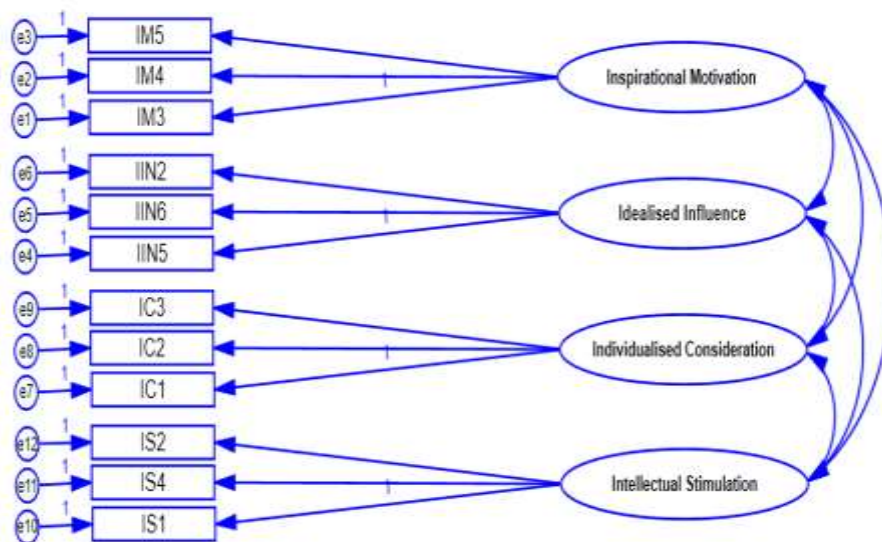


Figure 0.2 Original CFA Model Based on EFA Results

5.7.1 Assessing Overall Fit (CFA)

The measurement model in this study was evaluated using the Maximum Likelihood estimation techniques. The CFA technique has the ability to find how well any factor represents the data. This can be done by examining the model fit indices. In general, if the fit indices prove to be good, the model is consistently accepted. However, instead of rejecting fit indices that are not good, a model with unsatisfactory fit indices will be modified until it reaches acceptable fit indices.

In order to decide whether or not the model adequately represents the set of causal relationships, each of the measurement and structural models was subjected to the assessment of overall model fit. AMOS, however, generates 25 different goodness-of-fit measures and the choice of which to report is a matter of dispute among methodologists. Hair et al. (2006) recommends reporting chi-squared statistics in addition to another absolute index such as RMSEA and an incremental index such as CFI. They also recommended reporting the goodness-of-fit index (GFI) and the adjusted goodness-of-fit index (AGFI). Therefore, the fit indices used to assess model fit in this study were:

Chi-square (χ^2), which is one of the most basic indices of absolute fit indices that include, in general, the degree of freedom (df) value and (p-value) (Kline, 2011).

Comparative fit index (CFI) is also a commonly used measurement model fit index, where ranges between 0 and 1 with higher values indicate better fit. Values less than .90 are not usually associated with a model that fits well (Byrne, 2001; Hair et al., 2006; Kline, 2010).

Root mean square error of approximation (RMSEA) takes into account the error of approximation in the population. Generally, values less than 0.05 indicate good fit and values as high as .08 represent reasonable errors of approximation in the population (Byrne, 2001).

The goodness-of-fit index (GFI) was developed by Jöreskog and Sörbom (1984) for Maximum Likelihood estimation. A GFI closer to 1 indicates a better fit. Values more than .80 are usually associated with a model that fits well (Byrne,

2001; Hair et al., 2006; Kline, 2010).

The adjusted goodness-of-fit index (AGFI) takes into account the degrees of freedom available for testing the model. An AGFI greater than 0.9 indicates a good fit (Holmes-Smith 2000).

Model comparison indices (also known as incremental indices) compare the fit of a given model to the fit of another baseline model that assumes uncorrelated measurement variables, where all factor loading scores are fixed to 1, and all error values are fixed to 0. Examples of incremental indices include Comparative Fit Index (CFI), Normed Fit Index (NFI) and Non-Normed Fit Index (NNFI), which is also known as the Tucker-Lewis Index (TLI) (Schermeleleh-Engel et al., 2003; Kenny, 2011; Byrne, 2013). Based on the above discussion, this study used the following ‘Rules of Thumb’ criteria for an acceptable model fit (see Table 5.6 below).

Table 0.6 Model Fit Thresholds

Goodness-of-Fit Measure	Model Fit Thresholds	References
RMSEA	<0.10	Byrne (2001)
GFI	>0.9	Hu and Bentler (1999)
AGFI	>0.8	Etezadi-Amoli and Farhoomand (1996)
RMR	<0.05	Hair et al. (2010)
NFI	>0.9	Kline (2010); Lau (2011)
TLI	>0.9	Hair et al. (2010)
CFI	>0.8	Kline (2010); Hair et al. (2010)
Degrees of Freedom	≤ 3	Hair et al. (2010)
P-value	>0.05	Kline (2010); Lau (2011)

Figure 5.3 below shows the output path diagram of the CFA and is followed by the overall goodness-of-fit statistics in following Table 5.7. The full model-fit summary for the CFA appears in Appendix 3.

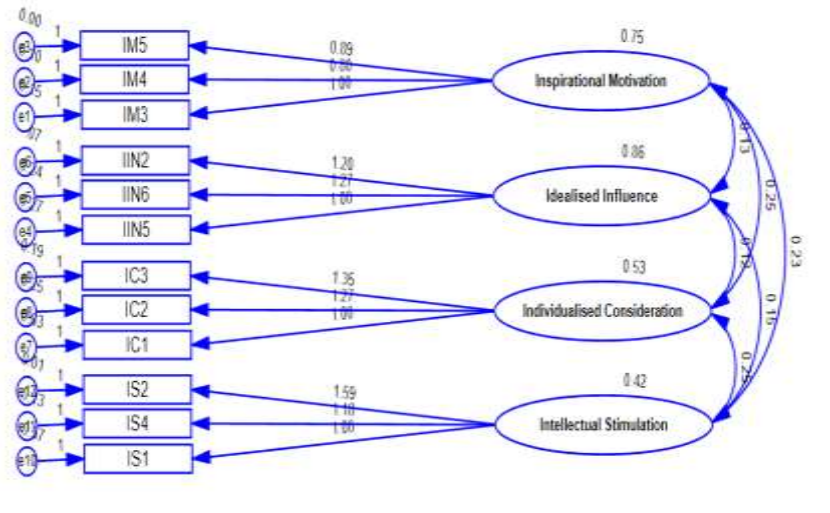


Figure 0.3 Output Path Diagram of the CFA

Table 0.7 CFA Full Model-Fit Summary

Goodness-of-Fit Measure	Model Fit Thresholds	Model Actual Measures	Results	References
RMSEA	<0.10	0.048	Acceptable	Byrne (2001)
GFI	>0.9	0.923	Acceptable	Hu and Bentler (1999)
AGFI	>0.8	0.911	Acceptable	Etezadi-Amoli and Farhoomand (1996)
RMR	<0.05	0.034	Acceptable	Hair et al. (2010)
NFI	>0.9	0.938	Acceptable	Kline (2010); Lau (2011)
TLI	>0.9	0.976	Acceptable	Hair et al. (2010)

CFI	>0.8	0.978	Acceptable	Kline (2010); Hair et al. (2010)
Degrees of Freedom	≤ 3	1.703	Acceptable	Hair et al. (2010)
P-value	<0.05	0.05	Acceptable	Kline (2010); Lau (2011)

Steiger and Lind (1980) proposed using RMSEA to measure the discrepancy for every degree of freedom, and CFI was recognized by Gerbing and Anderson (1992) as a consistent measure of fit. The comparison of the absolute fit of a specified model with the absolute fit of the independent model often employs metrics such as CFI, GFI and TLI. The CFA model demonstrated a good model fit in accordance with the standards and conditions outlined in Table 5.23. Following the attainment of a satisfactory model fit, it's essential to verify the measurement model's validity, which we will discuss next.

5.7.2 Convergent Validity

Convergent validity refers to the idea that a specific construct's indicators (items) should have a high shared variance or convergence (Hair et al., 2010). Anderson and Gerbing (1988) put forward three ad hoc tests for empirical evaluation of convergent validity.

Standardised factor loading

Most SEM programs, AMOS included which was utilized in this study, have maximum likelihood estimates as the default option. The problem with unstandardised loadings is their limited diagnostic information other than statistical significance and direction. Therefore, standardized loadings are analyzed because they are valuable and necessary for estimating reliability and discriminant validity. Hair et al. (2010) recommended a minimum standardised factor loadings (regression weights) threshold of 0.5.

Construct reliability (CR)

Construct reliability is another measure of convergent validity. A common guideline is for reliability estimates to be .07 or more to indicate good reliability. The lowest acceptable level for construct reliability is generally 0.70; however, this rule is not applicable to exploratory research. High construct reliability signifies internal consistency and that all the measures consistently depict the same latent construct.

Average variance extracted (AVE)

The variance taken from an item is the squared standardised factor loading, which represents the latent factor's explained variation in an item. The average variance extracted (AVE) in CFA is an overarching indicator of convergence. AVE is computed as the mean variance extracted for the items loading on a construct (Fornell and Larcker, 1981). An average variance extracted (AVE) of 0.5 or greater is generally considered to indicate satisfactory convergence (Hair et al., 2010).

Table 0.8 Convergent Validity of CFA Model

Serial No	Constructs	CR	AVE
1	Idealised influence (IIN)	0.903	0.757
2	Inspirational motivation (IM)	0.980	0.950
3	Intellectual stimulation (IS)	0.976	0.909
4	Individualised consideration (IC)	0.970	0.923

As shown in Table 5.8 above, CR values are greater than the recommended 0.7 and AVE values are higher than the threshold value of 0.5, which confirmed the convergent validity of the measurement model. Moreover, standardised factor loadings (regression weights) are well above the minimum threshold of 0.5.

Discriminant Validity

Discriminant validity is the extent to which a construct is truly distinct from other constructs. Thus, high discriminant validity provides evidence that a construct is unique and captures some phenomena other measures do not. Hair et al. (2010) and Anderson and Gerbing (1988) suggested a rigorous test to assess discriminant

validity. They suggest comparing the squared correlation estimates of any two constructs (latent variables) with the average variance extracted (AVE) values of these two constructs. The AVE estimates should be greater than the squared correlation estimates. Moreover, to confirm the discriminant validity, Kline (2011) and Hair et al. (2006) suggest that the square root of AVE for each pair of constructs should be greater than the correlation estimates. In Table 5.9, the diagonal elements in bold and blue represent the squared root value of AVEs and the off-diagonal elements are the correlation estimates. Each diagonal element is higher than the respective off-diagonal elements. Therefore, the discriminant validity for each construct was established.

Table 0.9 Discriminant Validity Analysis

Constructs	IIN	IM	IS	IC
Idealised influence (IIN)	0.870			
Inspirational motivation (IM)	0.211	0.979		
Intellectual stimulation (IS)	0.144	0.005	0.953	
Individualised consideration (IC)	0.233	0.115	0.052	0.960

In addition, discriminant validity can be confirmed if the maximum shared variance (MSV) is lower than AVE (Hair et al., 2011; Fornell and Larcker, 1981). As shown in the following table, Table 5.10, AVE values are higher than MSVs, which further confirmed the discriminant validity of each construct.

Table 0.10 Discriminant Validity Analysis (AVE and MSV)

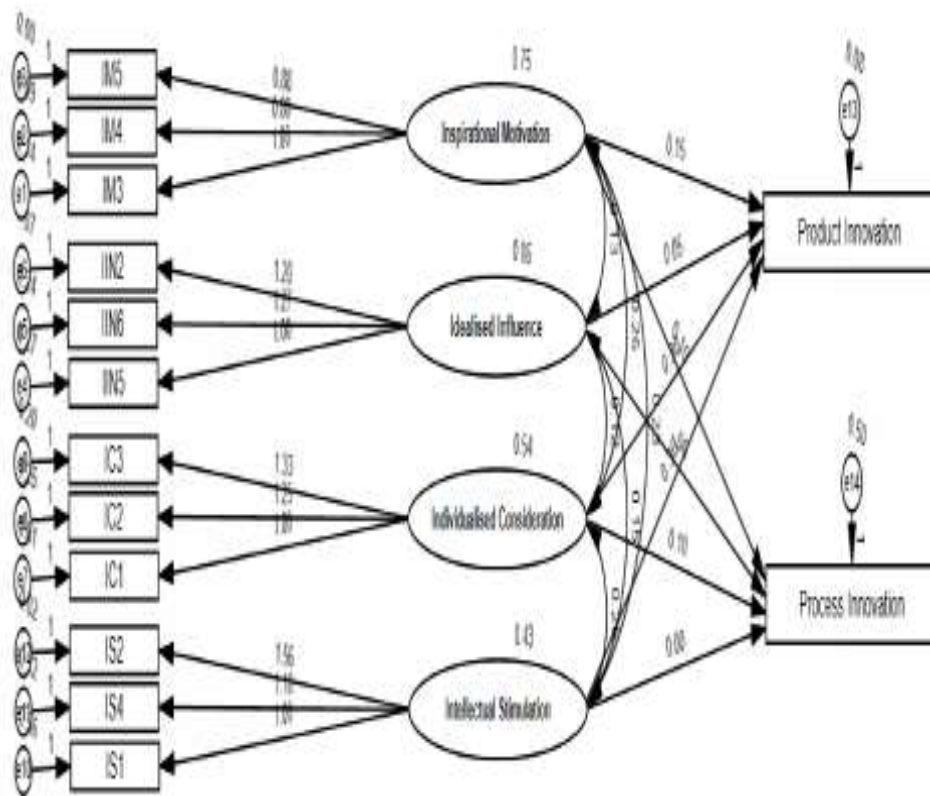
Constructs	AVE	MSV	AVE > MSV
Idealised influence (IIN)	0.757	0.068	Accepted
Inspirational motivation (IM)	0.950	0.118	Accepted
Intellectual stimulation (IS)	0.909	0.073	Accepted
Individualised consideration (IC)	0.923	0.167	Accepted

5.8 Path Model (Structural Equation Model)

The structural model serves as a conceptual illustration of the structural connections between constructs, often visualized via a graphical diagram (Hair et al., 2010). It connects the proposed model's constructs through one or more dependency relationships. Hair et al. (2010) suggested that the structural model is valuable in showcasing the interplay of variables across constructs. The structural parameter estimates, or path model, is an empirical depiction of the structural tie between any two constructs.

The final step in the decision-making process is verifying the structural model's validity. This is accomplished by comparing the fit of the CFA model and the structural model. This comparative analysis assists in determining to what extent the relationships specified in the structural model degrade model fit in comparison to the CFA model. SEM is employed to examine hypotheses and the causal impact of independent variables (IVs) on dependent variables (DVs), according to Byrne (2010) and Hair et al. (2011). Hence, to establish the relationships between the constructs of the hypothetical conceptual framework (refer to Figure 3.2), SEM was implemented.

The two-step approach proposed by Hair et al. (2011) was used in this study for the SEM process: first, specify and evaluate the measurement model to validate it, and second, scrutinize the structural model to assess the construct relationships (Hair et al., 2006). Both steps necessitated a review of the model fit indices and parameter estimates, based on procedures and criteria like those utilized in the previous section's CFA analysis.



SEM Model Fit: CFI 0.923; GFI 0.915; $\chi^2/df = 1.79$; RMSEA 0.048

Figure 0.4 Structural Model Assessment against INN

The results of the structural model assessment were evaluated against the criteria listed in Table 5.6 and are presented in the above figure, Figure 5.3. Goodness-of-fit indices and other parameter estimates were examined to assess the hypothesised structural model. The fit indices show that the hypothesised structural model provided a good fit with the data. The absolute fit measures and the incremental fit measures indicate goodness-of-fit of the model; particularly, values of CFI and GFI are well above the recommended value, i.e., 0.9.

5.9 Hypotheses Outcomes (H1a-h)

Having successfully validated the structural model's goodness-of-fit to the data, the next step was to examine the research hypotheses using path measurement coefficients (regression weight estimates and critical ratios) from the SEM analysis performed with AMOS 27. Table 5.28 summarises these results.

Table 0.11 Hypotheses Testing (Regression Weight Estimates and Critical Ratios)

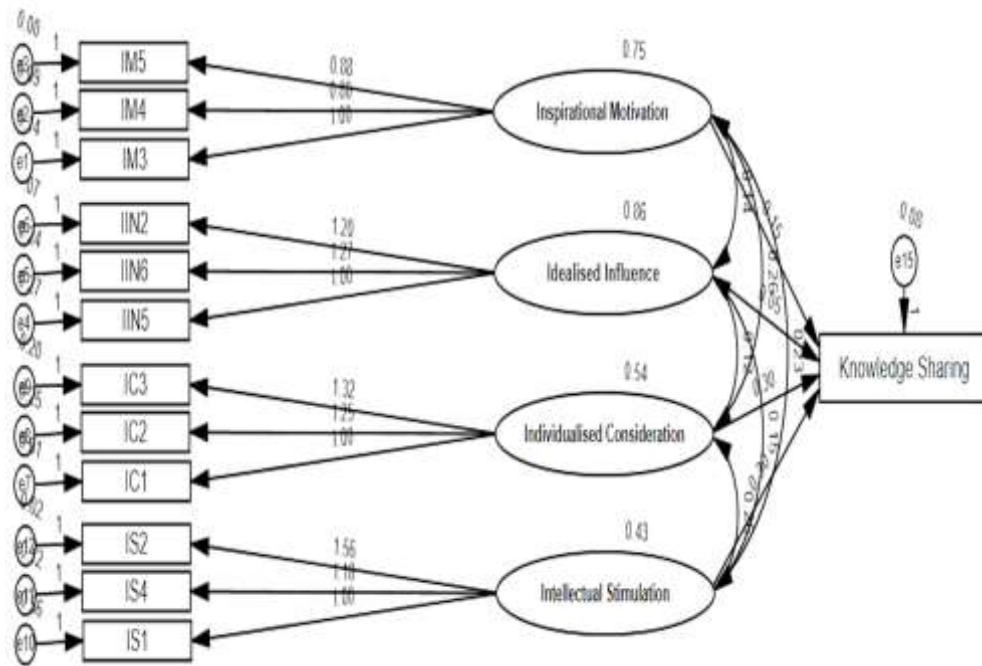
Dependent Variables	path	Independent Variable	Estimate	S.E.	C.R.	p
Product Innovation	←	Idealised influence (IIN)	.481	.072	6.655	***
Product Innovation	←	Inspirational motivation (IM)	.516	.060	8.664	***
Product Innovation	←	Intellectual stimulation (IS)	.012	.037	.324	.746
Product Innovation	←	Individualised consideration (IC)	-.017	.048	-.358	.720
Process Innovation	←	Idealised influence (IIN)	-.211	.038	-5.546	***
Process Innovation	←	Inspirational motivation (IM)	.144	.049	2.950	.003
Process Innovation	←	Intellectual stimulation (IS)	.013	.038	.324	.755
Process Innovation	←	Individualised consideration (IC)	.016	.053	.268	.510

Note: *** represents $p < 0.001$

In line with the advice from Hair et al. (2010), who state that a significant relationship is considered if the p value is less than 0.05, four of the eight variables were found to have a significant and positive relationship with DVs (product and process innovation). Thus, four of the eight hypotheses are accepted. The following section portrays results of other research hypotheses.

5.10 Hypotheses Outcomes (H3a-d)

Having successfully validated the above structural model's goodness-of-fit to the data, the next step was to examine the other research hypotheses using path measurement coefficients (regression weight estimates and critical ratios) from the SEM analysis performed with AMOS 27. Table 5.12 summarises these results.



SEM Model Fit: CFI 0.984; GFI 0.925; $\chi^2/df = 1.89$; RMSEA 0.038

Figure 0.5 Structural Model Assessment against KS

The fit indices (CFI = 0.98; GFI = 0.92; RMSEA < 0.05) of the above model show that the hypothesised structural model provided a good fit with the data; thus, next logical step is to test the proposed relationships.

Table 0.12 Coefficients Measurement (Regression Weight Estimates and Critical Ratios)

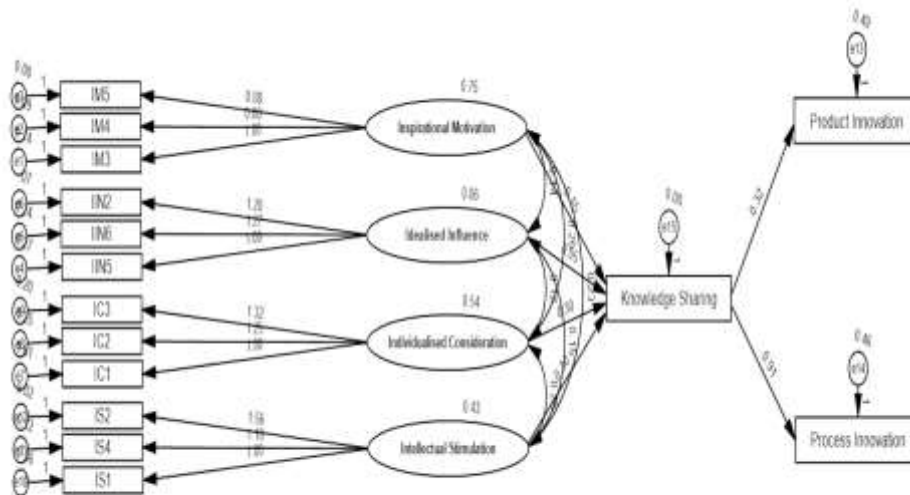
Dependent Variables	path	Independent Variable	Estimate	S.E.	C.R.	p
Knowledge Sharing	←	Idealised influence (IIN)	.160	.065	2.471	.013
Knowledge Sharing	←	Inspirational motivation (IM)	.516	.060	8.664	***
Knowledge Sharing	←	Intellectual stimulation (IS)	.144	.049	2.950	.003
Knowledge Sharing	←	Individualised consideration (IC)	.132	.024	1.850	.002

Note: *** represents $p < 0.001$

In line with the advice from Hair et al. (2010), and based on the criteria mentioned above, all four hypotheses are accepted i.e., $p < 0.05$. The above models and hypotheses portray direct relationship with the independent and dependent variables. The following section tests and explains indirect relationships and includes mediating factor (knowledge sharing).

5.11 Testing Mediating Factors (H4a-b)

After previously estimating the direct effects of other factors via hypothesis testing, the researcher tested with SEM, using AMOS 27, the indirect effects of the mediating role of Knowledge Sharing in the proposed model. Using the bootstrap procedure described by Preacher and Hayes (2004) and Hayes (2013), the recommended 5,000 bootstrapping samples were generated from the original data set for the overall sample ($n=333$). The following figure shows the full model using SEM which includes all variables under study i.e., independent, dependent and mediating variables.



SEM Model Fit: CFI 0.914; GFI 0.921; $\chi^2/df = 1.69$;
RMSEA 0.047

Figure 0.6 Path Analysis using Mediating Factor

Goodness-of-fit indices and other parameter estimates were examined to assess

the hypothesised structural model. The fit indices show that the hypothesised structural model provided a good fit with the data. The absolute fit measures and the incremental fit measures indicate goodness-of-fit of the model; particularly, values of CFI and GFI are well above the recommended value, i.e., 0.9. Since the model is stable and shows a good fit, the next logical step is to test the hypotheses i.e., mediating role of the knowledge sharing (KS).

Bootstrapping is a powerful non-parametric statistical technique that involves repeatedly resampling from the observed data set to generate a distribution of a statistic (like the indirect effect). This approach is particularly useful in the context of mediation analysis in AMOS because it provides an empirical method to derive confidence intervals for the indirect effects, which can often be non-normally distributed. When bootstrapping in AMOS, users can select the number of bootstrap samples (commonly values like 1,000 or 5,000 are used) to derive an empirical distribution of the indirect effect (Cheung & Lau, 2008). From this distribution, percentile confidence intervals can be computed. If this confidence interval does not contain zero, then one can conclude that the indirect (mediating) effect is statistically significant at the chosen level. This is particularly advantageous over traditional methods, such as the Sobel test, as bootstrapping does not rely on the assumption of normality of the sampling distribution of the indirect effect (Preacher & Hayes, 2008).

Table 0.13 Mediating Analysis Direct and Indirect Effects

Mediating Effect (H4a-h)	Direct Effect	Indirect Effect	Total Effect	Results
IIN→KS→Product Innovation	.431	.062	4.325	No Mediating Effect
IM→KS→Product Innovation	.546	.050	8.664	No Mediating Effect
IS→KS→Product Innovation	.052	.037	.324	No Mediating Effect

Mediating Effect (H4a-h)	Direct Effect	Indirect Effect	Total Effect	Results
IC→KS→Product Innovation	-.067	.048	-.358	No Mediating Effect
IIN→KS→Process Innovation	-.271	.036	-5.546	No Mediating Effect
IM→KS→Process Innovation	.184	.043	2.950	No Mediating Effect
IS→KS→Process Innovation	.023	.036	.324	No Mediating Effect
IC→KS→Process Innovation	.071	.052	.268	No Mediating Effect

The indirect effects of Knowledge Sharing factor on Product and Process Innovation were not significant. This suggests no mediation was confirmed for their impacts on Dependent Variables. Thus, H4 was not supported. The following Table 5.14 summarises the results of the hypothesis testing:

Table 0.14 Hypotheses Testing Findings

Hypotheses		Description	Results
H1	H1a	IIN will positively influence product innovation in GCAA	Accepted
	H1b	IM will positively influence product innovation in GCAA	Accepted
	H1c	IS will positively influence product innovation in GCAA	Rejected
	H1d	IC will positively influence product innovation in GCAA	Rejected
	H1e	IIN will positively influence process innovation in GCAA	Accepted

	H1f	IM will positively influence process innovation in GCAA	Accepted
	H1g	IS will positively influence process innovation in GCAA	Rejected
	H1h	IC will positively influence process innovation in GCAA	Rejected
H2	H2a	KS will positively influence product innovation in GCAA	Accepted
	H2b	KS will positively influence process innovation in GCAA	Accepted
H3	H3a	IIN will positively influence knowledge sharing in GCAA	Accepted
	H3b	IM will positively influence knowledge sharing in GCAA	Accepted
	H3c	IS will positively influence knowledge sharing in GCAA	Accepted
	H3d	IC will positively influence knowledge sharing in GCAA	Accepted
H4	H4a	Transformational leadership positively influence product innovation through KS in GCAA	Rejected
	H4b	Transformational leadership positively influence process innovation through KS in GCAA	Rejected

5.12 Summary

This chapter presented the findings of the survey data analysis. The survey was conducted to examine the employees' intention to adopt change programmes being implemented in the UAE's aviation sector. Several sections were used to show the survey findings. The analysis started by describing the respondents' profile and the survey descriptive statistics. The results of the exploratory factor analysis (EFA) show that nearly all the items loaded above 0.60, which is more than the minimum recommended threshold (Pallant, 2013). In addition, items that did not load or had cross loadings were excluded from the analysis to improve the

reliability. This test used principal component analysis (PCA) with the varimax rotation method to verify constructs' validity (Pallant, 2010).

In addition, the reliability test confirmed the internal consistency of the used constructs and showed that all the Cronbach's alpha values were above the recommended minimum threshold (0.70). Then, the study model was tested using structural equation modelling (SEM).

After attaining a satisfactory model fit, the SEM was employed to examine the presumed associations between independent and dependent factors. The majority of the hypotheses were affirmed. The findings, indicating significant connections between constructs, largely conformed to theoretical predictions. Nevertheless, the data analysis revealed some unexpected outcomes, especially regarding the mediating influence of knowledge sharing. These anomalies are elaborated upon in the subsequent chapter.

Chapter 6: Discussion

6.1 Introduction

The previous chapters covered the background of the research, literature review, conceptual framework of the model, research methodology and data analysis and finding. This chapter covers the discussion of the findings of the current study. A conceptual model was developed to examine the impact of transformational leadership (TL) on innovation (INN) through the mediating role of knowledge sharing (KS) processes, based on a literature review. The model was analysed and tested using factor analysis, exploratory and confirmatory factor analysis, SEM, and multi-group SEM.

This chapter provides an interpretation of the research findings presented in Chapter 5. The discussion links these findings to those from prior literature and concentrates on how these findings provide answers to the research questions, and in turn, meet the objectives of the study. Each section in this chapter deals with one of the main research questions presented in Chapter 1. Having presented the findings in respect of all the objectives, the chapter concludes with a short summary.

6.2 Refinement of the Measurement Scale

To commence, it's noteworthy that the foundational measurement scale for the survey consisted of 47 items, drawing upon existing scholarly research. This leads us to our primary focus: the operationalization and subsequent validation of study concepts. Historically validated tools were utilized to examine the impact of independent variables on the product and process innovation. Concerning transformational leadership (an independent variable), 21 items were sourced from Bass and Avolio (2000) and Avolio and Bass (2002), aimed at gauging its four facets: Idealised Influence, Inspirational Motivation, Intellectual Stimulation, and Individualised Consideration. Additionally, the product and process innovation, the dependent variables, were assessed through 13 items rooted in prior works such as Perri (1993), Skerlavaja et al. (2010), McGrath

(2001), and Daft (1978). Lastly, the aspect of knowledge sharing was gauged via 13 items, inspired by works from Hooff and Ridder (2004), Hooff and Weenen (2004), and Bock et al. (2005).

To ascertain the tool's reliability and internal coherence, both the Cronbach's alpha and exploratory factor analysis (EFA) were employed. The EFA revealed that various items, such as PROIN4, PROIN5, PRDIN5, IM1, IM2 and IS3 manifested subpar factor loadings (under 0.06). As such, these items were excised from further analysis (refer to Table 5.1). A further enhancement of the survey instrument was achieved through confirmatory factor analysis (elaborated in section 5.8.). A series of statistical analyses including convergent validity (CV), discriminant validity (DV), and average variance extracted (AVE) were then executed. This rigorous process led to the formation of theoretically grounded, reliable scales. These refined scales facilitated hypothesis testing. The culminating 7 constructs, encompassing 33 items validated by EFA and CFA, are delineated in table 6.1 below.

Table 0.1 Culminating Constructs

Constructs		No of items	Cronbach's alpha	Comments
Transformational leadership	Idealised influence (IIN)	3	0.853	Accepted
	Inspirational motivation (IM)	3	0.783	Accepted
	Intellectual stimulation (IS)	3	0.813	Accepted
	Individualised consideration (IC)	3	0.921	Accepted
Innovation	Product innovation (PRDIN)	4	0.882	Accepted
	Process innovation (PROIN)	4	0.753	Accepted
Knowledge Sharing (KS)		13	0.923	Accepted

6.3 Transformational Leadership and Innovation

The first objective of this study was to determine the effects of leadership and its dimensions (IIN, IM, IS and IC) on INN and its dimensions (PRDIN and PROIN).

In order to answer the above research question and as a result of reviewing the literature related to leadership and innovation, eight hypotheses (H1a-h)) were constructed for testing using **Structural Equation Modelling** (see chapter 3). These hypotheses were aimed to test the influence of independent variables (IIN, IM, IS and IC) on the research dependent variables (PRDIN and PROIN). Results of the hypotheses are discussed in detail in the following section.

Impact of Idealised Influence (IIN) on Innovation

The first factor which was tested against innovation using SEM was idealised influence. Idealised Influence (IIN) fosters a sense of trust and admiration in employees. Leaders who manifest IIN tendencies not only share risks with their team but also inspire dedication and reinforce the organisational vision. Such traits stimulate employees to be more industrious and innovative (Bass & Riggio, 2012).

IIN was hypothesised to have a significant influence on the product and process innovation in GCAA (hypothesis H1a and H1e). The relationship between idealised influence and innovation process is significant with a path estimate of 0.072, t-value of 6.655 and a significant p-value of $\leq .05$; hence, infers the support for the hypotheses H1a (IIN has a significant influence on PRDIN). The results of path measurement coefficients (Table 5.11) also revealed that the path coefficient between the IIN construct and PROIN was significant at a level of $p < 0.05$. As the Beta value was positive, these results infer that IIN positively influences PRDIN and PROIN in the GCAA (H1e).

The outcomes of the current investigation align with previous research conclusions. For instance, a study by Nusair et al. (2011) identified IF as the primary factor influencing innovation within the Jordanian public sector. Additionally, within Iran's banking industry, Faraji et al. (2014) determined a direct and significant correlation between idealized influence and facets of organisational innovation. These results concur with Vaccaro et al. (2012), who affirmed IF's positive impact on the organisational innovation process, emphasizing that leaders exuding idealized influence can catalyse a shift in cultural norms, subsequently fostering innovation and success.

Leaders who demonstrate idealized influence can galvanize their teams towards organisational objectives, setting a vision and nurturing an environment conducive to innovation (Sadler, 2003). Such transformational leaders employ mechanisms like idealized influence to mentally motivate their teams, bolstering innovation throughout the organisation (Faraji et al., 2014). Especially in the Arab context, leaders with idealized influence characteristics are widely regarded as trustworthy, commendable, and deserving of respect (Gupta & van Wart, 2015; Billingsley, 2009; as mentioned in Mellahi & Wood, referenced in Al-Hamadi et al., 2007). Numerous empirical studies on Arab management underscore the challenges faced by organisations in Arab nations, primarily due to bureaucratic structures and predominant power dynamics (Sabri, 2007).

Considering the UAE aviation sector, this study discerned that leadership reflecting idealized influence has a favourable impact on the innovation process, particularly in public service entities like the GCAA. This might be attributed to findings by Klein et al. (2009), suggesting that UAE leaders endorse a culture emphasizing achievement and fulfilment. Members are anticipated to be inventive and derive joy from their tasks. Hence, in organisations like the GCAA, a culture that focuses on employee development rather than mere utilization is anticipated. In the pursuit of goal realization, the GCAA has established specific metrics and indicators of strategic outcomes. These initiatives exemplify the GCAA embrace of the idealized influence aspect of Transformational leadership in promoting innovation (product and process).

Impact of Inspirational Motivation (IM) on Innovation

Inspirational motivation refers to a leader's capacity to craft and convey a vision that resonates deeply with their followers, making it not just acceptable but also motivating and uplifting (Gumusluoglu and Ilsev, 2009). According to Gooty et al. (2009), leaders adept in inspirational motivation has a unique ability to bring about transformation in their followers. They achieve this by setting ambitious standards, expressing hopefulness about future objectives, and emphasizing the significance of present-day responsibilities. Expanding on this, research has shown that such leaders often foster an environment where followers feel more

engaged, committed, and satisfied in their roles (Bass & Riggio, 2006). The overarching aim of these leaders is not just to accomplish tasks, but to inspire passion and enthusiasm in their team, driving both individual and collective success (Yukl, 2012).

The EFA table (Table 5.5) showed that only three variables related to the IM construct were loaded and significantly correlated with each other. Moreover, (IM) alone explains 9.8% of the total variance in the data and reliability ($\alpha=0.864$) is acceptable (Table 5.5). Additionally, CFA results confirmed that the IM construct has a high composite reliability and a high level of construct validity. Returning to the hypothesis posed at the beginning of this study, it was stated that inspirational motivation will have a significant influence on the innovation (PRDIN and PROIN) in the GCAA (hypothesis H1b and H1f). The results obtained through path analysis (see table 5.11) using AMOS 27 infers that both hypotheses are accepted ($p<0.05$) (for details, see section, 5.8).

The findings of the current study are similar compared to the previous studies in different contexts (see for example, Chang, 2012; Sarrors et al., 2008; Bass and Riggio, 2006 and DuBrin, 2007). Nevertheless, this result is different with those of McMurray et al., (2013). The study showed that Inspirational Motivation did not have a significant impact on innovation within the workplace. A potential reason for this outcome could be the restricted working hours prevalent in the public sector. While the GCAA leadership does inspire and motivate its employees, the shortage of time appears to hinder the enhancement of public services and the integration of innovation. For example, when leaders introduced training initiatives to bolster the innovation process, it did not receive widespread employee participation, possibly because of time constraints. Additionally, during the holy month of Ramadan, the working hours in the public sector, including GCAA, are shortened even further, as stipulated by Article 65 of the UAE Labour Law, which reduces daily working hours during this period (Emiratesdiary, 2017). It's essential for GCAA leadership to foster an environment that not only encourages but also supports innovation, primarily through effective communication and engagement (Smith & Lewis, 2011).

Inspirational motivation, a component of transformational leadership, is vital for fostering innovation within organisations. Inspirational motivation is when leaders articulate a compelling vision of the future, often evoking strong emotions, which can serve as a catalyst for innovation (Bass, 1985). Such leaders can frame challenges in ways that resonate deeply with their followers, creating a sense of purpose that often sparks creativity. When employees are motivated and inspired, they are more likely to think creatively, take risks, and explore new ways of problem-solving (Jung, Wu, & Chow, 2008). This is crucial for organisations such as GCAA that prioritize continuous improvement and are in industries where rapid change is the norm. Furthermore, when leaders consistently exhibit inspirational motivation, it fosters a climate of trust and collaboration. Such an environment is conducive to knowledge sharing, which has been recognized as a precursor to innovation (Wang & Noe, 2010). When people collaborate and share ideas, it enhances the possibility of combining diverse thoughts, leading to novel solutions. However, GCAA's top leadership needs to understand that while inspirational motivation can promote innovation, it must be complemented with other organisational factors like resource availability, proper training, and an organisational culture that supports experimentation (Amabile & Pratt, 2016). Sole reliance on inspirational motivation without the necessary support structures can result in diminished innovation outcomes. In conclusion, inspirational motivation plays a pivotal role in fostering innovation. Yet, it is most effective when paired with supportive organisational practices and resources.

Impact of Intellectual stimulation (IS) on Innovation

Intellectual stimulation (IS) pertains to a leader's capacity to question existing beliefs, embrace risks, and actively seek input from team members (Sarro, Cooper & Santora, 2008). Leaders' adept in using this leadership approach not only empower their followers but also inspire creativity and innovation in them. They encourage their teams to think differently, re-evaluate established norms, and devise fresh perspectives on longstanding challenges (Wang & Rode, 2010). Such leaders cultivate an environment of continuous learning and growth, promoting a culture where followers feel safe to express unconventional ideas and explore new territories (Dinh et al., 2014).

The EFA table (Table 5.5) exhibited that only three items/variables (IS2, IS4, and IS1) related to the IS construct were loaded on factor six and were highly correlated with each other. Moreover, factor three (IS) alone explains 5.6% of the total variance in the data and reliability ($\alpha=0.921$) is excellent (see Table 5.5). Additionally, CFA results confirmed that the IS construct has a high composite reliability (CR= 0.832) and a high level of construct validity (AVE=0.629).

IS was hypothesised to have a significant influence on the Innovation (PRDIN and PROIN) in the GCAA (hypothesis H1c and H1g). The results of path measurement coefficient revealed that the relationship between intellectual stimulation and innovation is insignificant with a path estimate of $P>0.05$. Hence, the hypotheses were rejected.

The recent findings from the GCAA study highlight that employee believe their leaders lack intellectual stimulation. This is evidenced in various practices, such as lack of endorsing unconventional approaches to address long-standing issues and using little innovative methods to manage tasks. These results are different with past research which underscores a positive relationship between intellectual stimulation and innovation (Al-Husseini & Elbeltagi, 2012; Hu, Gu & Chen, 2013; Ryan & Tipu, 2013; Noruzy et al., 2013; Khan et al., 2014). In a similar vein, studies by Khalili (2016) and Choi et al. (2016) have determined that leaders with transformational tendencies foster innovation among employees by intellectually motivating them to devise solutions. Thus, in a workplace that is conducive to innovation, transformational leadership becomes even more instrumental in enhancing organisational innovation.

Conversely, research by Sarros, Cooper, and Santora (2008) did not find a significant relationship between intellectual stimulation (IS) and innovation (INN). In a similar vein, Podsakoff et al. (1990) observed that intellectual stimulation might adversely affect employees. Their findings suggested that intellectual stimulation was inversely related to several employee attitudes, notably trust in leadership and overall job satisfaction. To elucidate this, the authors hypothesized that intellectual stimulation could lead to elevated levels of role ambiguity, stress, and potential conflicts at the workplace, which could

explain the negative implications observed.

Indeed, the effects of intellectual stimulation on employees appear to be twofold. While on one hand, it can intensify ambiguity and incite conflict in the workplace, on the other hand, it can foster a sense of value and empowerment among employees as they are galvanized to take an active role in organisational processes. Intellectual stimulation prompts employees to bring forth a plethora of ideas and perspectives. Naturally, such diversity in thought can lead to ambiguity, especially if there's a lack of consensus on which ideas to pursue (Doucet et al., 2009). In such scenarios, it becomes imperative for transformational leaders to promote a culture of mutual respect and collaboration, ensuring that while divergent views are appreciated, they don't impede the problem-solving process.

In the GCAA, leadership acknowledges the pivotal role of intellectual stimulation in creating an innovative service environment. Consequently, the strategic plan for the organisation emphasizes the cultivation of an innovative culture within the organisational framework. This strategic direction is designed to motivate the workforce to explore diverse viewpoints, and subsequently, reimagine traditional workflows.

Transformational leadership has emerged as a potent determinant of organisational innovation in multiple academic studies. Its core component - intellectual stimulation plays an instrumental role in fostering a culture where creativity and novelty thrive. Given its profound impact on driving innovation, leaders should consider adopting this leadership style more rigorously. Based on scholarly insights, a few recommendations for organisational leaders are: (1) Regularly articulate and reiterate a clear, compelling vision to inspire and motivate employees (Bass & Riggio, 2006); (2) Foster an environment of continuous learning and encourage employees to challenge the status quo (Gumusluoglu and Ilsev, 2009); (3) Place emphasis on mutual respect, collaboration, and open communication, especially when divergent ideas arise (Doucet et al., 2009); and (4) Recognise and reward innovative efforts to reinforce the significance of novel solutions in achieving organisational goals (Wang & Rode, 2010). In essence, the capacity of transformational leadership to boost

innovation is unequivocal, and leveraging its principles can pave the way for sustained organisational success and adaptability in a rapidly evolving marketplace.

Impact of Individualised consideration (IC) on Innovation

Individualised consideration constitutes one of the four aspects of transformational leadership that the present study considered to have a significant influence on innovation (product and process) in the GCAA.

The EFA table (Table 5.5) exhibited that only three items/variables (IC1, IC2, and IC3) related to the IC construct were loaded on factor five and were highly correlated with each other. Moreover, factor three (IC) alone explains 6.5% of the total variance in the data and reliability ($\alpha=0.925$) which indicate high reliability. Additionally, CFA results confirmed that the IC construct has a high composite reliability (CR= 0.894) and a high level of construct validity (AVE=0.737).

IC was hypothesised to have a significant influence on Innovation (PRDIN and PROIN) in the GCAA (hypothesis H1d and H1h). The relationship between individualised consideration and innovation process is found insignificant (p-value >0.05) between the IC and (PRDIN and PROIN) constructs; Thus, the hypotheses were rejected.

When leaders take a keen interest in the professional development of their subordinates, it often translates into heightened levels of trust and mutual respect (Bass & Avolio, 1995). Such trust serves as a foundation for fostering an environment where employees feel safe to express their ideas, take risks, and commit to innovative practices without the fear of retribution. However, in context of GCAA, the lack of active involvement of leaders is observed in recognizing individual efforts and providing constructive feedback. As highlighted by Amabile and Pratt (2016), recognition and timely feedback can serve as powerful motivators, driving employees towards consistent innovative behaviours and encouraging them to come forward with novel solutions. To maximize process innovation, it's vital for leaders in organisations, including GCAA, to continue placing individualized consideration at the forefront of their

leadership practices. Leaders should ensure continuous training programs tailored to individual needs and frequent one-on-one check-ins, aiming to understand and address any concerns or barriers to innovation that their employees might face. Such tailored approaches not only promote innovation but also boost overall morale, productivity, and organisational commitment.

Furthermore, the emphasis on treating employees as individuals rather than mere members of a group underscores the importance of fostering a sense of belonging and recognition in the workforce. When individuals believe that their unique contributions, skills, and insights are valued, there's an inherent motivation to consistently bring their best, most innovative ideas to the table (Bass & Riggio, 2006). Recognizing employees as distinct individuals with varied skill sets and experiences is a direct indicator of the organisation's commitment to harnessing the diversity of thought - an element crucial for spurring innovation.

Moreover, there is a profound significance in blending interpersonal leadership styles with the clear articulation of organisational goals and vision. When leaders act as facilitators, not just setting expectations but also aiding in achieving them, they create an environment conducive to idea generation and experimentation (Eisenbeiss, Knippenberg, & Boerner, 2008). Such a milieu, coupled with a high degree of employee involvement, can act as a catalyst in the innovation process, ensuring that novel ideas don't just emerge but are also implemented effectively. In conclusion, it's evident from the results that the personalized approach adopted by leaders in GCAA lacks far-reaching implications for driving innovation. For organisations aiming to foster a thriving innovative culture, it is imperative to prioritise individualized consideration, embrace facilitative coaching, and cultivate an environment that promotes employee involvement and positive affective attitudes.

The relatively minor impact of individualised consideration on both process and product innovation within the GCAA might be ascribed to leadership not sufficiently bolstering followers in harnessing their inherent strengths. The most prominent component under the domain of individualized consideration suggests that the emphasis on cultivating employee strengths is paramount for leaders

within GCAA if the objective is to spur innovation. This sentiment aligns with the prevailing sentiment among a considerable proportion of GCAA employees who perceive a lack of a cooperative organisational culture that champions the ideation and enhancement of innovative solutions.

Drawing parallels from extant academic insights, transformational leaders serve multifaceted roles: they are not only catalysts but also mentors, trainers, and enablers in the educational journey of their followers (Bass and Riggio, 2006). Their guidance, specifically in the realms of training and mentorship, is foundational to honing employees' proficiencies, which subsequently become the cornerstone for nurturing innovation. Hence, there's a compelling argument for leadership in the GCAA to intertwine the principles of transformational leadership, specifically focusing on individualised consideration, to foster an environment conducive for innovation.

6.4 Transformational Leadership and Knowledge Sharing

As outlined in Chapter 1, the second objective of this study was to determine the effects of leadership and its dimensions (IIN, IM, IS and IC) on Knowledge Sharing within GCAA.

To answer the above research question and as a result of reviewing the literature related to leadership and innovation, four hypotheses (H3a-d)) were constructed for testing using Structural Equation Modelling (see chapter 3). These hypotheses were aimed to test the influence of independent variables (IIN, IM, IS and IC) on the knowledge sharing (KS) within GCAA.

The SEM results corroborate the presumed associations between Transformational Leadership (TL) and Knowledge Sharing (KS) within GCAA in UAE. Historically, leadership styles have been linked to KS, suggesting that leadership plays a pivotal role in the proliferation of knowledge within organisations (Tse & Mitchell, 2010; Shih et al., 2012; Song et al., 2012). Indeed, organisational culture—facilitated by transformational leaders—promotes collaborative work, thereby facilitating KS (Bollinger & Smith, 2001; Zhang et al., 2006).

Interestingly, this study also highlighted the positive correlation between "**idealised influence (IIN)**" and KS within the aviation sector. Such leaders, often revered by their followers, successfully inculcate a sense of trust, pride, and confidence, and are adept at shifting followers' motivations towards organisational objectives (Northouse, 2007; Bass & Riggio, 2012; Betroci, 2009). This leadership style underscores the significance of both explicit and tacit knowledge, thus enhancing an organisation's activities (von Krogh et al., 2012). Building on this, trust has been pinpointed as a crucial element for KS (Barnett et al., 2001; Cabrera & Cabrera, 2005; Chow & Chan, 2008). When trust thrives, followers become more receptive and, consequently, more inclined to share their knowledge (Levin & Cross, 2004; Bakker et al., 2006).

Furthermore, **inspirational motivation (IM)**, another component of TL, holds significant sway in the context of KS (Kelly, 2010; Saenz, 2011). Leaders endowed with this trait can envision a brighter future and galvanize communication. Within Iraq's educational landscape, this leadership quality aids faculty members in rallying behind a shared vision (Carmeli et al., 2011). According to Davenport and Prusak (1998), leaders who inspire often earn unequivocal trust from those they lead. Such leaders have a unique ability to convey their insights in a manner that motivates. This motivational approach significantly enhances the readiness of subordinates to share knowledge both readily and often.

In line with Bass & Riggio (2006) and Yukl (2010), leaders providing **intellectual stimulation (IS)** challenge conventional thought processes and foster a shared vision. They not only encourage followers to think divergently but also place a premium on knowledge, leading to enhanced KS practices (Morales et al., 2008; Lee et al., 2010). This emphasis on intellectual capabilities is central to public sector, given their primary involvement in KS activities such as simulations, workshops and seminars (Singh, 2008). The process of knowledge sharing (KS) fosters an inquisitive mindset, enabling team members to present new concepts without the apprehension of being criticized. Findings by Han et al. (2016) resonate with this idea, suggesting that KS plays a pivotal role for transformational leaders in guiding their followers to formulate innovative

interpretations of existing data. This enhances the engagement in discussions around diverse viewpoints, thereby enriching the knowledge sharing endeavour. Ribiere and Worasinchai (2011) further contend that by emphasizing intellectual stimulation, transformational leaders foster an environment that promotes constructive disagreements, leading to the challenging of pre-existing assumptions and brainstorming innovative applications for traditional methods.

Lastly, transformational leaders who employ **individualised consideration (IC)** focus on followers' individual needs, nurturing them through mentorship and coaching (Betroci, 2009; Bass & Riggio, 2012). This mentoring role has been lauded for fostering a culture of KS (Roth, 2003; Jahani et al., 2011). Interestingly, contrary to Politis (2001), this research underscores the positive correlation between individualized consideration and knowledge acquisition in the aviation industry of the UAE. Taking cues from prior research, it's evident that the relationship between individualized consideration (IC) and knowledge sharing (KS) aligns with the findings of several other investigations. Stona's (2011) research on employees in the steel manufacturing domain underlines this, revealing that employees benefitting from both formal and informal mentorship are not only inclined to assist colleagues via knowledge sharing but also exhibit a sense of knowledge self-efficacy (Stona, 2011). Specifically, in the UAE's aviation sector, the overarching objective remains ensuring that the aviation department effectively zeroes in on key areas of relevance. This targeted knowledge creation and transfer aims to pave the way for innovative solutions that can be integrated into operational workflows and services.

6.5 Mediating effect of KS on the TL-Innovation relation

The third objective of this study was to determine the effects of knowledge sharing (KS) as a mediator on the relationship between Transformational Leadership (TL) and Innovation.

The structural equation modeling (SEM) findings in the previous chapter evaluated the mediating function of knowledge sharing (KS) in bridging transformational leadership (TL) and innovation (**H4a-b**). The data reveals positive correlation between TL and KS; however, no mediating affect was found

on innovation within GCAA. It becomes evident that transformational leaders inspire a culture of KS among faculty by employing strategies like idealised influence (garnering trust, admiration, and respect), inspirational motivation (promoting commitment, fostering team unity, and enhancing communication), intellectual stimulation (exploring innovative methods), and individualised consideration (addressing the specific needs of the staff). However, staff at GCAA are not keen to share and assimilate knowledge, experiences, and learning resources, which can be due to the organisational cultural settings or UAE's culture in general.

Although prior research has spotlighted indirect linkage between transformational leadership (TL) and innovation through knowledge sharing (Eisenbeib & Boerner, 2010; Chang, 2012), this study didn't unearth such a relationship within GCAA. This observation contradicts with Jung et al.'s (2003) proposition, which postulates that TL can amplify organisational innovation both directly and indirectly. Drawing from the current study's results, it's inferred that within the context of GCAA, TL does not indirectly support both product and process innovation due to lack of knowledge sharing culture.

To effectively facilitate knowledge sharing (KS) and foster an environment conducive to innovation, leaders must exhibit specific traits (Song et al., 2015). Furthermore, a leader's vision, mission, and values play a pivotal role in motivating followers to share their knowledge, which in turn, acts as a catalyst for generating innovative ideas and bolstering organisational innovation (Soken & Barnes, 2014). Wang et al. underscored the assertion that KS can serve as a linchpin to inspire individuals to introduce novel ideas and foster an innovative mindset. Additionally, they posited that there's a positive correlation between KS and innovation (INN) (Wang et al., 2017). Nonetheless, for innovation to truly flourish, the leadership style in play must be aptly suited to motivate followers towards creativity and idea generation (Zhu et al., 2020). Regrettably, such conducive leadership seems to be missing in the aviation sector of the UAE. This absence could be attributed to the inherent characteristics of public institutions or perhaps the prevailing organisational culture where job insecurity discourages open sharing of knowledge and information.

6.6 Summary

In this chapter, the results of a comprehensive quantitative data analysis, originating from a vast survey conducted within the GCAA, have been critically assessed and delineated. The discussion focuses primarily on the correlations observed between the various constructs in the preliminary research framework and their impact on both product and process innovation.

Remarkably, half of the eight constructs examined were found to substantially impact Innovation in terms of product and process. This underscores the potential factors that influence innovation within the organisation. The sub-facets of transformational leadership, notably IM, IC, IS, and IIN, played a pronounced role in enhancing Knowledge Sharing (KS). However, KS's mediating role between leadership and innovation was not identified as statistically significant, an observation that necessitated an in-depth discussion. The model proffered in this investigation presents a pioneering endeavour. It is an original contribution that seeks to demystify the interplay between transformational leadership, knowledge sharing, and innovation processes, particularly within the contours of the GCAA. Given its relevance and the insights it offers, the model promises to be of paramount importance for strategists, policymakers, and leaders in the UAE's aviation sector.

As we transition to the next chapter, we look forward to concluding this thesis. We will spotlight the unique contributions this study brings to the academic table, enumerate actionable recommendations based on empirical evidence, acknowledge the inherent limitations of the research, and chart out potential avenues for future scholarly exploration in this domain.

Chapter 7: Conclusions and Implications

7.1 Introduction

This research was designed to evaluate the effects of the four components of transformational leadership (TL) on innovation (product and process) and knowledge sharing and the possible mediating effect of knowledge sharing in the relationship between TL-INN. The research was undertaken in the context of the public sector organisation (GCAA) in the UAE. Having addressed each of the research objectives in the preceding chapters this final chapter seeks to draw relevant conclusions on the nature of the relationship between transformational leadership in the GCAA, innovation process and knowledge sharing. The chapter also discusses the study's contribution to knowledge and practical implications for public sector organisations such as the GCAA. Towards the end of the chapter, the limitations encountered during the research process are highlighted and directions for future research is suggested.

7.2 Conclusions and Summary of Research Findings

Transformational Leadership (TL), with its emphasis on inspiration, motivation, and intellectual stimulation, has been widely acknowledged as a catalyst for innovation in organisations. Drawing from the seminal works of Bass and Riggio (2006), TL encourages followers to transcend their self-interests for a collective purpose, fostering a climate of trust and collaboration. In such an environment, Knowledge Sharing (KS) thrives. Nonaka and Takeuchi's (1995) theory of knowledge creation posits that the conversion of tacit knowledge into explicit knowledge, a fundamental aspect of KS, is essential for organisational innovation. Essentially, when leaders inspire and motivate, employees are more inclined to share their unique insights, further enriching the organisational knowledge pool.

Furthermore, the relationship between TL, KS, and innovation becomes even more pronounced in sectors that heavily rely on continuous learning and adaptation, such as the aviation industry. Davenport and Prusak (1998) argue that KS facilitates the circulation of insights and ideas, leading to an environment ripe for innovation. The intricate interplay between TL and KS becomes a cornerstone

for fostering such an innovative milieu. In essence, while TL sets the stage by creating an open and encouraging atmosphere, KS acts as the conduit through which novel ideas flow, and innovation materializes. As the contemporary business environment becomes increasingly dynamic, organisations that leverage the synergistic relationship between TL, KS, and innovation will undoubtedly be better positioned to thrive and lead in their respective domains.

This research explored the influence of Transformational Leadership (TL) on both product and process innovation, with Knowledge Sharing (KS) serving as a mediator, within the UAE's public and aviation industry, specifically the GCAA. Based on literature insights, a model was constructed incorporating three key components: TL, KS, and innovation. KS, considered crucial for optimal performance, boosts innovation within an organisation. Conversely, TL fosters staff dedication, facilitating a creative and high-quality work environment. It can reshape values and foster a culture focused on shared visions and innovative actions.

The primary concern of this research was the evident gap in models probing the connections between TL, KS, and innovation, especially in the Middle East's aviation sector, with the UAE being our focal point. As detailed in Chapter Four, this research utilized a quantitative method to analyse the proposed model. The study highlighted that while TL can promote KS and subsequently influence both product and process innovation, the direct link between TL and innovation bypasses KS's mediation. Such findings underscore the distinct relationships between observed and underlying variables within the UAE's public sector.

The methodology involved a questionnaire, which incorporated previously verified questions related to TL, KS, and innovation. Gathering responses from 333 public-sector employees, the study aimed to decipher the connections and distinctions between TL, KS, and innovation. The analysis confirmed that our model was a good fit for the sampled data. The results were derived from SEM using AMOS version 27.

The data revealed that TL boosts both types of innovations and impacts KS. Moreover, it became evident that KS influences product and process innovation.

The absence of KS's mediation in the TL-innovation relationship was a key finding, highlighting unique relationships in the UAE's public sector context. The research indicates that TL, using mechanisms like idealised influence and intellectual stimulation, can foster innovation in the UAE's public sector. Consequently, the study successfully addressed its key objectives by evaluating the relationship between TL, KS and INN in the GCAA.

Public sector organisations have the important job of meeting society's broad needs, often with unique challenges different from private businesses. They must innovate not just to get ahead, but to make things better for everyone. Transformational Leadership (TL) plays a key role by connecting what the organisation wants with the larger good of society. Similarly, Knowledge Sharing (KS), is especially important in the public sector. As found by Moynihan, Pandey, and Wright (2012), groups that promote KS have more motivated workers and give better services. When TL supports a culture of KS, it not only makes things run smoothly inside but also makes a big positive change outside. Also, because public sector employees need to be open and honest, TL helps make sure any new ideas match what the public values. In short, for public organisations trying to meet the many needs of society, combining Transformational Leadership and Knowledge Sharing is a must. Those who understand and use this mix will come up with better ideas and stay in touch with what the public wants.

7.3 Contribution to Knowledge

The discourse throughout our exploration has shed light on several significant facets of the interplay between Transformational Leadership (TL), Knowledge Sharing (KS), and innovation, particularly within public sector contexts like the UAE's aviation industry. Here are the key contributions to knowledge based on our discussions:

Contextual Relevance: Most prior studies have approached TL, KS, and innovation from a general or private sector lens. This investigation delves deep into the dynamics within public sector organisations, such as GCAA, emphasizing the unique challenges and constraints inherent in such setups.

Synergistic Interplay: The research elucidates the synergistic relationship

between TL and KS and how they jointly fuel innovation in organisations. By understanding this synergy, institutions can better leverage leadership to cultivate a culture of knowledge sharing, leading to enhanced innovative capacities.

Public Sector Dynamics: The role of KS in public sectors holds more gravity due to the vast repositories of knowledge these entities possess, which are critical for societal wellbeing. This study accentuates how TL can magnify the effects of such knowledge by promoting its effective sharing and application, leading to transformative societal impacts.

Model Development & Validation: The conceptual model developed, linking TL, KS, and innovation, presents a fresh perspective. Its validation through quantitative analysis in the specific context of the UAE's aviation sector offers a robust tool for similar institutions seeking to understand and enhance their innovation processes.

Operational Mechanisms: The research unpacks the operational mechanisms through which TL promotes KS. These insights provide a clearer picture of how transformational leaders can tangibly foster an environment conducive to the free flow of ideas and information.

Ethical and Transparent Innovations: Emphasizing the critical role of TL in ensuring transparency and aligning innovations with public values, the research underlines the ethical dimension of innovation in public sectors. This is a crucial contribution given the heightened demands for transparency and ethics in today's socio-political climate.

In sum, this exploration not only deepens our understanding of the relationship between Transformational Leadership, Knowledge Sharing, and innovation but also offers actionable insights for public sector institutions seeking to navigate the intricate balance between organisational efficiency and societal welfare.

7.4 Practical Contributions

The in-depth examination of the relationship between Transformational Leadership (TL), Knowledge Sharing (KS), and innovation, especially in the context of public sector organisations like the UAE's aviation sector, provides

several actionable insights. Firstly, institutions might consider developing training programs that focus on nurturing transformational leadership qualities. This ensures leaders are better equipped to inspire their teams, advocate for knowledge sharing, and drive innovative initiatives.

Moreover, fostering a culture that values and rewards knowledge sharing can be paramount. By recognizing and incentivizing employees who actively contribute to and leverage the organisation's collective knowledge, institutions can cultivate a more collaborative work environment. In parallel, public-sector entities might look at adopting policies that give precedence to both TL and KS. Introducing initiatives such as open-door policies, routine brainstorming sessions, or cross-departmental collaboration can pave the way for more fluid knowledge exchange.

With the digital era upon us, leveraging technology to facilitate KS becomes crucial. Institutions can consider the integration of platforms like internal knowledge databases and collaborative tools to streamline the knowledge sharing process. Concurrently, establishing regular channels for feedback can be instrumental. It allows leaders to gain insights into any barriers impeding effective KS and subsequently address them to foster a more innovative milieu.

Considering the public sector's mandate, introducing clear ethical guidelines for innovation ensures that new initiatives align with public values and societal welfare. Institutions might also benefit from setting clear metrics to gauge the effectiveness of TL and the efficiency of KS processes. Regular assessments can then help them monitor progress and pinpoint areas that warrant attention.

The interplay between Transformational Leadership (TL), Knowledge Sharing (KS), and innovation, as explored in this study, offers insightful nuances for public Institutions (GCAA) in UAE. With a rapidly changing organisational environment and ways of doing things, it becomes pertinent for both public and private institutions to adapt and evolve. A central tenet to this adaptability hinges on the kind of leadership in place. As the study has underscored, a leadership style rooted in transformational principles, which prioritize idea generation and individualized consideration, holds the key to unlocking greater innovation.

Furthermore, promoting collaborations between the public and private sectors can infuse fresh perspectives into public organisations, fostering a more innovative approach to challenges. Lastly, given the societal implications of innovations in the public sector, involving the public in ideation and innovation processes not only bolsters transparency but also ensures the innovations resonate with real-world needs.

Lastly, continuous training and learning orientations, as suggested by the findings, can serve as the backbone for enhanced product and process innovation in GCAA. Such orientations ensure that public staff are well-equipped, not just in their domains of expertise, but also in the art of effective communication and collaboration. With top management's commitment and support, these endeavours can be magnified manifold, paving the way for a more vibrant, innovative, and knowledge-rich academic landscape in UAE.

7.5 Limitations of the Study

Exploring the intricate relationships between Transformational Leadership (TL), Knowledge Sharing (KS), and innovation in the public and aviation sectors of the UAE has provided valuable insights. However, it's crucial to acknowledge certain study limitations.

The study's geographical focus on the UAE offers depth but may limit the generalizability of the findings to other countries with different socio-political or economic contexts. Concentrating on the public and aviation sectors might not allow these insights to be directly applied to other industries within the UAE due to the unique challenges each sector presents concerning TL, KS, and innovation.

Potential biases can arise if data was gathered through surveys or interviews. Participants might convey personal perceptions or aspirations rather than actual observations, impacting data accuracy. If a cross-sectional design was employed, it provides a snapshot of the relationship between TL, KS, and innovation at a specific point in time, whereas a longitudinal approach might offer evolving dynamics over periods.

The definitions and measurements used for TL, KS, and innovation could

introduce elements of subjectivity. Even though they are rooted in established methodologies, nuances in how these concepts manifest specifically in the UAE's public and aviation sectors might exist. External factors, such as rapid technological advancements in aviation or changing governmental policies, might also influence the studied relationship, and not all of them would have been accounted for.

Moreover, the study's primary emphasis on TL might overshadow the contributions or implications of other leadership styles. With the UAE's diverse workforce, other leadership paradigms could also significantly impact KS and innovation. Recognizing these limitations provides avenues for future research that could broaden the scope, integrate more sectors, or explore multiple leadership styles to further understand TL, KS, and innovation dynamics in the UAE.

7.6 Directions for Future Research

The exploration of the intricate relationship between Transformational Leadership (TL), Knowledge Sharing (KS), and innovation in the public sector of the UAE has offered several insights. However, it also presents numerous avenues for future studies to further delve into this relationship.

One clear direction for further exploration is the diversification of participating organisations. While this study centered primarily on the General Civil Aviation Authority (GCAA), the UAE's innovative governance approach has seen the establishment of new departments such as the Ministry of Advanced Science and the Ministry of Artificial Intelligence. Investigating these newly formed entities and conducting a comparative analysis of different public sector bodies can offer a broader understanding of the dynamics between TL, KS, and innovation across varied institutional contexts.

Another promising direction involves deeper qualitative investigation. Although this study faced challenges in accessing high-ranking officials for interviews, alternative methods like ethnographic studies, focus group discussions, or extended participant observations may provide a richer understanding of the cultural, political, and social nuances shaping TL and KS dynamics in public

sector.

Given the UAE's rapid technological advancements, it's also pivotal to explore how emerging technologies like Artificial Intelligence, blockchain, and data analytics might be influencing TL practices, KS mechanisms, and their combined effect on innovation. How these technological shifts interface with leadership and knowledge dynamics in the public sector can be an enlightening area of research.

Comparative studies also hold significant promise. Contrasting the practices of the public sector with those of the private sector in the UAE can reveal best practices, challenges, and cross-sector learning opportunities. Such juxtapositions can offer holistic insights into the operational dynamics of both sectors, helping to identify strategies that drive innovation.

The unique cultural blend of the UAE, merging tradition with modernity, also presents a fascinating backdrop against which the dynamics of TL and KS can be further studied. Exploring how cultural values, norms, and traditions influence leadership and knowledge-sharing practices can provide deeper context-specific insights. Additionally, global comparative studies involving other nations, both from within the Middle East and beyond, can help in understanding the universality or specificity of the identified patterns and dynamics.

The emphasis on continuous learning in the UAE public sector also highlights the potential role of training in fostering TL and promoting KS. Future research can evaluate the efficacy of various training and developmental programs, guiding institutions in designing impactful initiatives.

Lastly, to capture the evolving dynamics of leadership, knowledge processes, and innovation, long-term longitudinal studies can be instrumental. Such studies, spanning multiple years, can provide valuable insights into patterns, shifts, and trends over time.

In essence, while significant ground has been covered in understanding the interplay between TL, KS, and innovation in the UAE's public sector, there remain numerous exciting avenues for research that can contribute to both academic discourse and practical applications.

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Appendices

Appendix: 1 Missing Data Analysis

Univariate Statistics

	N	Mean	Std. Deviation	Missing		No. of Extremes ^a	
				Count	Percent	Low	High
IIN1	333	3.4955	.95571	0	.0	8	0
IIN2	333	3.6637	1.08151	0	.0	18	0
IIN3	333	3.7327	1.05741	0	.0	13	0
IIN4	333	3.8198	1.04303	0	.0	0	0
IIN5	333	3.2492	1.06465	0	.0	.	.
IIN6	333	3.4474	1.27809	0	.0	0	0
IIN7	333	3.3574	1.07052	0	.0	18	0
IM1	333	3.2553	1.11033	0	.0	0	0
IM2	333	2.9910	1.17321	0	.0	0	0
IM3	333	3.2072	.94853	0	.0	13	0
IM4	333	2.6877	1.25813	0	.0	0	0
IM5	333	3.3994	.76811	0	.0	13	0
IS1	333	2.8679	.99424	0	.0	0	0
IS2	333	3.0360	1.03197	0	.0	0	0
IS3	333	3.6577	1.09898	0	.0	16	0
IS4	333	2.7508	.84724	0	.0	0	22
ISS5	333	3.4474	1.28514	0	.0	0	0
IC1	333	3.2132	1.07527	0	.0	24	0
IC2	333	3.5075	1.05172	0	.0	13	0
IC3	333	3.6607	1.07638	0	.0	14	0
IC4	333	2.7508	1.03306	0	.0	0	0
PRDIN1	333	3.2342	.94060	0	.0	13	0
PRDIN2	333	3.1922	.97823	0	.0	13	0
PRDIN3	333	3.0991	.97519	0	.0	0	0
PRDIN4	333	3.0210	.97074	0	.0	0	0
PRDIN5	333	3.1502	.98558	0	.0	0	0
PROIN1	333	3.1441	.91685	0	.0	10	0
PROIN2	333	3.2342	1.05244	0	.0	0	0
PROIN3	333	2.9730	.94543	0	.0	0	0
PROIN4	333	2.6667	1.01198	0	.0	0	3
PROIN5	333	3.0420	.88053	0	.0	0	0
PROIN6	333	2.6937	.72135	0	.0	0	11
PROIN7	333	3.5556	.98210	0	.0	.	.
PROIN8	333	2.8829	.89246	0	.0	0	32

a. Number of cases outside the range (Q1 - 1.5*IQR, Q3 + 1.5*IQR).

Appendix 2: Descriptive Analysis and Normality Tests Results

Descriptive Statistics

	N	Mean	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
IIN1	333	3.74	-.849	.138	.547	.275
IIN2	333	3.66	-.673	.138	.427	.275
IIN3	333	3.72	-1.491	.138	1.862	.275
IIN4	333	3.61	-.772	.138	.417	.275
IIN5	333	3.69	-.876	.138	.455	.275
IIN6	333	3.56	-.746	.138	-.046	.275
IIN7	333	3.61	-.506	.138	-.234	.275
IM1	333	3.58	-.626	.138	-.095	.275
IM2	333	3.55	-.636	.138	-.186	.275
IM3	333	3.66	-1.033	.138	.410	.275
IM4	333	3.62	-.636	.138	-.102	.275
IM5	333	3.66	-.958	.138	1.065	.275
IS1	333	3.46	-.541	.138	-.813	.275
IS2	333	3.66	-.713	.138	-.300	.275
IS3	333	3.70	-.618	.138	.219	.275
IS4	333	3.53	-.610	.138	-.713	.275
IS5	333	3.66	-.994	.138	.277	.275
IC1	333	3.68	-.823	.138	.229	.275
IC2	333	3.65	-1.079	.138	.247	.275
IC3	333	3.64	-.932	.138	.156	.275
IC4	333	3.72	-.262	.138	1.711	.275
PRDIN1	333	3.80	-.710	.138	1.053	.275
PRDIN2	333	3.71	-.186	.138	1.495	.275

PRDIN3	333	3.78	-.787	.138	1.078	.275
PRDIN4	333	3.71	-.559	.138	.488	.275
PRDIN5	310	3.82	-.890	.138	1.596	.276
PROIN1	333	2.42	.644	.138	.058	.275
PROIN2	333	2.59	.336	.138	-1.201	.275
PROIN3	333	2.46	.584	.138	-.393	.275
PROIN4	333	2.46	.492	.138	-.585	.275
PROIN5	333	2.49	.490	.138	-.162	.275
PROIN6	333	2.34	.904	.138	.400	.275
PROIN7	333	2.32	1.012	.138	.686	.275
PROIN8	333	2.31	.887	.138	.368	.275
Valid N (listwise)	333					

Appendix 3: CFA Output Results

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	77	2573.521	329	.000	1.703
Saturated model	406	.000	0		
Independence model	28	10876.723	378	.000	28.774

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.034	.923	.911	.536
Saturated model	.000	1.000		
Independence model	.216	.227	.170	.212

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.763	.728	.787	.976	.978
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.870	.664	.684
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	2244.521	2086.705	2409.740
Saturated model	.000	.000	.000
Independence model	10498.723	10161.813	10841.986

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	8.275	7.217	6.710	7.748
Saturated model	.000	.000	.000	.000
Independence model	34.973	33.758	32.675	34.862

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.048	.143	.153	.000
Independence model	.299	.294	.304	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	2727.521	2743.358	3015.733	3092.733
Saturated model	812.000	895.504	2331.659	2737.659
Independence model	10932.723	10938.482	11037.527	11065.527

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	8.770	8.263	9.301	8.821
Saturated model	2.611	2.611	2.611	2.879
Independence model	35.153	34.070	36.257	35.172

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	45	48
Independence model	13	13

Appendix 4: SEM Model Fit Results

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	88	2590.967	347	.000	1.797
Saturated model	435	.000	0		
Independence model	29	11338.276	406	.000	27.927

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.061	.915	.878	.536
Saturated model	.000	1.000		
Independence model	.223	.214	.158	.200

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.771	.733	.796	.860	.923
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.855	.659	.679
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	2243.967	2085.871	2409.471
Saturated model	.000	.000	.000
Independence model	10932.276	10588.320	11282.588

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	8.331	7.215	6.707	7.747
Saturated model	.000	.000	.000	.000
Independence model	36.457	35.152	34.046	36.278

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.051	.139	.149	.000
Independence model	.294	.290	.299	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	2766.967	2785.757	3096.351	3184.351
Saturated model	870.000	962.883	2498.206	2933.206
Independence model	11396.276	11402.468	11504.823	11533.823

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	8.897	8.389	9.429	8.957
Saturated model	2.797	2.797	2.797	3.096
Independence model	36.644	35.538	37.770	36.664

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	47	50
Independence model	13	14

Appendix 5: Data collection Tool (Questionnaire)
Survey Questionnaire for Civil Aviation Authority Employees

(Please confirm the following by ticking the box below)

I have read the information sheet provided and I am happy to participate. I understand that by completing and returning this questionnaire I am consenting to be part of the research study and for my data to be used as described.

Section 1: Transformational leadership					
Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<i>Idealised Influence</i>					
Acts in ways that build my respect					
Instils pride in being associated with him/ her					
Talks about his/ her important values and beliefs					
Goes beyond self-interest for the good of the group					
Considers the moral and ethical consequences of decisions					
Emphasises the importance of having a collective sense of mission					
Displays a sense of power and confidence					
<i>Inspirational motivation</i>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Talks optimistically about the future					
Talks enthusiastically about what needs to be accomplished					
Articulates a compelling vision of the future					
Expresses confidence that goals will be achieved					

Develops a team attitude and spirit among members of staff					
<i>Intellectual stimulation</i>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Re-examine critical assumptions to question whether they are appropriate					
Gets me to look at problems from many different angles					
Suggests new ways of looking at how to complete assignments					
Seeks different perspectives when solving problems					
Encourages me to rethink ideas that have never been questioned before					
<i>Individualised consideration</i>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Spends time mentoring and coaching					
Treats me as an individual rather than just as a member of a group					
Considers me as having different needs, abilities and aspirations to others					
Helps me to develop my strengths					
Section 2: Knowledge Sharing					
<i>knowledge Donating</i>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Knowledge sharing with colleagues is considered normal outside of my department					
Knowledge sharing among colleagues is considered normal in my department					
When I have learned something new, I tell colleagues outside of my department about it					
When they have learned something new, my colleagues within my department tell me about it					
I share information about working profession with my colleagues in the organisation					
I share information about administrative issues with my colleagues in the organisation					
I share information I have with colleagues within my department when they ask for it					

Colleagues in my organisation share information about working profession with me					
Colleagues within my department share knowledge with me, when I ask them about it					
Colleagues within my department tell me what their skills are, when I ask them about it					
I share my skills with colleagues outside of my department, when they ask me to					
I share my skills with colleagues within my department, when they ask for it					
I share information I have with colleagues outside of my department, when they ask me to					
Section 3: Innovation					
<i>Product innovation</i>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Our organisation is delivering new courses for members of staff					
Our organisation constantly emphasises development and doing research projects					
Our organisation often develops new training materials and methodologies					
Our organisation often develops new programmes/ services for members of staff and students					
Our organisation is extending its programmes/ services to new groups of employees not previously served by the organisation/institute					
<i>Process innovation</i>	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Our organisation is developing new training programmes for staff members					
Our organisation encourages teamwork and good working relationships between staff members					
Our organisation is implementing an incentive system (i.e. higher salaries, bonuses, --) to encourage members of staff to come up with innovative ideas					
Our organisation often develops new technology (internet, databases, ---) to improve the innovation process					
Our organisation often uses new technology to improve the innovation process					

New multimedia software is used by this organisation for innovation purposes and administrative operations					
This organisation is implementing a reward system (i.e. promotions, thank---yous) to encourage members of staff to come up with innovative ideas					
Our organisation is trying to bring in new equipment (i.e. computers) to facilitate innovation operations and work procedures					

Part Two – About You

Target Audience: EMPLOYEES OF CIVIL AVIATION AUTHORITY (GCAA) UAE

Please indicate your gender

Male Female

Indicate your age group (years)

21 -- 25 26 -- 30 31 -- 35 36 or Over

Please indicate your level of education

High school Diploma Bachelor

Masters Doctorate

Other, please specify

Please indicate your total years of service in GCAA

5 or Less

6 – 10

11 – 15

16 – 25

Over 25 years

Prefer not to say

Appendix 6: Participant Information Sheet

LIVERPOOL JOHN MOORES UNIVERSITY PARTICIPANTS INFORMATION SHEET



Title of Project: Study of the impact that style of leadership has upon innovation within the UAE through utilisation of the knowledge sharing role.

Name of Researcher: Khuluod Alhaddad

School/Faculty: Liverpool Business School

Dear Participant

You are being invited to take part in the above research study. Before you decide it is important that you understand why the research is being done and what it involves. Please take time to read the following information. Ask us if there is anything that is not clear or if you would like more information. Take time to decide if you want to take part or not.

1. What is the purpose of the study?

The research aims to provide insights and understanding with regard to the impact that transformational styles of leadership have upon innovation management through mediating the knowledge sharing role within the context of the civil aviation industry context of the UAE. It is known that TL initiates and stimulates strong effects through various initiatives aimed at raising the awareness that followers have of the contributions of other group members in order to sustain competitive advantage.

2. Do I have to take part?

This questionnaire is intended for employees of the GCAA. Also, the participation in this study is voluntary so it is up to you to decide whether to take part in the research or not. If you do wish to participate, you will be given this information sheet. You are still free to withdraw at any time and without giving a reason. You may withdraw your participation at any time during the study that will not affect your rights. Data cannot be withdrawn once the questionnaire has been completed and submitted. By completing the questionnaire, the participants will be consenting to be part of this research.

3. What will happen to me if I take part?

Your participation in the study is by being involved in filling the attached questionnaire that would serve as the primary source of data. It will take approximately 10-15 minutes to answer the questionnaire. Once completed, the questionnaire should be returned electronically within 10 working days.

The questionnaire relates to demographics, participant's attitude about the knowledge sharing, leadership and innovation styles being following in your organisation.

The data collected will be solely for the research/academic purposes and your identity will be kept anonymous. Therefore, I can confirm that there will be no risks to you due to your participation. The data (completed questionnaires) will be transferred to the UK for further analysis and will be treated confidentially, stored securely in a locked cabinet at the university. Only the researcher and his supervisory team will have access to it. All personal information will be retained for a period of 5 years when it will then be destroyed.

4. Are there any risks / benefits involved?

There are no known or expected risks for involvement in this study. However, the results of the study will be shared with the research participants (on request as researcher email is provided). This investigation may provide leaders of change with information and guidance on how various factors can affect people's attitude towards change.

5. Will my taking part in the study be kept confidential?

Yes. The data collected will be solely for the academic use and will not be sold to any third party or so. The demographic data such as age, gender, course details and university details will only be used for the academic research purpose. All the questionnaires will be anonymised, and no names will be used in the study itself or in any further publications. The data collected will be stored on the password-protected computers at LJMU University, Liverpool UK. The access to these computers is only given to the researcher. The hard copies of the questionnaires will be kept securely in the locked cabinets. The data will be stored for the purpose of this study for next 5 years and thereafter the data will be destroyed.

This study has received ethical approval from LJMU's Research Ethics Committee

Thank you for your valuable assistance and your co-operation is highly appreciated.

Contact details:

Name of Researcher: Khuluod Alhaddad

Email: K.M.Alhaddad@2019@2017.ljmu.ac.uk

Name of Supervisor: Dr. Scott Foster

Email: s.foster@ljmu.ac.uk

Address:

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Faculty of Business and Law

Liverpool John Moores University

Redmonds Building

Brownlow Hill

Liverpool, United Kingdom

L3 5UG

If you any concerns regarding your involvement in this research, please discuss these with the researcher in the first instance. If you wish to make a complaint, please contact researchethics@ljmu.ac.uk and your communication will be re-directed to an independent person as appropriate.