

Improving Capabilities and Strategic Fit in Governmental Agencies

The Case of Abu Dhabi Government Infrastructure Sector

Abdulla Alshebli

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Dedication

It is with my deepest gratitude and warmest affection that I dedicate this humble work to the memory of my late father, and to my mother for making me who I am.

I would also like to extend this dedication to my brothers, sisters, wife and three daughters, the unforgotten ones who have been with me along this journey.

Abstract

The notion of Strategic Fit has been and remains to be one of the most important arguments in the fields of business strategy and strategic management. This research study examines the key concept of ‘strategic fit’ and its associated theories and seeks to investigate the causes that have created ‘strategic drift’ in Abu Dhabi’s governmental agencies in the infrastructure sector with the aim of improving their performance.

However, for organisations, public or private, it still remains to be the most important notion and one that cannot be ignored because it is about the success of the organisation in its external environment where all competitive activity takes place. Thus, there are many underlying factors such as organisational culture, structure and organisational history that impact, or influence, the level of fit that organisations achieve.

Therefore it is imperative that research is further undertaken on a deeper and wider level to fully understand the concept and importance of strategic fit and how it can be achieved. Hence, a research study in this area, especially in developing cities such as Abu Dhabi, is well justified and needed.

The lack of strategic fit that has been witnessed in the Abu Dhabi’s infrastructure sector over the past few years continues to be, and it is a clear indication of a developing mismatch between the government and its policies and the agencies that implement them. However, this is clearly a major issue for the government going forward, if policies are developed with no clear understanding of the available resources and capabilities.

Similarly, the study also seeks to determine why a strategic fit has not been achievable by the Abu Dhabi government. Though the government has developed policies to better serve its people, it continuously faces issues of policies not being implemented, or being implemented too late and targets not been met according to the original brief. It has been identified that there are numerous deficiencies between the various government agencies in the infrastructure sector in terms of keeping pace with governmental policies - consequently, resulting in strategic gaps with an increasing possibility of a possible strategic drift, if these issues are not addressed effectively and in a timely manner.

The study further wishes to explore if strategic gaps have occurred as a result of inherent cultural, historical, political and/or structural aspects of the Abu Dhabi government and its numerous agencies – simply because these issues can be seen as preventative to change and progress which, in turn, can lead to strategic gaps and strategic drift in the long term.

The research paradigm selected for this research study is that of the pragmatist approach and subsequently the key methodology employed throughout this research is that of the mixed methods. That mixed methods research is an intellectual and practical synthesis based on qualitative and quantitative research.

Also, This research provides a summary of the important findings, proved hypotheses, achieved aim and objectives, and significant contribution to the knowledge of strategic management through the development of the “Community Innovation Scheme”, the “3-Spectrums of Change”, the “4Ms Change Model”; and the resulting framework model; the “Government Strategy Model”.

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Abbreviations

- 3SoC	The 3-Spectrums of Change, <i>developed by the author</i>
- 4MCM	The 4Ms Change Model, <i>developed by the author</i>
- AADC	Al Ain Distribution Company
- AAM	Al Ain Municipality
- AASTMP	Al Ain Surface Transport Master Plan
- ADAC	Abu Dhabi Airport Company
- ADAT	Abu Dhabi Airport Terminals
- ADDC	Abu Dhabi Distributing Company
- ADEC	Abu Dhabi Education Council
- ADHA	Abu Dhabi Health Authority
- ADIA	Abu Dhabi Investment Authority
- ADM	Abu Dhabi Municipality
- ADP	Abu Dhabi Police
- ADPC	Abu Dhabi ports Company
- ADPC	Abu Dhabi Power Corporation
- ADSSC	Abu Dhabi Sewage Services Company
- ADSTMP	Abu Dhabi Surface Transport Master Plan
- ADTCA	Abu Dhabi Tourism and Culture Authority
- ADWEA	Abu Dhabi Water and Electricity Authority
- ADWEC	Abu Dhabi Water and Electricity Company
- AED	UAE Dirham
- AIHW	Australian Institute of Health and Wellness
- AMM	Al Ain Municipality
- ARPU	Average revenue per user
- AUH	Abu Dhabi International Airport
- BOO	Built-Own-Operate
- BOOT	Build-Own Operate Transfer
- BPD	Barrels per Day
- Buf	Back-up-Fuel
- CISM	Community Innovation Scheme Model, <i>developed by the author</i>
- CLGF	Commonwealth Local Government Forum
- CPNI	Centre for the Protection of National Infrastructure
- CSPP	Concentrated Solar Power Plant

- DED	Department of Economic Development
- DMA	Department of Municipal Affairs
- DoF	Department of Finance
- DoT	Department of Transport
- DSM	Demand Side Management
- Du	Emirates Integrated Telecommunications Company
- EAD	Environment Agency Abu Dhabi
- EBWC	Al Etihad Biwater Wastewater Company
- EDB	Economic Development Board
- EHSMS	Environment, Health, and Safety Management System
- EIAST	Emirates Institution for Advanced Science and Technology
- EITC	Emirates Integrated Telecommunications Company
- ENEC	Emirates Nuclear Energy Company
- ER	Etihad Rail
- ERP	Electronic Road Pricing
- eSRVCC	Single Radio Call Continuity
- ETISALAT	Emirates Telecommunication Company
- EY	Etihad Airways
- FTTH	Fibre-to-the-home network
- GCAA	General Civil aviation Authority
- GCC	Gulf Cooperation Countries
- GCC	Link Integrated Gulf Network
- GCI	Global Cities Index
- GDP	Gross Domestic Product
- GIS	Geographic Information System
- GLA	Greater London Authority
- GSADEC	General Secretary of Abu Dhabi Executive Council
- GSM	The Government Strategy Model, <i>developed by the author</i>
- HKIA	Hong Kong International Airport
-HS2	High Speed Rail
- IAEA	International Atomic Energy Agency
- ICAD	Industrial City of Abu Dhabi
- ICSR	Innovation Cities Survey Ranking
- IEA	International Energy Agency
- IO	Industrial Organisation

- IPTV	Internet Protocol Television
- IRT	Interborough Rapid Transit Company
- IWPP	Independent Water and Power Plants
- JV	Joint Venture
- KBZ	Khalifa Bin Zayed City
- Kizad	Khalifa Industrial Zone Abu Dhabi
- LMA	Large Model Association
- LTE	Long-Term Evolution
- M2M	Machine-to-Machine
- Masdar	Abu Dhabi Future Energy Company
- MBZ	Mohamed Bin Zayed City
- MSECADC	Maritime Security Executive Committee Abu Dhabi Customs
- MW	MW Mega Watt
- NGNBN	Next Generation Broadband Network
- NOC	No Objection Certificates
- NRI	Networked Readiness Index
- NSW	North South Wales
- NTA	National Transport Authority
- NYC	New York City
- PSA	Port Singapore Authority
- PUB	Singapore's National Water Agency
- RASCO	Abu Dhabi Company for Servicing Remote Areas
- RMB	Rhein-Main Biokompost
- RSB	Regulation And Supervision Bureau
- SARS	Severe Acute Respiratory Syndrome
- SCADIA	Supervision Committee for Expansion of Abu Dhabi International Airport
- SLA	Service Level Agreement
- SSRN	Sydney Strategic Road Network
- STEP	Strategic Tunnel Enhancement Programme
- STMP	Surface Transport Master Plan
- SUSDEV21	Sustainable Development of the 21st Century
- TDS	Territorial Development Strategy
- TEU	Twenty-foot Equivalent Unit
- TRA	Telecommunication Regulatory Authority

- TransAD	Centre For Regulation of Transport
- TRANSCO	Abu Dhabi Transmission and Dispatch Company
- twofour54	Media Zone Intaj FZ LLC
- UAE	United Arab Emirates
- UN	The United Nation
- UPC	Planning Council
- UPC	Urban Planning Council
- VICT	Vancouver is International Commerce and Trade
- VoLTE	Voice over LTE
- WHO	World Health organisation
- WoG	Whole of Government
- WPR	World Population Review
- WRM	Western Region Municipality
- WRSTMP	Western Region Surface Transport Master Plan
- WTO	World Trade Organisation
- WVBWC	Al Wathba Veolia-Besix Wastewater Company

Chapter 1: Introduction

- 1.1 Preface**
- 1.2 Outline of the notion of strategic fit**
- 1.3 Objectives of the study**
- 1.4 Aims and objectives**
- 1.5 Key areas to be addressed**
- 1.6 Conceptual Framework**
- 1.7 Outline of Study**
- 1.8 Summary and anticipated outcomes**

Introduction

1.1 Preface

One of the most important debates in the literature of the combined fields of business strategy and strategic management has been, and remains to be, the concept of strategic fit (Thompson, 2010).

Strategic fit is the notion that organisations do not exist in a vacuum but rather they exist and co-exist, compete and cooperate in relation to others. Consequently, organisations need to have the ability to respond effectively to the diverse challenges in their external environmental and competitive activity, in a timely manner and better than competition, in order to achieve and maintain performance (Hoang et al, 2011; Davila, 2012; Ostroff, 2012).

The strategic fit concept asserts that if organisational strategy is appropriately matched against external environmental challenges it significantly raises business performance and sustainability (Lindow (2013). As such, over the years the search for strategic fit has become a core concept in strategy development (Henderson and Venkantraman, 1989; 1993; Bergeran et al, 2004, Griffith and Myers, 2005; Garlichs, 2011; Brown, 2013) and very important in research (Boulter, 2012; Nelson, 2012).

1.2 Outline of the notion of strategic fit

Organisational performance and objective achievement are directly connected with the effectiveness of the strategy development process. High performing competitive organisations focus on strategy development process closely to effectively convert challenges in the business environment to their advantage by

matching existing organisational resources and capabilities (Katkalo, et al, 2010; Ellonen, et al, 2011).

According to Johnson, et al (2011), and in general agreement by other authors in the field (i.e., Chandler, 1962; Andrews, 1971; Quinn, 1980; Mintberg et al, 1999) strategy is the direction and scope of an organisation in the long run that will provide a sustainable advantage in a dynamic organisational climate through better management of its resources & competencies in fulfilling business and shareholder objectives.

Appropriateness and suitability of organisational strategy is assessed through the concept of strategic fit (Ensign, 2001; Grant, 2007). Garlichs (2011), states that strategic fit is explained as the degree to which an organisation is matching its resources and capabilities with the opportunities in the external environment. Strategy that does not support achievement of organisational objectives would not be effective (McLaren et al, 2011). Successful and highly performing organisations tend to always match their internal structures, culture, resources, systems and processes and capabilities against their external environmental challenges and changes as a matter of continuous process (Brown, 2013) – which then results in ultimate organisational performance in its external environment(s) (Hoang et al, 2011).

However, frequently, organisations experience issues in terms of achieving a strategic fit. Many reasons can be attributed to this; for example, structural issues, cultural aspects, ineffective communications and organisational inertia to mention but a few. As a result, strategic gaps occur when an organisation's actual performance does not meet the requirements, or goals, of the organisation as set

out in their vision, mission and objectives. In other words, a strategic gap would mean that the organisation has lost its direction, or it is drifting away, from its strategic purpose or reasons for existence (Unger et al, 2012).

In the pursue of strategic fit organisations need to ensure that resources, processes, systems and overall capabilities are aligned accordingly in line with internal and external environmental conditions. Strategic Alignment is the process and result of linking business strategy and objectives with business units, functions, and employees in order to achieve an optimum relationship between these functions, or parts (Henderson and Venkantraman, 1989; 1993; Bergeran et al, 2004).

However, the ability of continuously matching the resources with external environmental changes is a difficult task - especially when organisations are rigid and inflexible. Most of the organisations today find it difficult to achieve a sustainable strategic fit and eventually fall into a strategic drift (Worch, 2012).

According to Jeffs (2008), strategic drift occurs when organisational strategies progressively fail to address the strategic position of the organisation and this is frequently followed by transformational change that creates underperformance, if not managed effectively. Armstron (2008) reiterates that the notion of strategic fit expresses the degree to which an organisation is matching its resources and capabilities with the opportunities in the external environment. The matching takes place through strategy and it is therefore vital that the organisation has the actual resources and capabilities to execute and support the strategy. As a result, this creates a strategic gap that is reflected as the gap between the current performance of an organisation and its desired performance as expressed in its

mission, objectives, goals and the strategy for achieving them. Dransfield (2001) is also in agreement and indeed numerous authors in the field over the years.

However, despite how important the notions of strategic fit and strategic drift are, extensive literature review indicates that there appears that studies in the field no longer research and discuss the topic as much as they used to in the past. It is as if, the literature in the wider area of strategy has moved on investigating other aspects in the field and the notion of strategic fit as a concept, and in practice, is no longer a priority.

Nevertheless, for organisations be it public or private, it still remains to be the most important notion and one that cannot be ignored because it is about the success of the organisation in its external environment where all competitive activity takes place.

There are also relatively fewer studies now being conducted in the field on core concepts that underpin the notions of strategic fit and strategic drift. In most cases, strategic fit is only explored on a case study basis with more focus on understanding how strategic fit can be achieved by organisations matching resources and capabilities to the environmental conditions. However, there are many underlying factors such as organisational culture, structure and organisational history that impact, or influence, the level of fit that organisations achieve.

Therefore, it is imperative that research is further undertaken on a deeper and wider level to fully understand the concept and importance of strategic fit and

how it can be achieved. Hence, a research study in this area, especially in developing countries such as Abu Dhabi, is well justified and needed.

1.3 Objectives of the study

The principal objective of this study is to assess the ‘strategic fit’ and the possibility of mitigating ‘strategic drift’ in Abu Dhabi’s governmental agencies in the infrastructure sector with the aim of improving their overall performance, competitive advantage and strategic sustainability. According to Cole (2003), competitive advantage of a firm derives by an appropriate match of its capabilities and resources to the opportunities available in the external environment on the face of challenges and competitive activities so that the organisation outperforms competitors.

In practice, however, most organisations experience problems in terms of achieving the required strategic fit. There can be many reasons for this such as structural issues, cultural aspects, ineffective communications and organisational inertia to mention but a few. This will lead to poor performance resulting in strategic gaps to occur when an organisation's actual performance does not meet the strategic requirements. According to Kaufman (2003), suffering a strategic gap would result to the organisation losing its long-term direction from its strategic purpose and reasons for existence.

The lack of strategic fit that has been witnessed in the Abu Dhabi’s infrastructure sector over the past few years (GSADEC, 2012) continues to be deteriorating and it is a clear indication of a developing mismatch between the government and its policies and the agencies that implement them. The mismatch could be related to the government not fully understanding the resource and capability requirements

needed by the infrastructure sector to implement their policies, or it could be that the agencies are not properly utilising current resources. However, this is clearly a major issue for the government going forward, if policies are developed with no clear understanding of the available resources and capabilities to ensure success.

Similarly, the study also seeks to determine why a strategic fit has not been achievable by the Abu Dhabi government. Though the government has developed policies to better serve its people, it continuously faces issues of policies not being implemented, or being implemented too late and targets not been met according to the original brief (Abu Dhabi Government SWOT Analysis Report 2008; 2010; 2012). It has been identified that there are numerous deficiencies between the various government agencies in the infrastructure sector in terms of keeping pace with governmental policies - consequently, resulting in strategic gaps with an increasing possibility of strategic drift, if these issues are not addressed effectively and in a timely manner (State of Emirates Report, 2012).

The study further aims at exploring if the strategic gap identified has occurred as a result of inherent cultural, historical, political and/or structural aspects of the Abu Dhabi government and its numerous agencies – simply because these issues can be seen as preventative to change and progress which, in turn, can lead to strategic gaps and strategic drift in the long term.

In the last few years, it has become evident that there is a lack of strategic fit in the infrastructure sector of the Abu Dhabi government due to a number of reasons. This particular sector is divided in four main subsectors, namely: ‘Transport Infrastructure’, ‘Utilities’, ‘Urban Development’, and ‘Telecommunication’.

Some of the problems encountered over the years are, that in certain cases, policies developed are not addressing the real issues of the public and in other occasions relevant policies are not developed due to the bureaucratic challenges that the sector is experiencing (Abu Dhabi Government SWOT Analysis Report 2008; 2010; 2012). This is largely triggered by the inefficient external environmental assessment system prevailing at the moment. There is no systematic process developed in identifying the external demands of the public of Abu Dhabi that would have generated important dimensions in policy development. Further, there is a substantial communication gap identified between the public and the government that has increased the mismatch.

It can also be seen that there are number of performance-related aspects that have triggered internal inefficiencies and lack of effective implementation and controls (Abu Dhabi Government SWOT Analysis Report 2008; 2010; 2012). Most of these issues have not been improved over time and are deteriorating further. These, in turn, have created a blame culture among departments and antagonism has also become evident – all of which have, clearly, become detrimental to the overall performance of the sector.

On-going observations and diverse feedback from numerous sources (GSADEC, 2012) and talking to key members in the government structure indicate that the infrastructure sector has diverted from its overall strategic brief, is experiencing numerous problems and a strategic drift has already occurred and deteriorates further.

Some of the main issues identified are:

- Limited ability to embrace public demands and respond to the changing external environmental conditions;
- Review and evaluation mechanisms are, at large, absent and/or limited and success measurement techniques are ineffective and not properly aligned against objectives;
- Strategic planning and strategy development processes are weak and incomplete and do not incorporate the views of key stakeholder groups;
- Lack of focus and commitment towards implementation of strategies;
- Lack of organisational flexibility and ability to change as and when it is required;
- Communication gaps between departments and between central government agencies;
- Unclear systems and processes for acquiring appropriate resources and developing relevant capabilities;
- Limited transparency, accountability and due diligence.

Change management equally plays a vital role in the current organisational environment as it directly supports shaping up the internal environment together with organisational policies in achieving the desired strategic fit. At the moment the infrastructure sector of Abu Dhabi is having issues with change management practices that have directly impacted in resulting strategic gaps in implementing new policy decisions & strategies internally. This is again negatively supported by rigid structures and negative internal cultures. Consequently, in the process of pursuing the desired strategic fit these aspects would also need to be looked at.

1.4 Aims, Objectives and Questions

Hence in the context of this research study and in line with the relevant literature in the field the following aim and objectives have been developed:

Aim

The principal aim of this research is to investigate the factors that cause strategic drift in the governmental agencies of the Abu Dhabi infrastructure sector in order to minimise identified gaps and achieve the desired strategic fit.

Key Objectives

To operationalise the above aim, three specific objectives have been devised that enable a logical approach to problem-solving. The objectives aim to find answers to the causes of strategic gaps between the government and its agencies. Once the causes have been identified, measures will then be taken to minimise gaps and to finally improve overall strategy development and management of the government and its agencies.

Objective One

To examine the factors that cause strategic drift in the diverse agencies of Abu Dhabi's infrastructure sector.

Objective Two

To determine ways, in line with government policy and agency capabilities, in order to minimise organisational and strategic gaps.

Objective Three

To suggest agency-wide strategies for improving resources, systems, processes and overall practices in order to develop capabilities and competences and so increase performance and achieve the desired level of strategic fit.

Key Research Questions

In the process of pursuing the above objectives, relevant research questions and have been developed. It is acknowledged that the research questions are, for the most part, based on objective one. The key research questions are as follow:

1. Are the strategies developed by the Abu Dhabi government appropriate and realistic in line with environmental conditions?
2. Are communications in the government structure open and free flowing?
3. Are leadership and management practiced effectively throughout the governmental structure?
4. Is change embraced effectively by the various government agencies or are they subject to organisational inertia?

1.5 Key areas to be addressed

In doing so, as shown in Figure 1-1, the following key areas are addressed: the concepts of strategic fit and change management in addition to understanding the external and internal environment of Abu Dhabi. Moreover the global prospective of the infrastructure sector is looked at through the benchmarking of several cities around the world.

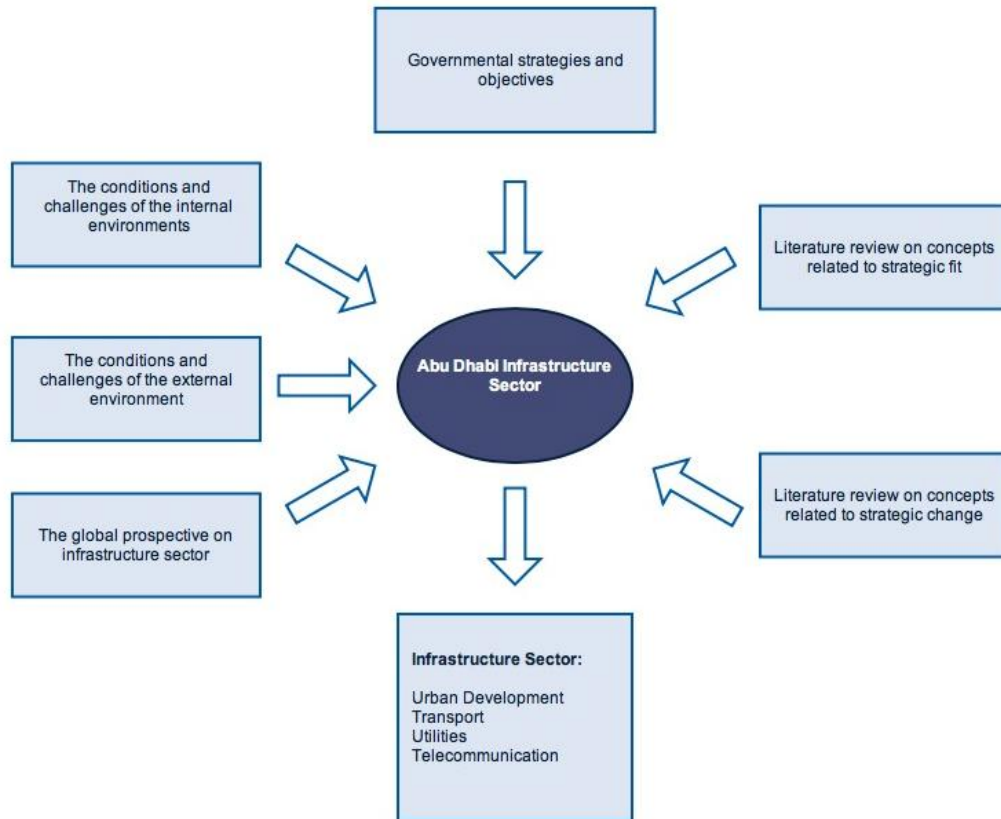


Figure 1-1 Key Areas to be Addressed

1.6 Conceptual Framework

In the process, a conceptual framework as depicted in Figure1-2 has also been developed to further illustrate the theoretical linkages of the various notions that make the body of knowledge of this research. The framework shows the key areas that will be taken into consideration when reviewing the literature of the subject matter at hand because they are all integral parts of this research study.

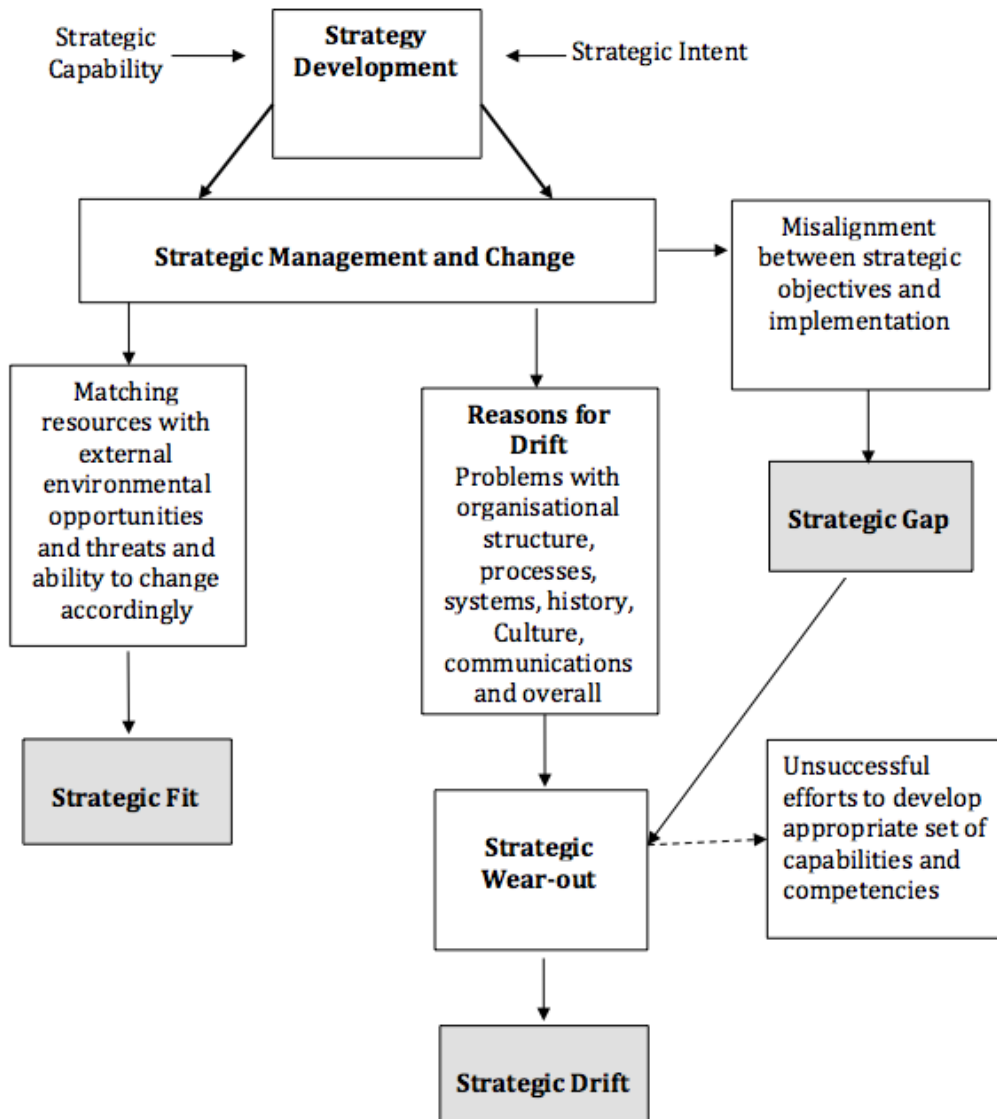


Figure 1-2 Key Theoretical and Practical Notions of Strategic Fit

1.7 Outline of Study

Table 1-1 here below illustrates the key chapters of this study in an effort to highlight the specific sections of this research in an ‘at a glance’ manner for purposes of clarity and transparency.

Part I Introductory Aspects
Chapter One Introduction This chapter is dedicated to Introduce the study at hand and provides an overview of the key dimensions of the research
Part II The Theoretical Framework and Literature Review

<p>Chapter Two Strategic Fit</p> <p>This chapter is about the concept of “strategic fit” which involves detailed and reflective literature review of the notion of strategic fit incorporates additional concepts that underpin the notion. In the process genuinely diverse perspectives are discussed and linked against the research objectives.</p>	<p>Chapter Three Change Management</p> <p>This chapter is tackling the concept of “change management” that introduces the wider subject of change management because the area is interrelated with strategic fit since the latter cannot be achieved without the former. Of course, the theoretical notions will always be linked to this study’s research aims and objectives.</p>
<p>Chapter Four The External Environment</p> <p>This chapter discusses external environmental conditions and examines the recent changes in the wider, regional and local environments. In addition, this chapter sets the context of the wider national environment and will discuss the various social, economic, demographic and other key changes in order to articulate external environmental challenges and opportunities.</p>	<p>Chapter Five The Infrastructure Sector</p> <p>This Chapter provides an overview of the infrastructure sector in itself and present the four subsectors in the different areas of the sector in an effort to demonstrate the actual field of application for this research and define the key parameters of this investigation.</p>
<p>Chapter Six Global Perspective In Infrastructure</p> <p>This chapter is discussing six different smart cities around the world to explore worldwide practices with regard to infrastructure sector management. The discussion includes general information about each city and then it will dig deep in to more details about the governance systems, economy, and demographics. The infrastructure sector in these cities is looked with regard to leadership and management practices and strategies.</p>	
<p>Part III The Research Methodology Framework</p>	
<p>Chapter Seven Methodology and Design of the Field Study</p> <p>This chapter discusses in detail the methodology that underpins this research study; it explains the research strategy and the data collection process and provides explanations and justifications regarding the selected analytical techniques to be used in the study.</p>	
<p>Part IV The Analytical and Discussion Framework</p>	
<p>Chapter Eight</p> <p>This chapter presents the analysis of the data collected and discusses the findings per each one objective and hypotheses. All results are, clearly, discussed in relation to the hypotheses made and conclusions reached are compared with other studies in the field. Given that this is a case study-based research (where findings are intimate to the organisation(s) at hand and not necessarily equally useful to other audience) there are on-going comparisons with other studies in the field in order to provide a generalised perspective in the area. The resulting framework model is also illustrated and explained.</p>	
<p>Part V The Concluding Framework</p>	
<p>Chapter Nine Conclusions and Recommendations</p> <p>This chapter links and illustrates all the findings of this study, it also acknowledges the limitations of this investigation and suggests additional research directions on the topic to aid further studies in the field.</p>	
<p>Part VI Miscellaneous</p>	
<p>Bibliography</p>	<p>Appendices</p>

Table 1-1 Structure of Study

1.8 Summary and anticipated outcomes

Given the context of this examination and the limited research that has been undertaken in the area in recent years and the fact that this is the only in-depth

enquiry of this nature in Abu Dhabi, it is believed that this study will make a significant contribution in the field.

The study will also attempt to improve current theories and frameworks in the area, thus further developing our understanding in the field of strategy, strategic management and competitive landscapes. The research aims to bring together the work of diverse authors, from differing perspectives in a reflective and consistent way, thereby bridging discontinuities and extending knowledge.

In addition, the study will supplement the body of knowledge in the area, and should also serve as the basis for further research and analysis in the combined fields of business strategy and strategic management.

Chapter 2: Strategic Fit

- 2.1 Introduction**
- 2.2 Punctuated Equilibrium**
- 2.3 Business Strategy**
- 2.4 Strategic positioning**
- 2.5 Strategic management**
- 2.6 Strategic Fit**
- 2.7 Strategic Capabilities**
- 2.8 Strategic orientation**
- 2.9 Strategic change**
- 2.10 Strategic gaps**
- 2.11 Strategic drift**
- 2.12 Path dependency and strategic fit**
- 2.13 Organisational culture and strategic fit**
- 2.14 Leadership and strategic fit**
- 2.15 Strategic failure**
- 2.16 Summary**

Strategic Fit

2.1 Introduction

Effectiveness of strategies developed (organisational actions in the environment), and strategic management (process of decision-making and strategy development) are directly linked with the appropriateness and suitability of strategies being developed (Thompson, 2010). The end result is measured by the organisation's competitive advantages (advantages over competition) via its capabilities (internally developed abilities and overall competencies) that all lead to the organisation's strategic fit in its external environment (Boulter, 2012).

The literature in the combined field of strategy and strategic management is in agreement that strategic fit results from the effectiveness of organisational strategies in ensuring that resources, practices and capabilities developed correspond to the opportunities and challenges in the organisation's external environment (Davila, 2012). In other words, all organisational actions should lead to the fitness of the organisation in its environment, as the environment changes, if the organisation is to maintain and improve its performance and remain competitive (Ostroff, 2012).

This chapter involves detailed and reflective literature review of the notion of strategic fit incorporates additional concepts that underpin the notion. It goes through the life of any organization and the fluctuation might accrue along its timeline in terms of strategic journey through tackling the key concepts of strategic management.

2.2 Punctuated Equilibrium

The concept of the punctuated equilibrium (Sommer, 2012) provides a further insight into organisational practices in keeping up with environmental changes. The punctuated equilibrium theory suggests that organisations develop through long periods of stability (equilibrium periods) in their basic patterns of stability that are punctuated by relatively short bursts of fundamental change (revolutionary periods). Consequently, revolutionary periods disrupt patterns of established activity and create the bases for new equilibrium periods (Romanelli and Tushman, 1994; D’aveni, 2010). Chaos theory also has a similar perspective and sees order emerging from chaos and chaos giving impetus to order (Stacey, 1993; Webb, 2013).

The theory of the punctuated equilibrium states that, organisations to begin with do what they do in the manner that they do it, in order to remain strategically fit with their environment given the prevalent characteristics of that environment. For example, they adopt practices that reflect the current state of the economy and the overall know-how of that period in relation to their mission and objectives. This stage is the continuous stage of management (Williams, 2011).

The next stage is incremental. As problems occur, or as the environment changes, organisations adjust their practices and adopt new ways in order to maintain their strategic fit. For example, they may improve operations by embracing new technologies, systems and processes or introduce new products and services to facilitate new socio-cultural trends (Swaim, 2011). Incrementalism (Quinn, 1978) takes the view that top managers do not understand all of the organisation’s activities, or all environmental conditions, and thus decisions applicable to all subsystems of the organisation would be inappropriate. This approach assumes

that managers have a clear understanding of the organisation's long-term goals but only a limited capability to realise them, due to constraints. Lower-level managers are thus involved in the process of decision-making and encouraged to propose strategies. In this way, change takes place incrementally, it occurs through trial and error and aims are achieved through co-ordination (Jones, 2013).

The following stage is the flux. Flux is the point where environmental conditions have changed dramatically over a short period of time and organisations are not sure of, or do not know, how to respond to the new changes. This is the revolutionary period and the point for radical change. This is the time where managers hold on-going meetings to decide what to do next, and potentially, seek advice from all kinds of experts in order to arrive to the most appropriate decision – given the situation that they are faced up with (Jennings, 2012).

The final stage is the transformational stage, decisions have been made and the organisation is implementing its new practice. At that stage, two things can happen. Either strategies developed, are suitable in relation to challenges encountered in the external environment, and therefore, the organisation maintains its strategic fit or, they are unsuitable and the organisation is no longer competent thus resulting to a strategic drift (Johnson, 1987) and eventually fails (Treen, 2012). The gap between the strategic fit and the strategic drift is said to be the strategic wear out (Dziri, 2011) where organisations are worn out by their efforts to keep up with environmental change. For example, they may have worn themselves out financially and can no longer maintain performance, they may suffer from bad leadership and poor management or they may be unable to cope with market changes at the speed required because of inertia (Drummond, 2013).

According to Nirgudka (2002), organisational actions to ensuring strategic fit not only influence competitive advantage(s) but also play a vital role to ensuring business sustainability. He continues by stating that efforts to maintaining strategic fit must be reviewed constantly to ensure that the direction of the organisation is on the intended path that delivers the mission and realises business objectives (Stevenson, 2010).

2.3 Business Strategy

Before embarking into a detail discussion on strategic fit and its associated diverse notions, it makes sense to introduce the concept of strategy because, after all, strategic fit is the outcome of strategy. The Oxford dictionary defines (Stevenson, 2010) strategy as a plan of action designed to achieve a long-term, or overall aim. Similarly, the US dictionary (Stevenson, 2010) states that strategy is a plan of action which an individual, group or organisation designs in an effort to achieve a vision.

Miles (2003), one of the proponents of strategy from a business perspective, says that strategy is illustrated as the main tool that is used to achieve an organisation's current and future vision. This, he continues, explains that strategy is looking at long-term planning and defines the organisation's future position to ensure the attainment of objectives with a provision of a platform for organisational decision-making. Liebowitz (1999) concurs and reiterates that organisational strategy is developed with the clear intention of envisioning the long-term direction of an organisation.

Michael Porter (1979; 1980; 1996; 2001) is widely regarded as the modern-day godfather of strategy from a business point of view and his works are quoted in

every book in the field. Magretta (2012) citing one of his studies (Porter, 1996) reiterates that strategy is about making choices and trade-offs; it's about deliberately choosing to be different and knowing what to do and what not to do. Hamel and Prahalad (1989; 1993; 1994) add that an organisation should develop relevant resources, capabilities and competencies to match its strategic direction and Burton (2004) amongst others is also in agreement. Jensen (2001) highlights that strategy development involves the establishment of organisational purpose and reasons for existence that define the strategic standing of a firm – and this includes clear definition of short term, mid- term and long term goals that underpin the vision of the organisation. Rothwell (1994) reiterates and states that a clear strategic direction enables an organisation to develop sustainable future plans and Arnold (2007) adds that strategic planning must be a collective approach in an organisation in order to enable the best possible shaping of a plan.

The concept of strategy is not new. It is originating from ancient Athens and the word 'strategy' derives from the Greek word *strategós* which is the position of the general leading large divisions of *stratós* (army). Cummings (1993), states that the term coincides with the ancient Athenian Kleisthénēs who developed a new socio-political structure in Athens between 508-507 B.C., after leading a successful uprising against the ruling of Sparta. As part of the restructure, he introduced different divisions that acted as military and political units for the Athenian region. The head of each division was named *strategós* and was offered a chair at the war council lead by Kleisthenes.

In modern history, and from a business perspective, strategy emerged with an economics viewpoint in the late eighteenth century from the founder of modern-

day economics Adam Smith, in his book *The Wealth of Nations* (1776) (Smith, 2007). As time progressed and the discipline evolved, the theory of the Industrial Organisation (IO) was born in the 1930s. In the 1950s, the first focused writings in business strategy appeared, initially as a by-product of the Industrial Organisation economics. As academic thought and reflection grew, business strategy gained momentum, and in the 1980s, it became an established management discipline (Mintzberg et al, 2003).

Chandler (1962), another proponent of modern-day business strategy, defines strategy as the determination of the basic long -term goals, and objectives of an enterprise, and adoption of courses of action and the allocation of resources necessary for carrying out these goals. Child (1972) adds that strategy includes the set of fundamental, or critical, choices about the ends and means of a business.

Quinn et al (2003) see strategy as the pattern, or plan, that integrates an organisation's major goals, policies and action sequences into a cohesive whole. He further explains that a well formulated strategy helps to marshal and allocate an organisation's resources into a unique and viable posture based on its relative internal competencies and shortcomings, anticipated changes in the environment and contingent moves by intelligent opponents.

However, Sloman (1999) and Aaker (2001) argue that strategy definitions should be developed for different levels of an organisation in the planning process because each level is engaging with different aspects in the process of decision-making. He maintains that strategies at different levels of decision-making must be reflecting the overall corporate strategy of an organisation and hence must help achieve that. Miltenburg (2005) notes that the process of developing strategies

within an organisation should involve creativity and innovation to obtain the highest benefit – and this is directly linked with the arguments of Porter (1980; 1996) that strategies developed in an organisation should be different from competition in order to achieve competitive advantage(s). This argument is further supported by Callan (1993) as he indicates that the competitive environment is dominated by various factors where most are unpredictable and firms need to be developing ways in which these can be tackled in order to remain competitive.

Nevertheless, Panagiotou (2012) argues that given that there are three different levels of decision-making in an organisation (corporate, business and functional), three different definitions of strategy are needed in order to highlight the specific aspects of each level of strategy development and provide the necessary clarity in the field. To that end, he articulates that corporate strategy is the continuous and persistent appraisal of the organisation's external environment to identify favorable industry conditions, which warrant the creation of a unique and valuable position for the organisation to enter and/or maintain, enabling it to exploit business opportunities given its strengths, weaknesses, capabilities and resources. As to the business strategy, he says that business strategy emerges from what the company does, or wants to do, and it can be defined as the adoption of a course of action and a set of coherent, unifying, flexible and integrative plans, which support and enable the business unit to achieve its overall goals in its chosen industry, sanction the utilisation of resources and efforts, whilst averting potential threats and facilitating the creation of barriers to imitation to its competitors. He also makes clear that these two definitions are more appropriate for large organisations with more than one Strategic Business Unit (SBU). For a single

business enterprise, the two definitions are merged, since corporate decisions and business strategies are formulated by the same team of managers. Finally, he specifies that functional strategy (tactical level) is the concurrent alignment and pattern of plans that translate corporate and business objectives into a framework of flexible processes that attempt to perform similar activities better than rivals, to enable operational effectiveness and competitive advantage(s) to take place.

Alternatively, Mintzberg (1994) and Mintzberg et al (2003) provide four different perspectives of how strategy can be seen as. The first is strategy as a ‘Plan’ where strategy is used as an organisational planning tool. This is a conscious effort by the organisation to achieving intended objectives. The second is strategy as a ‘Pattern’ where it can be seen as a behavioural consistency that is implemented methodically having a pattern and such patterns can evolve during the course of strategy implementation. The third is strategy as a ‘Position’ where organisational strategy defines the market position of the firm. This is also known as ‘strategic position’ Porter (1979; 1980; 1996; 2001) as well and it links the organisation with its external environment. The fourth and final is strategy as a ‘Perspective’ where strategy is directly or indirectly used in shaping the perspective of the organisation. This is to say that strategy development can be seen as the personality of the organisation that underpins the way in which an organisation, via its management, perceives the environment.

On the other hand, Johnson et al (2010) add that the process of strategy development can also be seen as in three different paradigms. ‘Strategy as a design’ is the first, where the strategic direction of the organisation is decided through using a formalized planning model. Strategic position and the choices are

analytically evaluated and the best combinations are chosen. The second is 'strategy as 'experience' and this is where an organisation uses past experience as a learning curve in developing future strategies and new directions are formulated as deviations from existing strategies. The third and final is 'strategy as ideas' where an organisation considers that strategies emerge from day-to-day operations and employee contributions are encouraged in order to facilitate an environment that encourages innovation and creativity.

Armstrong (2011) complemented all the above viewpoints by stating that organisational strategy also has two basic dimensions. The first is the 'where you want to go and how do you get there' and involves a position audit which is the planning part of the strategy development process. The second is the notion of strategic fit that highlight the suitability of selected strategies and the extent to which these are effectively matched with internal resources, capabilities and competences against external environmental challenges and opportunities.

2.4 Strategic positioning

As in the latter section, the concept of strategic positioning is also relevant and hence merits a discussion because strategic fit is the result of effective organisational positioning in the external environment. The essence of an organisation's strategic positioning is achieving a distinctive and visible position in the external environment in the eyes of diverse audiences and target groups (Das, 2011). According to Thompson (2010) strategic positioning is simply performing different activities than rivals or performing similar activities in different ways.

The notion of strategic positioning has been initially articulated by Porter (1979; 1980; 1985) in the three generic strategies framework. The three generic strategies is a useful framework for identifying different strategic positions in an industry and possible routes to competitive advantage(s). In particular, these strategies are ‘differentiation’, ‘cost leadership’ and ‘focused’. Differentiation and cost leadership are relevant when a company serves an entire industry and the competitive scope is broad. When a company serves a particular segment of that industry and thus the competitive scope is narrow, the relevant strategy is focus since the company focuses its efforts on the needs of a specific group of customers. In the context of focused strategies, cost focus or differentiation focus can then be selected as the bases with which to compete.

However, despite the usefulness of the framework, the guidelines are rigid (Aaker, 2001) as they suggest that these positions are alternative strategic routes to competitive advantage and that, an organisation can only compete in a market by either being cheaper than competition or different in order to justify higher prices. If the company pursues more than one of these strategies, it is in danger of being ‘stuck in the middle’ because it will be doing too much, rather than concentrating its efforts on one specific aspect. Since the original theory, however, it has become evident that many companies pursue hybrid strategies by integrating both differentiation and cost and are successful in what they do (Moon, 2010).

Whilst Porter (1979; 1980; 1985) attempted to explain what is strategic positioning other authors (Ulph, 2011) discussed the key internal requirements in an organisation in order to achieve the desired positioning. A large debate in the field is based on which approach an organisation is to adopt to achieve their

targeted positioning (Williamson, 2013). The positioning school of thought (Henry, 2008) states that an organisation should be driven by its external environmental conditions and as such endeavor to develop internal capabilities in line with the external environment. This approach is also known as ‘outside-in’ or market-based view (Foss, 1997).

On the other hand, the opposite approach to this comes from the resource-based perspective (Foss, 1997) where it is argued that strategy development should first aim at developing internal capabilities and then seek to position the organisation in the external environment accordingly (Foss, 1997; Henry, 2008; Hunt, 2010). This approach is also known as ‘inside-out’ or resource-based view (Henry, 2008). Hence, strategy development is based on the resources and capabilities of the organisation (Gibbert, 2012). This, in turn, emphasises the need of creating core competences through capabilities in order to achieve competitive advantages in the external environment (Barney, 2007; Ireland, 2010)

Nevertheless, a number of authors in the field (Sanchez, 2010) argue that firms must strike a balance between the resource-based view and the market-based view in achieving a sustainable advantage over rivals, since as Malhotra (2001) and Harrison (2010) say the resource based-view ignores the organisation’s market conditions and trends and customer perceptions and satisfaction.

2.5 Strategic management

Similarly, as with the last section, it is also necessary to provide a concise summary of the notion of strategic management in order to have a discussion in place that underpins the central theme of strategic fit of this chapter. According to Jeffs (2008), strategic management is described as the decisions that generate

strategy development, implementation and control which then lead to achieving the organisation's vision, mission and objectives. Alkhafaji (2003) and others (Sadler, 2003) concur and state that strategic management is the process of assessing the corporation and its environment in order to meet long-term objectives.

Sadler (2003) argues that strategic management is different from operations management; strategic management is concerned with decisions at the top level of management in an organisation and has a long-term perspective whereas operations management is concerned with tactics and has a short to medium-term perspective. These advances are also in line with Panagiotou's (2012) definitions of strategy discussed earlier. Nevertheless, as commonly agreed by authors in the field (Amason, 2010) all levels of strategy and management are interconnected because one follows from the other and frequently inform each other (Thompson, 2010).

However, given that strategic management, for the most part, includes the process of decision-making, and consequently, impacts on how individuals perceive the environment that, in turn, influences actions that create organisational strategic fit or strategic drift, it is also useful to provide some historic arguments as to how strategic management has evolved over the years.

As already discussed earlier, the first writings of business strategy appeared in the 1950s. At first, business environments were viewed as objective entities, and the company was considered to be detached from its industry and market - as if, companies were players in an arena competing against each other. Because strategic management spawn from economics, and in particular from the branch of

Industrial Organisation (IO), the field of strategy from the beginning was subject to an economics-based view that business environments are objective (Hodgkinson, 2005) and that managers are rational utility-maximizing individuals (Calori et al, 1992). As such, it was assumed that managers possess similar knowledge, all reason in a similar logical way, all notice the same threats and opportunities and all pursue similar goals (Stubbart, 1989) – also acknowledged by Ketchen (2006).

Because of the formality of the practice and the influence from the military routes of strategy, business strategy was seen as a top-to-bottom activity where plans of action were formulated by management and implemented throughout the organisation observing a strict chain of command. However, over a period of time this approach was perceived as simplistic, biased and incomplete (Panagiotou, 2008; 2012). As a result, over the years, a number of additional perspectives were introduced in the field, eventually forming the various schools of thought in strategic management (Mintzeberg, 1998; 2003).

Table 2-1 illustrates the varied perspectives of the numerous schools of thought in the field and highlights the key aspects of each (Mintzberg et al, 1998; 2003).

School of Thought	Viewpoint	Time Period	Summary of Attributes
Design School	Strategy development as a process of conception.	1960s-1970s.	This was the first school of thought to emerge in the field. It perceived strategy development as achieving the essential strategic fit between external opportunities and threats and internal strengths and weaknesses. Strategy development is seen as a top management activity, it is simple in nature and deliberate in process.
Planning School.	Strategy development as a formal process.	1970s-1980s.	Has similar characteristics like the design school. However, over time, strategy process became more formalized and corporate planners are seen as the key players in strategy development.
Positioning school.	Strategy development as an analytical process.	1980s-1990s.	Emphasis is placed on rigid scientific analysis of formalized business environments and generic views of competitive positioning. This is a popularized and dominant view that grew rapidly in all areas of business strategy. This perspective is still strong in the field.
Entrepreneurial School.	Strategy development	Grew in parallel with	The literature for this perspective was formed slowly rather than in waves as in other schools of thought. Emphasis is placed on the

	as a visionary process.	others	CEO's visions and intuitive abilities. Prescriptive approaches to strategy development start to break down and emergent approaches are embraced.
Cognitive School.	Strategy development as a mental process.	Emerged in the late 1970s and grew in the 1990s.	Formed out of continuous dissatisfaction with the formalized processes of the prescriptive approaches that primarily assumed away the human element in the process of strategy development. Re-introduced the individual and 30organisation managerial cognitions as the key element in strategy development.
Learning School.	Strategy development as an emergent process.	Late 1970s onwards. Grew in parallel with others.	A major challenge to the prescriptive schools of thought. The learning school sees strategies being emergent, and believes that strategic thinking can be found throughout the 30organisation. Sees strategy development and implementation as being interrelated with one guiding the other to increase organisational competencies and capabilities.
Power School.	Strategy development as a process of negotiation.	Grew in parallel with others.	A small but quite distinctive school of thought with two perspectives. The first is the micro perspective which sees strategy development as an internal political and persuasive process. The second is the macro perspective which uses power as a leverage over external parties to achieve objectives. Focus on self-interest.
Cultural School	Strategy development as a collective process.	1980s onwards.	This perspective sees strategy development as a common interest among stakeholders and emphasises social interaction to achieve the objective. Positive and effective culture is used as a strategic leverage.
Environmental School.	Strategy development as a reactive process to environmental conditions.	Mid 1970s onwards.	Emphasis is placed on organisational maneuvering dependent upon current environmental pressures and operating issues.
Configuration School.	Strategy development as a process of transformation	Grew in parallel with others.	Emphasis is placed on adopting and integrating elements from both the prescriptive and descriptive schools of thought in order to achieve a more holistic approach to strategy development.

Table 2-1 The Ten Schools of Thought in Strategic Management

(Source: Mintzberg, Ahlstrand and Lampel, 1998 and Mintzberg and Lampel, 1999a; 1999b.)

2.6 Strategic Fit

Now that the underpinning diverse theories in relation to the notion of strategic fit are in place, and continuing from sections 2.1 and 2.2, where preliminary discussions about the concept of strategic fit have already taken place, it is felt that this chapter can engage with a more involved discussion on the topic. Prasad (2004) argues that strategic fit is an organisation's effort to matching its resource pool and capabilities with external challenges or opportunities in the environment. The main objective is to identify opportunities that will accrue to the organisation and to prepare the organisation to obtain benefits that will have financial or non-financial payoffs. Cole (2003) agrees and further suggests that any firm in order to maximize its competitive advantage must match its resources and internal capabilities with the changing elements in the external environment. Triantis

(1999) is also of the same opinion and adds that a strategic fit exercise is a continuing process within an organisation that faces continuous change as a response to the changing nature of the external environment. In addition, according to Birchall (2005) the degree of change required depends on the nature of environmental dynamism and the rate of change.

The contingency theory of strategic fit (Rumelt, 1974; Stalker and Burns, 1994) suggests that the degree of organisational performance and effectiveness of operations is closely linked with the number of internal characteristics that the organisation is challenged by such as functional structure, resources and contingency planning. Donaldson (2001) further states that a firm's strategy and structure must be in-line with the external environment and expected changes in order to derive to the best possible strategic fit given the situation – and he summarizes strategic fit as the relationship between a firm's task (external) environment, internal structure (including systems and processes) and performance (fit). Birchall (2005) is also in agreement and explains that an organisation must possess a strategic flexibility that is explained by proactive and reactive organisational potential for maintaining a dynamic fit between the organisation and its environment.

However, environmental uncertainty is identified as a key problematic variable to the latter (Pennings, 1975) as indicated in Miner (2005) and Witzel (2005) when it comes to achieving the desired strategic fit. Nevertheless, it is also accepted, in theory, that an organisation's optimal structure is contingent upon various situational factors but, in practice, providing real advice based on this

understanding is difficult (Nasrallah and Qawashem 2009) because each case has its own challenges and needs to be seen on one-to-one basis.

Therefore, additional theories pertaining to fit between strategy, structure and environment in different situations, relationships and contingencies have been introduced in an effort to fully explore the eluding notion of strategic fit (Papp, 2001). Bergeron (2000) argues the relevance of contingency models in strategy development and illustrates how these models help organisations managing their strategic fit. He further maintains the importance of contingent strategy formulation in an organisational context and shows how it enables an organisation to manage and incorporate the changing needs of the target market in the service or product offering. He continues by stating that rigid strategy formulation is not effective and retains that organisations should inject clarity and flexibility into their strategic and implementation processes in order to avoid inertia.

Original studies on the concept of strategic fit (Cole, 2003) primarily identify two schools of thought; namely, the ‘strategy follows structure’ or the ‘structure follows strategy’. The early work of Chandler (1962) showed that the structural contingency theory of organisational adaptation identifies organisations to make structural changes in areas of size, diversification and technology in order to match internal resource capabilities with the external environment. This theory, Lindow (2013) says, denotes that organisational strategic fit can be achieved through adjusting its internal structural elements.

Van de Ven and Drazin (1984) state that organisational strategic fit can be achieved via three particular approaches; namely, ‘selection’, ‘interactions’ and ‘systems’. The selection approach assumes that the organisation has structured

itself in line with its external environment. The interactions approach in a similar manner, regards fit as being the ongoing interaction between the organisation and its external environment and that the organisation changes its structure in line with environmental changes to maintain performance. The systems approach widens the interactions approach and also includes changes in organisational systems and processes in an effort to maintain performance.

However, Venkatraman (1989) argues that from a systems point of view approach the strategic fit can best be measured using six separate perspectives as they pertain to an organisation's environmental uncertainty, strategic orientation and structure to maintain levels of performance. In particular these perspectives are 'fit as moderation' (appropriate strategic orientation leads to better organisational performance), 'fit as mediation' (intervention for corrective action as/when required), 'fit as matching' (matching of resources and capabilities in line with environmental challenges and opportunities), 'fit as gestalts' (organisational actions based on identified past patterns of behaviour), 'fit as profile deviation' (consistencies and deviations in action based on the desired organisational profile following up the mission statement), and 'fit as co-variation' (co-alignment of internal variables to achieve consistency of actions). Later on, Bergeron et al (2001) argued that the 'strategic IT perspective' would also need to be added to these as the missing element to make the framework more complete, and Santala and Parvinen (2007) supplemented the same framework with the 'customer perspective'.

From a resource-based point of view, as discussed earlier, Hamel (1994) made the argument that effective allocation of organisational resources leads to higher

performance and hence strategic fit, and Garlichs (2011) is also in agreement and adds that the relationship between the two create a dynamic interaction for achieving strategic fit.

Finally, Lindow (2013) from a congruence approach view point joined the debate in the field and argues that if an understanding of the organisation as a system with its basic set of elements (input, strategy, output and transformation process) is achieved there is no need to check the link with organisational performance because the tighter the fit-the greater the congruence, and therefore, the higher the performance.

2.7 Strategic Capabilities

Irrespective of the arguments in the field associated with the notion of strategic fit, it is commonly agreed among authors (Helfat, 2009) that strategic fit cannot be achieved without relevant strategic capabilities. Hence, strategic capabilities are key prerequisites to operationalizing the diverse requirements in the pursuit of strategic fit (Auster, 2005).

Strategies that are not implementable are worthless (Ketchen, 2006). It is, therefore, clear that all things strategic must lead to organisational capabilities to enable effective implementation. In fact, a structural dimension of strategy is ensuring the development of relevant capabilities in order to operationalise the strategy and enable the organisation to achieve its aims and objectives (Ireland, 2010).

According to Johnson et al (2008; 2010) strategic capability is the adequacy and suitability of resources and competencies of an organisation for it to survive and prosper and it is clear that the concept of strategic capability is closely linked with

organisational resources and competencies (Burnie, 2003; Bircall, 2005). The strength of capabilities is also depending upon the quality, type, and amount of resources that an organisation has.

However, acquiring a capability is not as easy as it sounds. To become good at something involves on-going training and practice (Capasso, 2005). It necessitates appropriate resources and continuous refinement (Eikelenboom, 2005). Most of all it requires a mindset of willingness and commitment. It is the same thing in a corporate setting. Organisations need to nurture such a concept if they are to match, cultivate and maintain relevant capabilities (Henry, 2008). They need to adopt practices and processes that develop into such support systems that, in turn, create a host of operational activities that interlock with each other in a harmonised and synchronised manner. Then only the organisation can develop successful competitive strategies that outperform others in the marketplace (Thompson, 2010).

Stalk et al (1992) also acknowledged in Enders (2004) articulate four basic principles of capabilities-based competition. They state that:

- The building blocks of corporate strategy are not products and markets but business processes.
- Competitive success depends on transforming a company's key processes into strategic capabilities that consistently provide superior value to the customer.
- Companies create these capabilities by making strategic investments in a support infrastructure that links together and transcends traditional SBUs and functions.

- Because capabilities necessitate cross functions, the champion of a capabilities-based strategy is the Chief Executive Officer (CEO).

In other words, capabilities are a fundamental ingredient of competitive strategies. However, these capabilities are underpinned by the organisational processes that make this happen. Prahalad and Hamel (1990; Hamel, 1996) regard these processes as organisational core competencies. They view the diversified corporation as a large tree. The trunk and the big branches, they say, are the core products. The smaller branches are the business units, the leaves, flowers and fruit are the end products. The root system that provides nourishment and stability is the core competence.

They maintain that long-term organisational success derives from the management's ability to consolidate corporate-wide technologies and production skills into competencies that enable SBUs to adapt and respond quickly to environmental changes. Core competencies are the collective learning in the organisation and the ability to communicate, harmonise, coordinate and integrate diverse skills into multiple streams of activities across the corporation. Thus, the core competencies lead to winning products and enable competitive advantages over rivals. Consequently, competences are the glue that binds the business together and provide the basis for long-term survival and success.

Mansour (1998) and Whiddett (2003)) hold the same opinion and state that at the bottom of the hierarchy the building blocks of any type of competence are the organisation's resources. Not just physical resources such as tangible equipment but also intangible such as know-how and contacts. In fact, the intangible resources are much more important because they are difficult to be imitated by

competitors. For example, locations, equipment and products are relatively easy to imitate, it is much more difficult to imitate cultural aspects, brands and reputation of an organisation.

On the other hand, it is not what assets one has but rather how one uses these assets. The next level up is exactly that. Capabilities are organisational abilities in using resources in the best possible way. In so doing, processes and practices that enable the utilisation of such resources are adopted, for example, designing a production line that is capable of producing more than one type of product by using the same resources.

A competence, the third level on the hierarchy, requires more sophistication and involves cross-business functions, integration of activities and effective coordination within the SBU. Finally, core competences are of the highest level of organisational sophistication because the coordination efforts required are even greater than before. In this case, in addition to the skills necessary at the previous levels, truly open and effective communications are essential as is finding ways to manage organisational knowledge. Developing core competencies involves not only the integration of cross SBU functions but also those of external partners.

Of course, concentrating on a narrow range of competences to the detriment of other important organisational aspects is dangerous because a company needs to be competent in as many areas as necessary as the external environment dictates, if it is to maintain its strategic fit. Equally, the more the organisational core competences the greater the advantages over competition (Sanchez, 2010).

Botten (1999) concurs and adds that strategic capabilities are directly influenced by internal competencies - and competencies, are the activities and processes through which an organisation deploys its resources effectively. Stringham (2012) states that retention and improvement of strategic capabilities heavily rely on the management of the organisation and that strategic capabilities and strategic fit are directly connected with each other.

Henry (2008) elucidates that organisational competencies are attributes that firms require in order to be able to compete in the market place. There can be many competencies within an organisation, Drejer (2002) reiterates, however, it is important to identify the core competencies that will enable the firm to obtaining competitive advantages. He continues by stating that he also in agreement with Prahalad and Hamel (1990) and Hamel (1996) that a core organisational competence is illustrated as the collective learning in an organisation and requires coordination of diverse product skills and integration of multiple streams of technologies.

According to De Wit et al (2010) core competencies can only be developed by long term consistent investments in the improvement and enhancement of resources and capabilities that may even span more than ten-fifteen years and in order to do so firms need to be engaging with strategic architecture. The concept of strategic architecture has been developed by Hamel and Prahalad (1994) and Hamel (1996) and they articulate that strategic architecture is a high-level blueprint for the deployment of functionalities, the acquisition of new competencies or the migration of existing competencies, and the reconfiguring of the interface with customers. Hence, the essence of strategic architecture is to

provide direction and a framework for restructuring. Needless to say, a prerequisite for the top management team in order to be effective in such a major corporate exercise is to have a clear vision of what needs to be accomplished and be characterised by strong leadership skills. This careful planning of a firm's activities to attain core competencies leads to sustainable competitive advantages, Chaston (2012) adds.

The resource-based view of strategic capability, further illustrates that to achieve strategic fit, an organisation will have to have sufficient resource capabilities. According to Penrose (1959; 1995) and Birchall (2005), an organisation is an administrative unit and a collection of productive resources. This notion is further clarified by Hamel and Prahalad, (1994) where he explains that strategy is a balance between the exploitation of existing resources and the development of new ones and Armstrong (2008) is also in agreement.

Jenster (2001) reiterates the above in a different way and says that an organisation can increase its strategic capability by clearly identifying the vision and then developing strategies that match internal resource capabilities to effectively address market opportunities and customer expectations. A number of authors including Capasso (2005) believe that strategic capabilities are a collective approach that has to be shared amongst the organisation in order to maintain a long-term competitive edge – and in the process, knowledge management and knowledge transfer plays a vital role in the organisation.

It is, therefore, clear by the arguments presented thus far that strategic capabilities and strategic fit are directly related. This is further highlighted by Armstrong (2008) where he argues that a lack of capabilities or lack in strategic fit

impacts the organisation adversely. According to the resource based view, explained by Malhotra (2001) if a firm is to achieve strategic capability it should be armed with the necessary resources and develop corresponding competencies. Jeffs (2008) demonstrates that the main driver of strategic capability within an organisation is the strategic intent, in line with Hamel and Prahalad (1994) where this is achieved by having a clear and well communicated vision and mission statement and a sound plan to achieve the stated short, mid and long-term objectives.

The strategic fit notion, as a model for organisational strategy and long-term sustainability, is being criticised by many even though it is regarded as the most rational model for strategy development and implementation, as already illustrated in previous sections. There have been many arguments brought forward challenging the conventional strategic fit model (Birtchall, 2005). Betz (2011) advocates that new possibilities for competitive advantages emerge for modern day firms through technological advancements; according to him the degree of retaining a competitive advantage depends on the ability to adopt new technologies in a timely manner and firms that do not have the ability to do so jeopardizing performance.

According to Hamel and Prahalad (1994), the strategic fit model only looks at resource capabilities and market conditions when developing strategies and he argues that these two factors alone are not enough to achieve sustainable competitive advantages. They maintain that a firm should have a far-reaching vision in place, and via strategic architecture, to ensure that they acquire resources and capabilities in line with this vision to ensure long-term survival. Afuah (2009)

concur and argues that firms that only see internal resource capabilities and market opportunities have a narrow vision and will be the least competitive in the future as competition develops more innovative strategies and product or service offering.

It is, therefore, obvious that a firm needs to have sustainable core competencies to achieve sustainable competitive advantages in the long run. Sustainability of a competency, Hill (2007), says depends on the durability and imitability of that particular competency. Durability of a competency, he continues, is the rate at which a firm's underlying resources and capabilities (core competencies) depreciate or become obsolete. Imitability of a competency is the rate at which a firm's underlying resources and capabilities (core competencies) can be duplicated by competition.

According to Kotler (2009), a strategic capability of a firm can be stated as the effectiveness of using organisational resources and competences in delivering high value to customers, since customers are value maximizers and they only purchase products and services that perceive to have some inherent value. These values can either be threshold values (minimum features and quality) or they can be critical success factors where such values are recognised by a group of customers (Kotler, 2009). Therefore, it is important that a firm differentiates between resources and competencies when attempting to identify and develop strategic capabilities. Resources are basically the asset base of an organisation that could be in tangible form and competencies represent what the organisation is capable of doing which are definitely intangible in nature (Eva, 2010). Shield (2008) states that threshold resources are the bare minimum resources that an

organisation must possess in order to deliver the minimum expectation of its target groups (i.e., customers and end users) using threshold competencies.

On the other hand, organisational knowledge is of paramount importance when it comes to determining organisational strategic capabilities (Helfat, 2009). In highly uncertain and continuously transforming competitive landscapes where the only constant characteristic is change it is not land, labour or capital that provide lasting competitive advantages but rather it is knowledge (Sanchez, 2010). As Davila (2010) says, in today's highly competitive environments the key to faster, better and cheaper products, services and processes is to bring the full force of a company's knowledge to bear in order to ensure superiority over competition. To that end, knowledge is the most critical resource of an organisation that needs to be updated and expanded on a continuous basis, if the company is to achieve and maintain its strategic fit in its industry (Hauschild et al, 2001; Garlichs, 2011; Pauleen, 2011).

Organisational knowledge is basically the acquisition of Information and skills through experience, or education, where the theoretical or practical understanding of a subject can be obtained (Pablos, 2009). Kodama (2011) agrees and further states that organisational knowledge stems from employee skills, abilities and overall knowledge that the organisation possesses. Most importantly, he maintains, organisational knowledge has become a key factor that contributes towards the establishment of strategic capabilities (Kodama, 2011).

Hislop (2013) concurs and adds that even though there has been much research on the topics of organisational resources and associated competencies and capabilities, the power of knowledge as an underpinning resource for maintaining

capabilities has not been researched as a critical organisational aspect up until recently. He further argues that nowadays that competition can copy anything that is visible, and even make the copy better than the original, knowledge and knowledge management become critical intangible resources that enable the maintenance of organisational capabilities since knowledge is an intangible resource and thus hard to imitate.

Nevertheless, as has already been demonstrated, central to the process of strategy development is building organisational capabilities in line with the prevailing conditions of the organisation's external environment in order to achieve and maintain a good strategic fit. This is even more important in complex business environments that are interlinked and globalized and customers are sophisticated and demanding. In mature and saturated markets that are proliferated with comparable quality products and services and are characterized by cut-throat competition and very little loyalty between sellers and buyers, this aspect becomes critical for the survival of the firm (Panagiotou, 2013).

To that end, the notion of Key Success Factors (KSFs), also known as Critical Success Factors (CSFs), is critical to the achievement of an organisation's strategic fit. Key success factors according to Howell (2009) can briefly be described as critical elements that provide the basis to compete in the market place. Aaker (2010) says that the concept of critical success factors can be broadly divided into two areas where one is strategic necessities and the other is strategic strengths. Strategic necessities are basic requirements to compete in the market place where they do not provide any competitive advantage as competitors also possess those. However, these are mandatory to have since any loss of these will

provide the competitor the upper hand over the organisation that will suffer a market disadvantage. Strategic strengths on the other hand are the elements that a firm excels in and this involves internal assets and competencies that are different and superior to those of the competitors. These according to McLoughlin and David (2010) provide the bases for competitive advantage(s).

Others explain these factors in numerous ways. For example, Brotherton and Shaw (1996) define critical success factors as the essential things that must be achieved by the company or areas that will produce the greatest competitive leverage, and Fryer et al (2007) are also in agreement. Digman (1990), Guynes and Vanecek (1996) and Butler and Fitzgerald (1999) define them as the areas and functions where things must go right to ensure successful competitive performance for an organisation. Eid et al (2002) and Chin et al (2008) also hold the same opinion.

Lin et al (2004) assert that critical success factors, also known as key success factors, are widely adopted and used in a variety of fields in order to determine the most critical factors influencing enterprise success, but do not explain what they are. Thomson et al (2011) state that key success factors are the competitive factors that mostly affect industry members' ability to prosper in the marketplace, but again, no additional guidelines as to what these factors are and how they can be identified and achieved are provided.

In addition, none of the above descriptions and definitions shed light into what are key or critical success factors and how they are linked with organisational capabilities or the notion of strategic fit. Nevertheless, Panagiotou (2013) comes to the rescue and clarifies the situation. He argues that the notions of Critical

Success Factors (CSFs) or Key Success Factors (KSFs) are used wrongly in the field and proposes to divide the combined terms of KSFs and CSFs into two distinct concepts and refocus them onto the two main organisational environments in a way that KSFs will be concerned with the external environment and CSFs with the internal environment of the organisation. In this way, he maintains that KSFs can be defined as the key external competitive factors that an organisation must satisfy in order to be successful. They can be identified through the prevailing conditions of supply and demand, the wider technological, political and socio-cultural aspects, as well as through environmental and ecological considerations and the legal and regulatory framework of the focal competitive landscape. They are equally applicable to all companies operating in the same industry and specific segments since all companies in that market must satisfy the same competitive factors. He continues by saying that, in turn, the company must possess a relevant set of CSFs that can effectively be matched against identified KSFs in order to achieve a good strategic fit between the organisation and its external environment. Hence, CSFs are defined as the critical factors internally to the organisation that are imperative for operational success. In this way, he sustains, a meaningful connection is established between the two terms (Panagiotou, 2013).

2.8 Strategic orientation

Strategic orientation is much discussed area in today's organisational context. As indicated in (Bettis, 2009) strategic orientation is direction(s) implemented by a firm to create the proper behaviours for the continuous superior performance of the business (Narver and Slater, 1990). Most of the studies on strategic orientation are conducted either with a holistic approach or with a subdivision approach. The

relationship between strategic fit and strategic orientation is closely linked with each other. With correct strategic orientation organisations can increase their performance dramatically. There are many third party variables that have a direct influence on strategic orientation and lead an organisation to different performance levels. LIU (2011) identified some such variables to be taken into consideration when strategic orientation of a firm is evaluated. These variables are identified to be the scale of organisational operations, the industry the organisation operates in, competitor industry behaviour, and internationalization of operations.

Morgan (2003) argues that every organisation must review its strategic orientation on frequent basis in order to identify early enough any deviation from the desired strategic fit and so initiate corrective action. Deviations from the desired strategic fit are said to be ‘strategic drift’, as discussed earlier in section 2.2 and in additional detail in section 2.11.

2.9 Strategic change

In a dynamic business environment strategic change is identified as a critical element that needs to be taken into consideration, if an organisation is to succeed in its efforts to achieve the desired strategic fit (Treen 2012). Change is an inevitable part of everyday life and there is no difference to the business environment which is becoming even more competitive and dynamically complex by the day (Herselman, 2004). According to Pasmore (1994), strategic change is a type of change where organisational plans and actions are expected to change to one extent or another. He maintains that strategic change is different from the day-to-day change, where organisational operations only are impacted; strategic change is at a higher level and impacts policy formulation and strategy

development. The latter is also supported by Jacobs (1997) where he reiterates that strategic change is impacting the top tier of an organisation and requires such change initiatives in order to compensate for environmental changes and fluctuations (Jennings, 2012).

Such environmental changes and fluctuations are identified byŞener (2012) as environmental dynamism, environmental complexity and environmental munificence.

He further argues that top management perception on these environmental changes and uncertainty has a direct influence on strategy orientation.

As anything else in life, some organisations have a proactive approach towards change whereas others are reactive. When organisations are reactive towards change it creates deviations from the targeted strategic fit and creates strategic drift (Dziri, 2011). According to Cohen (2006), there are three key factors that determine the success or failure of a change process in an organisation; organisational readiness, technology and external environmental conditions. Miles et al (2003) add that organisational capability in effectively handling strategic change depends on three key elements or problems; entrepreneurial problem, engineering problem and administrative problem. They maintain that any organisation can broadly be categorized into four different groups, based on the strategies that they employ in solving a change problem. These groups are defenders, prospectors, analysers and reactors. In turn, these four types are closely linked with the organisational internal environment and its culture and leadership traits and all influence the organisation's approach to change in a unique way.

Harigopal (2006) adds that there are four types of organisational change, namely; planned change, incremental change, emergent change and transformational change. Mintzberg (2009) continues and states that change makes certain organisational strategies obsolete when it comes to implementation and names these ‘unrealised strategies’ (Mintzberg, 1994; 2003). The latter is endorsed by many scholars (Ulph, 2011; Coghlan, 2006; Thompson, 2010) where they agree that strategic implementation can face numerous challenges and strategic change is highlighted as the most impacting one.

The arguments above introduce yet another important element in the pursuit of organisational strategic fit - the notion of strategic gap; and, if strategic change is not dealt with effectively, the effect will be strategic drift.

2.10 Strategic gaps

According to Dransfield (2001), a strategic gap is the miss-match, or the difference, that exists between internal organisational capabilities and the most significant external environmental factors; a strategic gap is measured by comparing organisational capabilities against the prevailing conditions in the external environment. In other words, a strategic gap reflects the imbalance between the current strategic position of an organisation and its desired position (Piercy, 2012).

Coveney (2003) agrees and reiterates that a strategic gap can exist in any organisation at any given point in time and Kaplan and Norton (2004) explain that such strategic gaps should be consistently monitored and evaluated in order to be identified early enough and respond to accordingly. The difference between the desired outcome and the actual outcome is highlighted as the strategic gap

analysis (Auster, 2005.). Gammeltoft (2012) from a more macro perspective adds that strategic gaps can also exist at country level and it is important to identify such strategic gaps in an economy very quickly in order to enable nationally-wide economic growth.

Nevertheless, the key question here is, how should an organisation approach the task of reducing the identified strategic gap (s). A strategic gap can emerge due to a number of factors that are both internal and/or external to the organisation. According to Mazzola (2010) strategic gaps can result from a number of reasons. For example, lack of clarity in direction, non-existent or irrelevant capabilities and lack of coordination between the selected strategic direction(s) in comparison to the pre-determined objectives through the process of strategy development.

Any organisation when evaluating an identified strategic gap should look into four main areas to determine and define the internal capability of the organisation, Dransfield (2001) says. In particular, these areas are management, technology, policies and resources. This is further argued by Alkhafaji (2003) where he observes that this misalignment exists between organisational strategy and implementation and it is mainly due to lack of core internal skills and competencies and coordination of the corresponding implementation.

Coveney (2003) also agrees and adds that there are three types of strategic gaps that can be displayed in an organisation; management-induced gaps, knowledge-induced gaps and/or resource-induced gaps. He continues by clarifying that management can cause gaps between strategy and implementation through both action and inaction and there are four main ways that management-induced gaps can emerge. These are failure to secure support for the plan, failure to

communicate the strategy, failure to adhere to the plan and failure to adapt to significant changes. O'Dell (2011) concurs and adds that knowledge-based induced gaps create incapacibilities that are due to knowledge gaps, and therefore, the organisation does not know how to approach a given situation. Wang (2012) agrees and further says that an organisation that lacks in knowledge that is critical in shaping strategies in line with environmental conditions, or over competition, it soon leads to a strategic drift – especially, in the fast moving environments of the modern-day competitive landscapes. Teng (2007), from a resource-based view, makes the argument that organisations that do not adequately invest in resources experience gaps in capabilities and are putting themselves at a competitive disadvantage. Finally, Pearce and Robinson (2012) make a point that there can be situations where organisations are incapable of taking timely corrective action due to inadequate internal resources or inertia.

2.11 Strategic drift

All the above arguments highlight the need for organisations to be well resourced and have such systems, processes and culture in place that enable the development of capabilities and competences in order to attain and sustain the desired strategic fit in the context of the organisation's mission statement and objectives and the prevailing conditions in the external environment. However, in reality this may not be achievable due to the many arguments presented thus far.

According to Goldman (2006) strategic drift refers to a situation where leadership and management fail to identify subtle changes in the business environment in a timely manner and react late thereby intensifying the problem. Simons (2011), in accordance with the latter, argues that a strategic drift is caused by the inability to either identify and/or respond to challenges in a timely manner and it directly

impacts performance and it is recognised as a key cause for organisational failure. This is the very reason why (De Wit et al, 2010) strategic drift must be monitored closely and studied well, since strategic drift and strategic change are closely linked to each other. In fact, the same authors maintain that strategic drift is primarily caused by a badly managed strategic change in an organisation.

Jackson (2000) from an incrementalism viewpoint (Quinn, 1978) adds that strategy developers have an inherent dislike in providing for, and/or anticipating drastic changes and they thus prefer incremental strategies. However, this is a risky proposition in fast-moving and ever-changing business environments because organisations may become complacent in such an incremental approach. He maintains that lesser flexibility, inelastic capabilities and competencies, familiarity with existing circumstances and relationships as well as lack of hindsight are some of the critical issues experienced in lagging organisations.

Johnson et al (2008) explain that incremental change takes place when strategies are developed little by little but such an approach is contingent upon the rate of change in the external environment. They maintain that an incremental approach to strategy development is more suitable in relatively stable business environments and less appropriate in fast and dynamic competitive landscapes - and Helfat (2009) is also in agreement.

Brian (2001) and Li (2009) argue that lack of strategic flexibility is identified as a main reason for strategic drift in organisations and in such cases there will almost be problems pertaining to strategic fit. Sushill (2012) concurs and adds that lack in strategic flexibility will lead to strategic drift since strategic flexibility is the

ability to leverage resources to developing competencies and capabilities in the pursuit of strategic fit.

2.12 Path dependency and strategic fit

According to Koch (2005), path dependency is the pattern of making decisions based on historical events, and such choices have a lasting restraining impact on future decisions. In other words (Carmohn, 2010) managers become accustomed to a certain pattern of decision making where they tend to perceive environmental changes and new developments in a similar manner each time. Path dependency is not seen as a positive pattern of thinking (Fuchs, 2006), and according to this theory, such managers usually take the same path in the process of decision-making (Chase, 2006). This leads them to finding the same type of customers with similar demands, as before, that the firm can fulfill and it thus depends on the same capabilities that made them successful historically (Eikenlenboom, 2005). Clearly, here the issue is that such organisations find it difficult to change and cannot easily survive in fast-moving and dynamic environments (Burnes, 2009). This has been discussed by a number of authors in the field (Goldman, 2006; De Wit et al, 2010; Goldman, 2011) and it is one of the main causes of strategic drift.

2.13 Organisational culture and strategic fit

Organisational culture is one of the most important elements in strategic fit, or strategic drift, (Longo, 2008) as discussed in earlier sections of this chapter. This is purely due to the impact and the influence that organisational culture has on organisational performance (Schein, 2010). Organisational culture can be defined as the basic assumptions and beliefs that are shared by members of an organisation that operate unconsciously and define in a basic taken-for-granted fashion an organisation's view of itself and its environment (Johnson et al, 2008).

According to Schein (2010), the culture of an organisation is a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as a correct way to perceive, think and feel in relation to those problems.

Hence in the context of this literature review it is felt that it is also important to highlight the relationship of organisational culture with the concepts of strategic fit or strategic drift because, as discussed earlier, culture underpins all organisational actions (Parikh, 2010). According to Botten (1999), the management of any organisation should be looking at developing a culture that supports organisational change. This is also; endorsed by Peper (2005) where he maintains that a flexible work force will ensure emergent strategies are implemented effectively within an organisation. Hence organisational responsiveness to environmental changes should be timely and appropriate (Robbins, 2009) thereby reducing the risk of a possible strategic drift (Herselman, 2004).

2.14 Leadership and strategic fit

With the same principle in mind, as in the previous section, and without going off course it also felt that a brief discussion on the role of leadership is relevant in the context of this literature review since managers, at large, create organisational cultures and develop strategies (Mumford, 2012.). Good leaders Finkelstein (2009) states that consider all relevant business aspects and support staff to carrying out their job role and responsibilities – all in an effort to avoiding strategic gaps (Northouse, 2010) maintaining competitiveness (Schein, 2010) and

avoiding strategic drift (Wood, 2006) thereby ensuring the strategic fit of the firm in the light of environmental conditions (Nelson, 2012).

Therefore, a number of authors in the field have drawn attention to the role of leadership in maintain organisational performance (Northouse, 2010; Speculand, 2009; Weisner, 2001).

Carmelli (2010) argues the role of organisational leadership in managing strategic fit and highlights the importance of innovation in enhancing economic, relational and product performance outcomes in dynamic competitive landscapes.

Adair (2010) also agrees and adds that leaders must be creative in order to transform external threats and barriers into opportunities and further states that creativity and innovation directly influence the retention of organisational competitiveness.

2.15 Strategic failure

Finally, strategic failure is where the strategy process of an organisation becomes unsuccessful (Dziri, 2011). This is commonly referred to as the strategic wear-out (Sommer, 2012; Treen, 2013), as discussed at the beginning of this chapter in section 2.2. Drummond (2012) explains that strategic wear-out is manifested when organisations no longer meet customer needs and are being surpassed by competitors.

Early detection of strategic wear-out is all important in order to avoid strategic drift (Kaufman, 2003). Poor implementation of strategies, time ineffectiveness of strategy implementation and obsolete strategies being implemented are some of the most critical indicators of strategic wear-out (Armstrong, 2011). Lowe (2005)

says that there can be many factors that can be identified in highlighting a strategic wear-out in an organisation. For example, poor leadership ineffective management traits, inflexible organisational culture, and unsuccessful change management initiatives are some such reasons (Jones, 2013).

On the other hand, uncertainty in the external environment is also identified as a key factor of a possible strategic wear-out (Wilson, 2012), if organisations do not take timely corrective action and find themselves having the wrong positioning after the business environment has crystalized (Silzer, 2009). Hence, proactive decision-making and acceptance of risk in the process of decision-making are critical factors for success in organisational endeavors to maintain strategic fit. (Thompson, 2010).

2.16 Summary

This chapter has reviewed the literature of strategic fit and has highlighted the numerous, and genuinely diverse perspectives in the field, about the wider concept. It is, clearly, evident from the narratives that the topic is of critical importance for the survival of organisations and it incorporates numerous areas ranging from resources-to cultural and communications-to staffing-to systems and processes. It is, therefore, difficult to pin it down since in, effect, everything that organisations do can potentially impact, positively or negatively, the strategic fitness of the firm.

The strategic fit notion is the degree to which organisations use their resources effectively to develop capabilities and competencies in line with the challenges and opportunities of the changing, and prevailing, conditions of their external

environment in order to achieve and/or maintain levels of competitiveness and gain a competitive advantage over comparable rivals.

Of course, the latter as argued by the literature in the field, is much easier said than done and organisations need to be characterized by perseverance and competitive stamina if they are to achieve such a challenging task. It is also evident from the literature that the processes employed by each school of thought in the area attempt to attract their audience as the most suitable way of achieving organisational strategic fit. However, in reality, each school of thought has its own strengths and weaknesses. Therefore, from a practitioner viewpoint, it is important to adopt a hybrid method of performing the diverse processes in order to minimise individual weaknesses by using the combined strengths of the different schools of thoughts in the field in the pursuit of organisational strategic fit.

Chapter 3: Change Management

- 3.1 Introduction**
- 3.2 Organisational change**
- 3.3 Resistance to organisational change**
- 3.4 Managing organisational change**
- 3.5 Summary**

Change Management

3.1 Introduction

In the previous chapter, the concept of strategic fit was discussed in length and detail. In doing so, it was argued that change management is an integral component of it because if organisations are to remain strategically fit in their external environment they need to have the ability to respond to the changing conditions in a timely and effective manner.

Consequently, in this chapter a relative concise discussion of change management takes place, since it is not the focal point of this research but rather complementary to this investigation, in order to complete the literature review and provide a consistent examination of the central topic of this thesis – given that strategic fit and change management are interconnected and effective change management processes support organisational actions to remain strategically fit.

Organisational change is an inevitable part of business activity and it must be managed effectively (Berkhout, 2012). In fact, it is said that change is constant (Reissner, 2008) and a normal characteristic of life (Carnall, 2007). Hence, from an organisational point of view, given the complexity and fast pace of business environments (Graetz, 2012) change management is an ongoing process requiring anticipation (Berkhout, 2012), flexibility (De Marchi, 2012), vision (Boulos et al, 2011; Mohrman and Lawler, 2012; De Marchi, 2012), sense of direction (Blank, 2013), capabilities (Li et al, 2011; So-Yol Lee, 2012;) and commitment (Shaker and Wright, 2011).

3.2 Organisational change

Though there appears from the literature that there is no universally accepted definition of change, a number of authors have attempted to describe it in many different ways. According to (Cummings and Worley, 2008) change is a set of unplanned activities that have the potential to impact normal organisational processes and performance. Donnelly (1987) says that change management is the attempt by the management to improve the overall performance of individuals, groups and the organisation as a whole by altering the organisation's structure, behaviour and technology. Along the same lines, Stoner et al (2002), and in agreement with Hug et al (2006) reiterate that change is the process of discovering and adopting new attitudes, values and behaviour with the help of trained change agents, who lead individuals, groups or the entire organisation through the process. Nadler and Tushman (1989) articulate that organisational change can involve one or more components of organisational systems or realignment of systems affecting all key sub systems such as strategies, work, people and formal and informal processes and structures - and Ramanathan (2009) is also in agreement. However, Ramanathan (2009) further clarifies that when change impacts a large part of an organisation it is called strategic change, but when change has a limited impact and/or affects a smaller, or a specific part of an organisation, it should be treated as incremental change (Quinn, 1978; Jackson, 2000; Swaim, 2011) in order to regain consistency and control of operations.

According to Paton and McCalman, (2008) and Mcarthy and Eastman (2010) change management involves requesting, determining, attaining, planning, implementing and evaluating changes, and using modern management techniques to deal with the changing situations productively. In doing so, it reduces the risk

of possible negative impacts and improves organisational performance. However, given that organisational change is directly linked with the organisation's people, Morrow (2011) adds that the philosophy of change relates to the organisation's culture because change cannot successfully take place without changing the overall mentality of the organisation.

Harigopal (2006) and in agreement with Burke (2009) identified a number of different types of change that can emerge in an organisation. Interestingly enough, these different types of change are consistent with the notion of the punctuated equilibrium as argued in the previous chapter and discussed by a number of authors over the years (Quinn, 1978; Romanelli and Tushman, 1994; D'aveni, 2010; Williams, 2011; Sommer, 2012; Jennings, 2012; Treen, 2012; Jones, 2013) in order to achieve and maintain the organisation's strategic fit in its external environment.

Specifically the types of change identified by Harigopal (2006) are planned change, stepped change, emergent change, incremental change and transformational change.

Planned change refers to an ideal situation in an organisation where the expected changes are already being planned and integrated in the corporate plan. This is similar to the stepped approach where a set of depended and pre-planned changes are implemented in a sequence. Specifically for the stepped approach, Liu (2011) says that during relative stable periods, change requirements could be identified in advance in order to preempt anticipated changes in the environment in the future and thus initiate changes in a stepped manner beforehand. However, she continues that the stepped approach is not necessarily possible in any organisation if

organisational structure and systems employed do not support a straight forward stepped change initiative. In addition, it is strategically difficult to identify in advance stepped changes when strategic planning has moved from trend analysis (current environmental issues) towards scenario planning (Wade, 2012) because scenario planning aims at predicting future aspects that not necessarily will be become real (Chermack, 2011).

According to Golembiewski (1992), the planned change approach is a preliminary requirement for any organisation assuming flexibility and the ability to incorporate unplanned items in the process too. Planning should be based on a series of assumptions that are taken based on the expected behaviour of the current environment and past experience. However, Miner (2005) and Sadler (2003) state that the main concerns in a planned change are that the process is pre-planned, rational and systematic, but, this may not be possible in complex, fast paced and dynamic environments since it is quite difficult to make realistic assumptions in such cases.

Going back to Harigopal (2006) and Burke (2009) emergent change refers to the changes that may be encountered in the process of unanticipated change circumstances that impact planned strategies. Hence, organisations need to address these requirements, as and when, they become apparent. The notion of the emergent approach to change evolved over the years because of the criticisms discussed earlier of the planned approach (Henry, 2008). Consequently, the emergent approach towards change (Mintzberg, 2003) is more recent and is seen in the field as more realistic over the incremental approach (Quinn, 1978; Thompson, 2010). Central to the notion of emergent change is that change is

anticipated as an unpredictable and fairly constant variable in the process of strategy development (Johnson and Whittington, 2008).

Hence, organisations should be incorporating contingency plans in corporate plans to ensuring flexibility, thereby maintaining the ability of responding to emerging issues in a timely and effective manner (Piercy, 2012). In addition, Reiss (2012) adds that because emergent change requires flexibility and timely responses, it is directly supported by bottom up approaches where all relevant employees should be involved in the process of decision making in order to identify the most appropriate action(s) to the emerging issue(s). Hence, open communications and collaboration among management and employees are identified as key success factors amongst other aspects when dealing with emergent changes.

Continuing with Harigopal (2006) and Burke (2009), the next stage is incremental change. They state that this particular phase is identified as more logical in its approach (Quinn, 1978; 2003) to change management. Centrally to the notion of incremental change management is that organisational changes should be incorporated in a stepped, or incremental manner, and that organisations should not be taking unnecessary risks associated with dramatic change initiatives and Swaim (2011) is also in agreement. However, a key criticism of this approach is that there is no provision for drastic organisational changes if need to (Thompson, 2010).

Finally as argued by Harigopal (2006) and agreed by Burke (2009) transformational change is the approach towards change most appropriate when radical changes are required (Johnson et al, 2008; Dziri, 2011). Johnson et al

(2008) further argue, and Treen (2012) and Drummond (2012) also agree, is that when drastic change is required organisations act outside their existing paradigms of managing activities, and potentially this can be problematic - especially if the organisation suffers from inertia. Ashburner et al (1996) draw attention to the need of obtaining a complete view of transformational change required in relation to current, or anticipated issues, before opting for it – simply because of the magnitude of such an exercise and the challenges associated with it. In doing so, he identifies five basic areas that can be used as key factors for success when determining the feasibility for transformational change. These areas are identification of multiple and interrelated changes needed across the system as a whole, requirements for new organisational forms at a collective level, an assessment of roles of employees at an individual level, the reconfiguration of power relations and the creation of a new culture, ideology and organisational meaning.

In addition, Ashburner et al (1996) state that transformational change goes beyond strategic change as it tries to change an organisation from its core and highlight four specific aspects that need to be taken into consideration in the process. The first aspect is 'perception about the value of employees'; that is, organisational outlook of treating employees as special assets directly affects key elements of the working environment. For example, inter-departmental and inter-personal communications, synchronization of work flow, production and marketing processes and individuals' prospects of future development (Davila et al, 2012).

The second is 'attitude towards knowledge creation'; that is, organisations should be developing an attitude of constantly upgrading the knowledge base of

employees, which is directly related to cultural aspects such as democratic management styles, training and development and open communications in order to aid knowledge creation and transfer (Pauleen, 2011) thereby enabling development of relevant organisational capabilities and competencies (Birchall, 2005).

The next is ‘attitude towards refining the process of application’; that is, organisations should be continuing upgrading their technological-based systems and processes in order to maintain levels of competitiveness in line with technological advancements and competitor activity (Enders, 2004).

The final aspect is ‘perception of motivation’; that is, organisations should realise the significance of employee motivation in the process of developing capabilities and managing change and should never adopt partisan behaviours but rather should have in place fair and consistent reward systems in order to support effective interrelationships and foster goodwill (Amason, 2010).

Most of the factors that create change are triggered from the external environment (Boulter, 2012), simply because, as argued numerous times previously, organisations need to be responding to such external environmental conditions in line with the new circumstances such as economic, demographic or technological (Paton and McCalman, (2008) and according to competitive activity (Hamel, 1996) if they are to maintain performance and competitiveness (Reiss, 2012).

However, not necessarily all change is driven by the external environment but it can also derive from internal environmental factors too (Ostroff, 2012) mainly due to search for efficiency (Gerritsen, 1992; Mohrman and Lawler, 2012; Priem et al,

2012) and a drive to increase productivity (Miner, 2005) and performance (Armstrong, 2008).

Nevertheless, irrespectively of where, or when, change is triggered Goldratt (1994) and Fox (2007) state that there are some common questions that need to be asked when evaluating a change situation for example, what to change? What to change to? How to change? How to avoid failure in the change process?

In addition, Bridges (2003) distinguishes between transition and change. Change, he states, is generally interpreted as the way in which things will be different in the future whilst transition involves how the change takes place in the organisation. He maintains that change is a collection of different events whereas transition is a continuous process and that change is the ultimate outcome that is planned to be achieved and transition is concerned with how to get there – and Marca (2010) is also in agreement.

It is also important to have a good idea about the type (Graetz, 2012) and scale of change (Holbeche, 2012). During the 1990s, change was a frequent phenomenon in organisations (Eikelenboom, 2005) but research conducted recently suggests that organisational change has accelerated even more to the point that organisations engage with such initiatives every year (Briody, 2012). The main focus of change is to reduce costs (Worrall and Campbell, 2000; Davila, 2012), initiate culture change (Burnes, 2009), streamline operations (Jones, 2013), improve systems and processes (Aaker, 2001) and outsourcing (Chandler, 1962).

Ridgeway and Wallace (1996) state that change internally is triggered by both hard (structure, systems, process, strategies) and soft (management styles, staff,

skills) factors. Ireland (2010) reiterates and adds that hard elements of change are changes to organisational strategy, structure, systems, performance and productivity. Thompson (2010) agrees and further clarifies that soft issues are stressed on organisational culture, leadership styles, competencies, motivation and overall staff attitude.

3.3 Resistance to organisational change

Thus far the notion of change has been discussed from an organisational perspective and arguments made as to what change is and why it is important to be engaging with such change initiatives. However, given that it is people who work in organisations and it is people who energize and drive organisations, it is people who also carry out such changes (Fuchs, 2006). From an employee point of view, therefore, there appears that organisations frequently experience resistance to change due to a number of reasons (Davila, 2012). Employees are uneasy about the risk and uncertainty associated with change (Longo, 2008) and they fear changes in structure, routines and job roles among other aspects (Henry, 2008) and the potentiality of job losses as a result of such change (Ireland and Hitt, 2010).

The topic of resistance to change, in an organisational context, has been a subject of research for many decades because of its importance to organisations to maintaining their strategic fit with their external environment (Boulter, 2012; Treen, 2012). From the old days Kubler-Ross (1969), and in agreement with Vakola et al (2004), identified that there are five main emotional responses to change that an individual goes through; denial, resistance, acceptance, exploration and commitment.

Arnold (2007) states that often individuals' natural tendency is to avoid and restrict change unless it is not impacting their lives on a major scale. According to Erwin and Garman (2010), recent research provides considerable practical guidance to organisational change agents and managers in understanding and dealing with resistance to change. To that end, research in the field is investigating diverse aspects of resistance to change ranging from cognitive (Bailey, 2007), affective (Carnall, 2007), and behavioural (Berkhout, 2003) dimensions of individual resistance and how it is influenced by individual predispositions. For example, towards openness and resistance to change (Reissner, 2008), individuals' considerations of threats and benefits of change (Hrebiniak, 2005), communication (Miles and Snow, 2003), understanding (Jeffs, 2008), participation (Wilson and Gilligan, 2012), trust in management and management styles (Warren (2012), and the nature of relationships with the change agents (Miles and Snow, 2003). In other words, these are all the key aspects discussed in the previous chapter, which are critical in the process of maintaining organisational strategic fit (Garlichs, 2011).

According to Kotter (1996) the term 'resistance' is seen as the defense mechanism of individuals who fear losing something or someone. From an organisational or work perspective, these include income, loss of security, satisfaction, authority, responsibility and working conditions. Thus, the greater the people are attached with something, or someone, the greater the fear of losing them.

Torrington and Weightman (1994) identified four broad types of organisational change, which have either a positive or a negative impact on individuals. These are imposition initiated by someone else normally from 'on high' or externally to

the organisation, adaptation and required changes in attitude or behaviour at the request of others, growth responses to opportunities normally with favorable consequences, and creativity, where individuals are put in control. In addition, the same authors have articulated a number of possible employee reactions to these changes. On the one hand are reactions with positive results such as enthusiasm to the prospect of change and co-operation, support and acceptance. On the other hand are the reactions with negative results such as passive resignation (indifference or apathy or loss of interest and minimal contribution), passive resistance (regressive and non-learning behaviour), active resistance (boycotts and walkouts) and quite protesting (working to rule but with minimal output, slowing down and making errors intentionally).

Most studies in the field (i.e., Burke, 2002; Anderson, 2010, Cameron, 2012), view resistance to change as a natural element in organisational behaviour. It is something that managers have to anticipate and have prior strategies to manage proactively such issues rather than have a reactive approach (Golembiewski, 1992). Robbins (2009) agrees and reiterates that employees have anxieties about change and worry about job security, stability and operational implications that they will have to deal with as a result of the change process.

Hellriegel (2009) concurs and further articulates that resistance to change in an organisational context could broadly be divided into two categories with one being individual resistance and the other being organisational resistance. Factors that decide the degree of individual resistance to change are perceptions, personality, habits, and threats to power, economic reasons, and fear of the unknown. Organisational factors are identified as organisational architecture and

overall business model, culture, resource limitations, fixed investments and inter-organisational agreements. This is further endorsed by (Pranit, 2006) and Lewis (2011) where they state that the main two factors to be looked at in an organisational context when dealing with change are the potential impact on individuals and the organisation as a whole.

Along the same lines, Hirscheim and Newman (1988) acknowledge resistance to change as an adverse element in organisational behaviour whilst Pugh (1993), Carnall (1994) and Nadler (1998), highlighted that organisational change should be considered as an inevitable element that should be looked at carefully and managed prudently, with other authors also in agreement (Ford et al, 2008) - all stating that resistance to change is primarily influenced by individuals' fear of the unknown.

According to Lussier (2011), employees have the natural tendency of denying change even before resistance. He maintains that resistance is most of the times a compelled reaction where employees deny and close the change risk at the initial level even before resistance. However, he also clarified that individuals, over time, appear to come to terms with such a change after going through the stages of denial and resistance. After these two stages, a process of exploration takes place and eventually commitment to the new ways.

Nutt (1982) adds that in many occasions employees fear change because they do not have a complete picture of it and are thus limited of envisioning the outcomes of change. Consequently are left with the emotion of fearing the unknown. Chivers (2012) clarifies that one of the reasons to individual resistance to change is that many employees are job centric workers where they care about their job

and are not necessarily concerned about the strategic vision of the organisation. Hence, they are mostly worried about the day-to-day comforts at work rather than the long-term sustainability of the organisation.

As discussed earlier, there are occasions that employees try to discourage change initiatives (Torrington and Weightman, 1994; Durant, 1999; Robbins 2009) by adopting disruptive actions. This, Gummings (2008), says that eventually results to organisations looking at two different options in an effort to counteract such effects. The first is identifying the source of resistance and eliminating it (for example, dismissing the protagonists of resistance). The second is developing alternative strategies for minimizing and/or eliminating resistance by enabling discussions with employees and adopting campaigns in order to inform stakeholders about the reasons behind such change initiative.

In addition to Kubler-Ross's (1969) emotional responses to change that individuals go through, as discussed at the beginning of this section, Hellriegel (2009) says that from an organisational point of view, organisations have inbuilt systems, structures and processes to ensuring operational effectiveness and preventing risk and instability. However, these very strengths can become the reasons of resistance to change because such structural inertia may work as restraining forces to change. Moreover, group inertia is a challenging factor to change too because groups and teams of people may also try to discourage the change process by counter striking change initiatives. He maintains that when faced with undesirable change these groups and teams operate collectively in order to remain at their existing ways of behaviour and fight the unknown.

In a nutshell, it is evident from the literature in the field, that any attempt to introduce change in an organisation will experience resistance in some way or another and the way management deals with these aspects is critical to the survival and ongoing performance of the organisation (Quinn, 1980).

However, not all resistance to change comes from employees and/or other stakeholder groups but it can also be the result of ineffective management. Hence, managers themselves can also be detrimental to change (Cawsey et al, 2011; Bartlett and Ghoshal, 1987; 2002). Burke (2002) agrees and further says that other than individual and organisational resistance to change there can be managerial resistance to change as well and these are commonly identified as managerial barriers to change – and a number of authors in the field are also in agreement (for example, Liu, 2006; Brown, 2012; Anderson, 2010).

Hug et al (2006) highlight a number of reasons that create managerial barriers to change in an organisation. The first is failure in highlighting to all relevant parties the benefits of change, and this particular issue has been one of the most common problems in many organisations. The second is high focus on cost, and when there is an excessive focus on the cost factor, there can be instances where change initiatives are deliberately overlooked in order to avoid creating even more costs in the process. The third is lack of coordination and co-operation because inability to synchronize activities in a timely fashion can also act as restraining forces to effective change management. The fourth is uncertainty avoidance, where just like employee resistance to change managers are also individuals, and may equally chose to ignore change requirements in order to avoid the fear of unknown.

3.4 Managing organisational change

Section 3.2 of this chapter introduced organisational change and attempted to identify and discuss the key characteristics of what change is. In this section, managing such change initiatives is discussed in greater detail. Organisational change as already argued occurs when a company makes a transition from its current state of affairs to another; perhaps, due to desirability of achieving a higher status and/or because of changes imposed by the external environment – and as a result, the company is in need of compensating for such changes in order to maintain its strategic fit (Boulter, 2012; Davila, 2012).

Managing organisational change is the process of identifying, planning and implementing change in organisations in such a way as to minimise employee resistance and cost to the organisation while simultaneously maximizing the effectiveness of the change effort (Cummings and Worley, 2008). To that end, Lewin (1951) from the early days introduced a three-stepped model to managing change that has been popularized in the literature over the years (Evans, 2004; Pasmore, et al, 2010; Ansari et al, 2012; Holt and Seki, 2012). According to Burnes (2009), the model helps managers to understand the various factors that impact organisations, positively or negatively, in each change step thereby enabling managing the entire process more effectively. These steps are ‘unfreezing’, ‘changing’ or ‘transition’ and ‘refreezing’.

The step of unfreezing is the initial stage of reviewing and initiating change and involves determining the factors that would need to be addressed in the process of change. It enables to highlight appropriate measures to be adopted in order to move away from the current organisational status and achieve the desired future positioning. This stage is primarily identified as an educational phase (Schein,

2010) where change requirements and needs are communicated to employees and other stakeholder groups in order to ensure willingness, participation and engagement, raise awareness and confidence in the initiative and pre-empt possible resistance to change. In other words, the main objective at this stage is to create a change friendly mindset where all relevant parties are willing to participate, are enthusiastic about and are synced and coordinated accordingly (Burnes, 2009). Hence, at this stage an effort to obtain staff support is made and an ethos of becoming change champions and ambassadors of change and promoters within the organisation is attempted (Medley and Akan, 2008). According to Lewin (1951), as quoted by Cummings and Worley (2008), once this level of support is obtained then the second stage of the change process can be implemented with minimal issues of staff resistance.

The next step is the actual stage of changing (transition) and it is where the pre-determined and accordingly designed change initiatives are implemented. At this stage open and unobstructed communications are required, as well as staff training, in order to facilitate the change process in the best possible way and minimise disruptions in operations (Chung and Nguyen, 2005). However, this is also the stage where possible employee resistance is manifested. Hence, it is necessary to have counter strategies in place to reducing such possible resistance, as and when it emerges (Burnes, 2009.) and have the change champions readily available to step in and support any matters arising in order to counteract possible negativity (Medley and Akan, 2008).

At this stage, Hall (1987) states that the most important aspect is to maintain on-going communications and support to employees involved in and/or impacted by

the change process so that they feel informed and secured thereby maintaining confidence about the process of change in itself and in management, and Pasmore et al (2010) are also in agreement. Lewin (1951) suggested that a 'Force Field Analysis' can be carried out at this stage in order to enable managers identify the diverse driving and restraining forces of organisational change - and in the light of such observations formulate strategies to drive the change process forwards.

In particular for the driving forces of the Force Field Analysis, Lewin (1951) says that these factors are the set of components that influence the change process in organisations positively and examples include new learning on the job, increased benefits, increased productivity, and reduction in operational costs. However, he also cautioned that such driving forces depend on the context of the change case and that they generally emerge after a successful change training programme. On the other hand, the restraining forces of the Force Field Analysis are these factors that oppose the change process. Generally, employees who restrict the change process try to identify the difficulties of the change initiatives suggested and try to retain the existing system. Such restraining factors can be fear of the unknown, anxiety, less encouragement for change, less stimulation, risk averseness and fear of loss of authority and power.

Consequently, the main argument brought forward by Lewin (1951), and in agreement with many authors in the field (i.e., (Pasmore, et al., 2010; Holt and Seki, 2012) is that managers who are responsible for change should ensure that driving forces are more powerful than the restraining forces. Lewin (1951) maintains that change initiators are not able to obtain the desired outcomes from

the change process if the restraining forces are stronger than the driving forces and Evans (2004) and Ansari et al (2012) are also in agreement.

The final step is the stage of refreezing and it is where new routines after the change programme starts again based on the new systems, processes and operating procedures. Hence this stage is the outcome of the change initiative(s) and aims at the smooth flow and operational stability as a result of the change initiatives being fully implemented (Lewin, 1951; Ansari et al (2012).

However, this stage also involves new norms and power relationships since employees identify new ways of working (Beer and Nohria, 2000). In addition, this phase is time consuming since it mostly happens on the job and people require further support from the change initiators (Mohrman and Lawler, 2012; De Marchi, 2012). Consequently, it requires close monitoring and immediate provision of support when required to ensure that staff are practicing the new ways accordingly and that emerging problems are addressed in a timely and efficient manner (Blank, 2013).

Kanter (1983) approaches organisational change from a different perspective and suggests that change should be achieved through corporate entrepreneurship arguing that organisations are discouraging entrepreneurial vision that, in turn, enables creativity and innovation. She maintains that entrepreneurship is a critical element in the process of change management in corporate entities and she contends the importance of employee involvement and empowerment when designing and planning such change initiatives. In the process, she cautions managers not to be adopting strict control mechanisms and top-to-bottom approaches in order to avoid the manifestation of restraining forces.

Beer and Nohria (2000) developed a theory entitled 'Change through Balancing'. The authors argue that most of the change initiatives are failing mainly due to lack of focus on central elements. They maintain that many organisations do not properly plan the change process and they thus rush into it by creating unnecessary bureaucracies and complexities and hence fail at the implementation stage. They continue that by rushing into change without proper planning leads managers immersing themselves in details and losing focus, consequently, resulting in messy situations. They further explain that there are two options, or perspectives, available when looking at organisational change, with Boonstra (2008) also in agreement.

The first is what they have entitled as 'Theory E' and it is an approach that change process is designed by primarily keeping the key organisational objectives in mind. For example, in a commercial organisation, the main objective is maximization of shareholder wealth. As such, the change process involves radical decisions; for example, staff redundancies, layoffs, cut downs on incentives, downsizing, restructuring, de-layering etc. – all with the aim of preserving and achieving shareholder objectives. In other words, shareholder objectives are preferred over other operational objectives and other stakeholder issues are ignored. On the other hand, they continue, 'Theory O' is a softer approach towards change and in opposition to 'Theory E' it is allied mostly with the perspective of employees. In this case, employee objectives are preferred and are central to the process of change. Consequently, it involves obtaining ideas and feedback from employees and reflecting and making future changes with the support and the contribution from employees - and as such 'Theory O' tries to maintain a committed psychological contract with employees.

Each approach, of course, has its strengths and weaknesses; the main disadvantage of ‘Theory E’ is that it ignores employee feelings and attitudes, whereas ‘Theory O’ does. Nevertheless, Beer and Nohria (2000) fully acknowledge these arguments and articulate that rather than trying to use a single theory in isolation, organisations should try using a mixed version of ‘Theory E’ and ‘Theory O’ in an attempt to achieve a balance between the needs of diverse stakeholder groups in the process of change – hence they maintain, this is exactly what is meant by the title of their work ‘change through balancing’.

Of course, if organisations are to attempt a balancing act, it requires a particular mentality and an attitude of organisational learning. This is where the work of Senge (1992) becomes relevant where he introduced the concept of the ‘learning organisation’. He explains that these organisations are the ones that continuously expand their abilities to increase the capacity and culture to become ‘learning organisations’. In the process, such a task can only be achieved by breaking the traditional model of control hierarchy, authority and bureaucracy where top management thinks and workers act and the aim is to encourage and integrate thinking and acting at all levels in a harmonious and synchronised manner.

Senge (1992) continues and identifies five core competencies in building a learning organisation and Zbar (1994) also agrees. The first is building a shared vision. This involves ensuring that all members in an organisation are focused on a similar vision, which is shared by the entire organisation since if there is no shared vision there will be not be synergy in actions. The second is personal mastery. This is the process of encouraging individual creativity and innovation within an organisation. In a learning organisation mistakes are not punished, yet

innovation is encouraged to obtain long term benefits. The third is working with mental models. This is similar to the process of encouraging individual creativity and innovation. In this case, people are given freedom to use their assumptions and to take risks in doing things differently. The main objective is, always, to encouraging organisational learning and creating a learning friendly organisational culture. The fourth is team learning. It is extremely important to encourage teamwork as it actually gives a synergetic advantage as opposed to individual learning. Personal mastery has to be supported and accompanied by teamwork so that this could be practiced collectively, which, in turn, provides even more learning in the organisation. Finally, it is systems thinking and here is where organisations should be placing greater emphasis on understanding the interrelationships rather than breaking problems in to small parts.

Kotter (1996) with his eight-step model introduced in his book 'Leading Change' has equally made a contribution to the area of organisational change management. He argues that the first step of a change initiative should be creating an urgency of change by setting appropriate and tangible goals of change with the aim of inspiring employees towards change. The second step should be to form a powerful coalition, i.e., building a team of change agents with the right people in the right place with the right mix of commitment, skills and emotional balance. The third step under this model includes activities such as creating and establishing vision and strategy, involving necessary emotional and creative aspects to drive service and efficiency. The fourth step asks for communication of the prepared vision to the workforce and earning their support through the quality of communication.

If through steps one to four the organisation succeeds in establishing the change initiative, then the change agents can proceed to the fifth step, which involves attempting to remove all types of resistance to change. After that, the sixth step is concerned with creating short-term wins and highlighting the positive impact of the total change to come.

Once the confidence of the workforce has been attained as to the benefits of change, the seventh step can be taken. This involves facilitating the process of building on the change that, in turn, it leads to the eighth and final step, which attempts anchoring these changes in the corporate culture.

Kotter (1996) divided these eight steps into three particular phases; preparing for change, managing change, and reinforcing change. He maintains that management need at least 75% support from the total workforce, if change is to be successful and he argues that the eight-step model enables managers to systematically achieve the targeted change initiatives with minimal resistance to change. In essence, he continues, this model stresses on issues such as forming a powerful team of change agents, using vision as a campaign instrument to remove resistance to change and creating short-term wins as a precursor in order to showcase the benefits the overall change to come.

3.5 Summary

This chapter has reviewed the literature of change management in order to provide a holistic view of the central notion of strategic fit in the context of this research study in an attempt to illuminate the concept of strategic fit even further. It is clear from the diverse arguments presented from the area of change management that change management is a fundamental aspect in organisational management and

deeply interrelated with organisational efforts to maintaining strategic fit. It is also evident from the narratives that ‘one size does not fit all’ since organisations are different in their key characteristics and are subject to a particular set of circumstances.

Hence, flexibility, adaptability, capacity to learn, operational capabilities, timely responses, entrepreneurship and competitive stamina are amongst some of the most key requirements in the quest for sustainability because they create a dynamic relationship between change management and strategic fit.

Effective change management, however, is a challenging task and requires an organisational culture that raises employee willingness and support and minimises possible resistance to change. In doing so, effective leadership skills, democratic management styles, open and unobstructed communications, employee motivation, empowerment and participation to ideas generation and involvement in the process of decision making are all key elements and contribute towards optimizing organisational responsiveness and actions.

Therefore, the capacity and overall ability to envisage, initiate and manage change engender competitiveness and sustainability by enabling organisations to counteract any external environmental changes and respond effectively to the shifting prevailing conditions in the external environment.

Chapter 4: The External Environment

- 4.1 Introduction**
- 4.2 An overview of the Abu Dhabi Government Structure**
- 4.3 Macro-environmental analysis of the UAE and Abu Dhabi**
 - 4.3.1 Political Aspects**
 - 4.3.2 Economic Concerns**
 - 4.3.3 Social Attributes**
 - 4.3.4 Technological Characteristics**
 - 4.3.5 Environmental Considerations**
 - 4.3.6 Legal Requirements**
- 4.4 Summary**

The External Environment

4.1 Introduction

The previous chapters reviewed the theoretical notions of strategic fit and change management from the viewpoints of the genuinely diverse perspectives of the varied schools of thought in the area in order to present the theoretical underpinning framework of this research study. This chapter focuses on the specific landscape under investigation in an effort to introduce the particular characteristics of the field of application and the particular realities of the local terrain, given that effectiveness of strategic fit is measured against the prevailing characteristics of the external environment of the organisation(s) at hand.

In doing so, the various political aspects, economic concerns, social attributes, technological characteristics, environmental considerations and legal requirements are discussed from the United Arab Emirates (UAE) and Abu Dhabi standpoints since this is the focal field of research in this study.

Organisations exist and co-exist, compete and co-operate in relation to others. Consequently, no organisation can operate independently from its external environment. As such, organisations need to have the ability to respond effectively and in a timely manner to the changing external environmental conditions, as argued frequently in the previous chapters.

In fact, in strategy development, the assessment of the organisation's external environment is an integral process and no strategic decisions are made, or should be made, without careful assessment of the organisation's external environment when determining the organisation's strategic actions and strategic positioning (Costa, 1995; Panagiotou and Van Wijnen, 2005; Thomas, 2007).

In doing so, an understanding of the underlying influences of the macro environment fully supports the analyst to both seek appropriate factors to examine as well as recognise better their impact and effect on the organisation. In the field of business strategy, which is the wider area of the focal subject-matter of this research study, the basic PEST (Political, Economic, Social and Technological) framework enjoys widespread acceptance as a useful technique that enables individuals to evaluate the macro environment even without a particular knowledge of economics (Cartwright, 2001; Walsh, 2005).

The framework was first introduced by Aguilar (1967) using the initials ETPS to provide a simple and memorable acronym that summarizes the key aspects of the macro environment in order to contextualize that level of analysis. Since then, and without any particular attribution to specific author(s), the framework is appearing in the wider literature of business and management as well as consultants' documentation in a number of ways including additional variables. Some of such versions are PESTLE (the additional letters stand for Legal and Environmental), SLEPT, SLEPTE, STEP and STEEP (the additional E stands for ecological).

Cartwright (2001) even created a SPECTACLES framework incorporating even more diverse aspects (Social, Political, Economic, Cultural, Technological, Aesthetic, Customer, Legal, Environmental, Sectoral). However, the 'Aesthetic' variable is mostly an internal to the organisation characteristic and the variables of 'Customer' and 'sectoral' are features of the marketplace. Hence, the framework is not concentrating at the macro level of analysis alone and potentially creates unnecessary confusion.

In order to operationalise the macro environmental factors of the UAE, in the context of this research study, the PESTEL version of the framework has been employed. The application of PESTEL analysis enables an analyst to determine the key structural features of the organisation(s) macro environment, identify changes in these factors in comparisons to previous periods, and ascertain the impact and effect of these factors on the organisation(s) (Gorgenländer, 2011).

4.2 An overview of the Abu Dhabi Government Structure

Given that the field of application in this research study is the infrastructure sector of Abu Dhabi, it is useful to first provide a concise introduction to the key structural elements of Abu Dhabi Government in order to provide a logical structure of the landscape that this research concentrates on. Abu Dhabi is a phrase used to refer to Father of Deer (UAE Interact, 2005) and it is the capital city of the United Arab Emirates with the second largest population among the seven member emirates (Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al Qaiwain, Ras Al Khaimah, Fujairah). It holds a population of about 896,800 according to the 2009 census. Over the years, it has become a cosmopolitan metropolis with major developments resulting to a high average income of its population.

The Abu Dhabi Government is aiming at being a transparent, accountable and responsive administration. It is currently headed by His Highness General Sheikh Mohamed bin Zayed Al Nahyan, who is the Crown Prince of Abu Dhabi, Deputy Supreme Commander of the UAE Armed Forces and Chairman of the Abu Dhabi Executive Council. His Highness is assisted by the Executive Council, which is the governing body of the Emirates. The Executive Council monitors the progress of the government-sponsored projects, the development of services and the improvement of governmental performance in Abu Dhabi. The members of the

Executive Council are chairpersons of Abu Dhabi's government departments and authorities, in addition to being appointed members by the Ruler of the Emirates. The government departments were formed in line with the Article 116 of the constitution. Figure 4-1 illustrates the basic government structure.

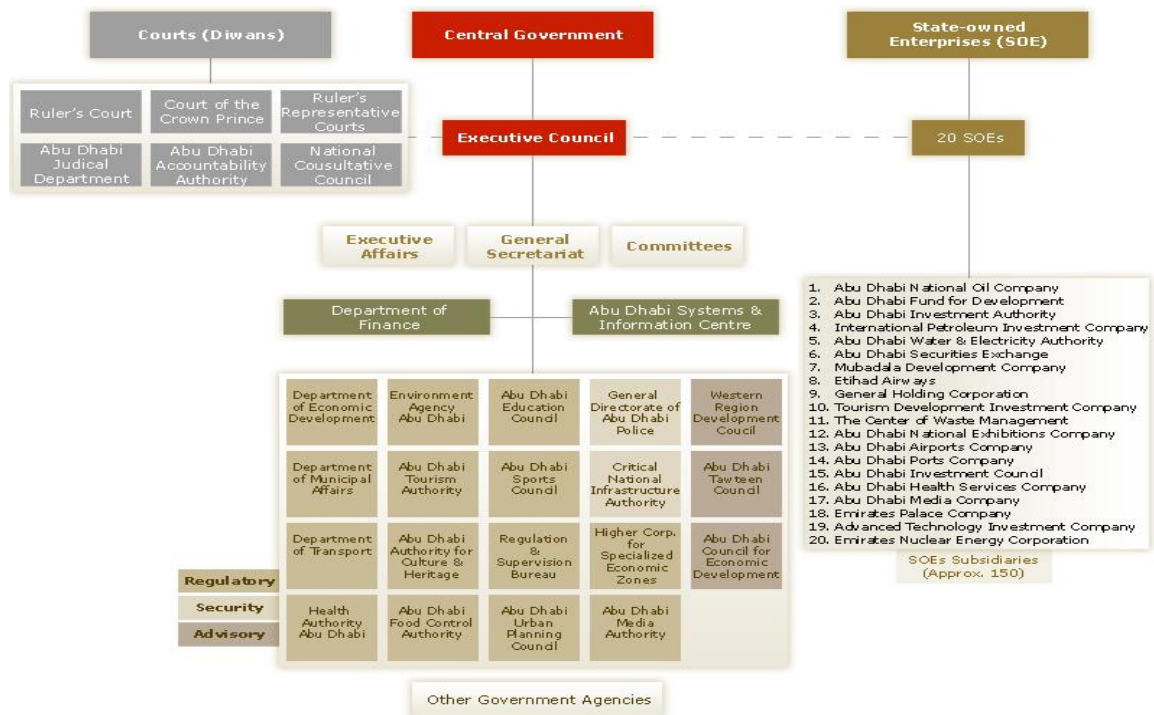


Figure 4-1 Abu Dhabi Government Structure
(Source: GSADEC, 2014)

4.3 Macro-environmental analysis of the UAE and Abu Dhabi

In the process of developing the PESTEL analysis, a number of sources have been looked at both externally and internally. For example, external sources include regional and local press such as ‘The National’ and regional and local data agencies such as the ‘Business Intelligence Middle East’. However, data accessed from these external sources were found to be fragmented and unstructured.

Nevertheless, given that this study centres in the governmental agencies of the infrastructure sector of Abu Dhabi there was no particular need to seek information from external sources because the government conducts its own

research on an ongoing bases on many different areas. Consequently, by referring to internal sources rich data were found that enabled a detailed PESTEL analysis to be developed in line with the objective of this chapter.

4.3.1 Political Aspects

Looking at both the federal and local governments, both separately and combined, underlines the United Arab Emirates unique amalgamation of the traditional and the modern political systems that have guaranteed national stability and laid the foundation for development which may be influential in combating localized increased levels of instability in the region and neighbouring countries.

In line with the United Arab Emirates rapid socio-economic developments, major steps have been taken, both at the federal and local levels, to reform the political system in the United Arab Emirates in order to make it more responsive to the needs of the country's population and to ensure that it is better equipped to cope with the challenges of development.

Legislation to overcome turmoil in the region and develop good international relationships has not only provided a platform for growth and co-operation but also led, according to the World Economic Forum to the United Arab Emirates sitting favourably in the international perception table.

Due to the multi-national demographics of the United Arab Emirates, there are a number of struggles in closer proximity, which could potentially create unrest and clashes. The recent military conflicts in Afghanistan, Iraq, Syria, and Yemen continue to attract world attention and the tensions in that region remain high. Even closer to the United Arab Emirates are the events that have taken place in Egypt, Yemen, Tunisia, Syria and Bahrain whereby local demonstrations have

resulted in major confrontations and in the case of Syria, significant loss of civilian loss of life.

Tensions are also increasing due to the deteriorating relationships between some nations and Iran, whereby the concerns for nuclear proliferation are associated with continues political and economical instability across the region. Yet, in light of these events the United Arab Emirates still remains committed to cooperation in its strive for peace in the region, particularly as the United Arab Emirates is growing its global reputation as a central hub for business and travel.

While the United Arab Emirates remains a country at peace amid the political and social unrest experienced by other Arab states, it faces a number of strategic issues relating from how these events will unfold; particularly the impact from increased tension between Iran and the West, and the posturing in relation to the Straits of Hormuz despite of the existence of the recent Nuclear Accord between Iran and the west which may take some time to provide goodwill and bring peace to the region.

4.3.2 Economic Concerns

The economic boom in the Emirates, driven by a wealth generation from oil extraction is a significant feature of the early 21st century in the United Arab Emirates, which has led to the protection from volatility abroad. The United Arab Emirates gross domestic product (GDP) reached 4.5% by the end of 2013, surpassing 2012 value of 4.1% according to the Ministry of Economy, in line with the estimates of the United Arab Emirates central bank, that resulted to better the International Monetary Fund's (IMF) United Arab Emirates GDP growth estimate of 3.5%. The emirate of Abu Dhabi's GDP is estimated to grow at an average

annual rate of 5.7% between 2013 and 2016 according to the Undersecretary of the Abu Dhabi Department of Economic Development (ADDED). This positive outlook means that the United Arab Emirates has gained three places in the Global Competitiveness Index to take the 24th position in the World Economic Forum standings - The improvement reflecting a better institutional framework as well as greater macroeconomic stability.

Higher oil prices up until end of 2014 sustained the budget surplus and allowed the United Arab Emirates to reduce public debt and raise the savings rate. Overall, the competitiveness of United Arab Emirates reflects the high quality of its infrastructure, where it ranks a very good eighth within the World Economic Forum standings 2012/2013. While the oil still a major contributing product to the UAE GDP, the slump in oil world price that started in 2015 is not expected to severely impact the infrastructure sector in Abu Dhabi (Khaleej Times, 2015). Abu Dhabi Executive Council allocated Dh17.5 billion for housing, infrastructure, education, and other projects across the emirates for 2016 (The National, 2016)

Funding, generally across the United Arab Emirates remains conservative. The Dubai Government cut spending by 4.5% throughout 2012 as part of a long-running effort to streamline operations while continuing to invest in infrastructure. This slimmer budget undoubtedly sends a clear message that the United Arab Emirates wish is to continue efforts to raise the efficiency of government spending through increasing productivity and improving economic and social returns. A dramatic rescue of Dubai Bank followed by a forced acquisition by Emirates NBD, further led to underscore lingering doubts about the United Arab Emirate's position within the current global financial crisis.

A driving influence in the Emirate's urban planning programme is Plan Abu Dhabi 2030. Plan Abu Dhabi 2030, was created to deliver upon the vision of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the United Arab Emirates and Ruler of Abu Dhabi, for the continued fulfilment of the grand design envisaged by the late Sheikh Zayed bin Sultan Al Nahyan and the ongoing evolution of Abu Dhabi as a global capital city. This initiative is continuing to help Abu Dhabi Emirate identify and then respond to current and future development needs, thus establishing a 'best-of-breed' planning culture and introducing recognised guiding development principles. This extensive strategic planning process capitalises on Abu Dhabi's advantageous location, natural assets, climate and unique culture, which, when combined with its safety and care for the environment, make it an excellent visitor destination. The consequences of this development programme are that it brings about increased disruption, heavy traffic congestion and reduces the cleanliness of certain areas. Although the bulk of construction is taking place in specially designated development zones outside, or on the fringes of, the existing urban areas the impact is still significant across the Emirate. Through ten individually chosen policy statements, the Plan Abu Dhabi 2030 specifies land use, building heights and transportation plans for the entire metropolitan area of Abu Dhabi. Under the Plan, the city is projected to grow to over three million people by 2030. As a result of the increase projected population, the 2030 Plan provides for large new areas of Emirati housing and overall infrastructure, inspired by the traditional family structures of the local community, and a diverse mix of affordable housing options for all the citizens and residents of Abu Dhabi.

4.3.3 Social Attributes

According to Interpol (2011), the Middle East is one of the fastest growing migrant-receiving regions with an increase of 4.5 million migrants since 2005, making a total in 2010 of 26.6 million international migrants equating to 13.5% of the world's total (APMM 2012).

In the United Arab Emirates, population also continues to grow, the reasons for this are of course primarily down to international migration to meet the needs of the individual Emirates as they continue to grow economically and strive towards the 2030 plan as in the case of Abu Dhabi. The population at the end of 2012 for Abu Dhabi was recorded as 3,265,262 (UAENBS 2013). Continued population growth, driven by the economic prosperity of the Abu Dhabi Emirate is likely to expand the areas of operation for Abu Dhabi Police and the diversification of its overall workload will affect the nature of the work Abu Dhabi Police is likely to encounter. Given that 22% of the population is Emirati, and approximately 46% of the Emirate's populations reside in Abu Dhabi City, the Abu Dhabi Police, like most other public sector organisations needs to understand who is living, working and coming to the Emirate and what influence will this have on the region's infrastructure and the emirate as a whole.

4.3.4 Technological Characteristics

The process of developing Abu Dhabi encompasses the use of scientific developments and new technologies to support new industries and the quality of life in the increasing population. These scientific developments and improved technologies present major and novel types of crime that challenge the traditional view of law enforcement agencies. Research and development across the United Arab Emirates is continued, and according to the 2012 Global Innovation 1000

study by global management consulting firm Booz and Company, research and development is now seeing a return to pre-recession levels with the greatest investment in computing and electronics, health, and automotive.

Cyber-crime is likely to continue growing in popularity as the choice of weapon for terrorists set on destabilising countries and regions. Security services, therefore, play an increasing role in the prevention and response to such threats. Accompanying this is the increasing need to protect the United Arab Emirate's borders against infiltration by illegal or undesirable people, by incorporating strong identity management procedures to verify the identity of all people crossing the borders (entering and exiting) through travel document validation such as e-passports and ICAO public key directory as well as increase in biometrics.

The continuous growth of access opportunities to the Internet and mobile technology is not only providing both opportunities for 'smarter' working but also increasing workloads for many within the United Arab Emirates. The increase in technology is likely to intensify further with the Abu Dhabi Government's aspiration to move towards more e-government channels when dealing with the public.

Technical shifts towards 'cloud computing' and 'grid computing' within the Abu Dhabi Emirate will increase the number, interconnectedness, and availability of mobile devices to the Internet making e-services even more appropriate and widespread.

4.3.5 Environmental Considerations

A recent report (The National 2013) suggests freshwater reserves in parts of Turkey, Syria, Iraq and Iran along the Tigris and Euphrates river basins had lost 144 cubic kilometres of its total stored freshwater, the second fastest loss of groundwater storage after India. Water also remains a vital resource for Abu Dhabi due to its geographical location and social and demographic composition. The availability of water is therefore a particularly urgent concern for both the public and the government. Currently, around 65% of all the water used within the United Arab Emirates is supplied from groundwater; the remainder is provided by desalination and recycled water. Due to the dry environment surrounding the Emirates groundwater renews itself slowly causing supplies to diminish. In 2010, the average withdrawal of groundwater decreased by 6.2% to 2,250.9 million cubic metres.

A growing population therefore means a future need for increased water supplies, and as groundwater levels diminish there will be more reliance placed on energy and carbon intensive desalination processes. The latest evidence of the worsening water crisis in the Middle East further indicates demand is increasing as a result of growing populations, war and the worsening effects of climate change, raising the prospect that some countries could face severe water shortages in the decades to come.

In 2010, the quantity of treated wastewater was recorded as 246.6 MCM. Within the emirate of Abu Dhabi, the Abu Dhabi city was understood to account for about 74% of treated wastewater, while the share of Western Region was less than 3.6% of the total.

4.3.6 Legal Requirements

The development that is underway within the emirate of Abu Dhabi has increased the number of regulatory areas and has influenced the work of all Abu Dhabi Government entities.

Changes to, and increased legislation (evidenced globally to be a necessity to meet current and future demands), also have the potential to significantly affect upon the training and policy development across all organisations. Such changes can alter almost immediately the way in which investigations are conducted as well as the obligations the entity may have for its employees. With increases in crime likely to continue, particularly 'new crimes' facilitated by the global movement of people, shifts in attitude and the advancement of technology, the impact on Abu Dhabi Police through increased regulatory controls is also likely to increase.

Within all Abu Dhabi governmental agencies knowledge and understanding of the new regulations in relation to overall environmental changes becomes of paramount importance in order to comply with the ever-changing requirements in relation to the modern unprecedented environmental changes.

4.4 Summary

This chapter has discussed the United Arab Emirates and Abu Dhabi's macro environmental aspects that form the key parameters for action in the local environment and that, in turn, create a set of opportunities and challenges that the infrastructure sector would fully need to take into consideration when developing future strategies in line with these external conditions. Only then strategies

developed, and specific actions taken will be appropriate, and in line with the notion of strategic fit, as discussed in previous chapters.

However, the latter is much easier said than done, since the infrastructure sector consists from four specific areas as illustrated in chapter one, and in each one area there are a number of organisations that are responsible for certain parts in their area – as shown in chapter five. In addition, each one organisation has its own particular strengths, weaknesses and capabilities that, in turn, enable or disable flexibility and timely responsiveness to these external prevailing conditions – hence the focal point of research of this study.

The concept of strategic fit, is perhaps, the most important notion in the wider business and management area – certainly in the combined fields of strategic management and business strategy because all organisational actions lead, or should lead, to the strategic fit of the organisation in its external environment – which is also the fundamental view of authors in the field, as discussed throughout chapters two and three.

Chapter 5: The Infrastructure Sector

- 5.1 Introduction**
- 5.2 Abu Dhabi**
- 5.3 Abu Dhabi 2030**
- 5.4 Abu Dhabi Executive Council**
- 5.5 Abu Dhabi Infrastructure Sector**
- 5.6 Urban Development Infrastructure**
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The Infrastructure Sector

5.1 Introduction

The previous chapter introduced the key external environmental features of both the United Arab Emirates (UAE) and Abu Dhabi in order to present the many local challenges associated with these external conditions that, in turn, set the context in which the diverse agencies of Abu Dhabi's infrastructure sector operates in.

This chapter is concerned with Abu Dhabi's infrastructure sector in itself in an effort to highlight the field of application of this research. Consequently, this chapter is descriptive in nature and introduces the different sub-sectors including the numerous key achievements and challenges in these areas.

According to the Oxford Dictionary (2014) infrastructure is 'the basic physical and organisational structures, services and facilities (e.g. buildings, roads and power supplies) needed for the operation of a society or enterprise'. The Collins dictionary (2011) defines infrastructure as the 'stock of fixed capital equipment in a country, including factories, roads, etc. considered as a determinant of economic growth'.

Kumar (2005), on the other hand, and in agreement with Fulmer (2009) has distinguished infrastructure in 'soft' and 'hard' elements where soft encompasses governmental policies educational institutions and health, medical and security facilities and hard comprises physical components that in their totality provide commodities such as utilities and roads that enable and enhance societal living conditions. Malik (2009) reiterates and adds that reliable and affordable infrastructure is critical to economic growth.

Ilesanmi (2012) is also in agreement and states that physical infrastructure such as electricity, transportation and communication networks are indispensable for the sustainability of a functioning market economy and the facilitation of good governance and that they constitute the bedrock of sound economic development, social progress and human security.

The Centre for the Protection of National Infrastructure (CPNI) (2014) states that the UK's national infrastructure is defined by the Government as: 'those facilities, systems, sites and networks necessary for the functioning of the country and the delivery of the essential services upon which daily life in the UK depends', and adds that, there are some cross-sector features such as technology that supports infrastructure and the delivery of essential services across a number of sectors.

5.2 Abu Dhabi

Abu Dhabi is the capital and the second most populous city in the United Arab Emirates, and also capital of the largest of the UAE's seven member emirates. Abu Dhabi lies on a T-shaped island jutting into the Arabian Gulf from the central western coast. The city proper had a population of 921,000 in 2013 (World Gazetteer, 2014).

Abu Dhabi houses federal government offices, as the seat of the United Arab Emirates Government. Abu Dhabi has grown to be a cosmopolitan metropolis. Its rapid development and urbanization, coupled with the relatively high average income of its population, has transformed Abu Dhabi to a larger and advanced metropolis (Gulf News, 2009). Today the city is the country's centre of political and industrial activities, and a major cultural and commercial centre, due to its

position as the capital. Abu Dhabi alone generated 56.7% of the GDP of the United Arab Emirates in 2008 (Gulf News, 2013).

Abu Dhabi is home to important financial institutions such as the Abu Dhabi Securities Exchange, the Central Bank of the United Arab Emirates and the corporate headquarters of many companies and numerous multinational corporations. As one of the world's largest producers of oil, Abu Dhabi has actively attempted to diversify its economy in recent years through investments in financial services and tourism.

The density of Abu Dhabi varies, with high employment density in the central area, high residential densities in central downtown and lower densities in the suburbs. In the dense areas, most of the concentration is achieved with medium- and high-rise buildings. The development of tall buildings has been encouraged in the Abu Dhabi Plan 2030, which will lead to the construction of many new skyscrapers over the next decade, particularly in the expansion of Abu Dhabi's central business district such as the new developments on Al Maryah Island and Al Reem Island.



Figure 5-1 Al Maryah Island Architecture Perspective, Abu Dhabi
(Source: Mubadala Real Estate & Infrastructure, 2014)

Abu Dhabi already has a number of landmarks and super tall skyscrapers as Sheikh Zayed Grand Mosque, Capital Gate Tower, and Etihad Towers (GSADEC, 2012). Abu Dhabi has over 2,000 well-maintained parks and gardens and more than 10 kilometres are public beaches (Whatsonwhen, 2010).

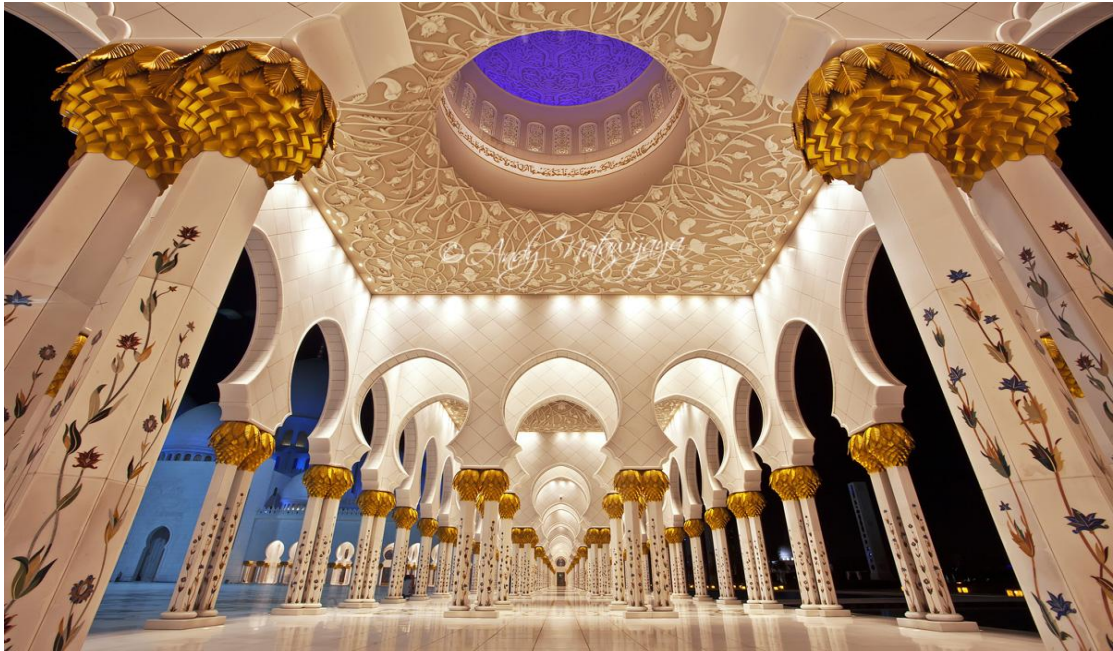


Figure 5-2 Sheikh Zayed Grand Mosque, Abu Dhabi
(Source: Natawijaya photography, 2014)

The UAE's large hydrocarbon wealth gives it one of the highest GDP per capita in the world and Abu Dhabi owns the majority of these resources – 95% of the oil and 6% of gas. Abu Dhabi thus holds 9% of the world's proven oil reserves 98.2bn barrels and almost 5% of the world's natural gas 5.8 trillion cubic metres (IEA, 2011). Oil production in the UAE was in the region of 2.3m BPD in 2010, and projects are in progress to boost production to 3m BPD. In recent years, the focus has turned to gas as increasing domestic consumption for power, desalination and reinjection of gas into oil fields increases demand. Gas extraction is not without its difficulties, however, as demonstrated by the sour gas project at

Shah where the gas is rich in hydrogen sulphide content and is expensive to develop and process (Morton, 2011).

Recently the government has been diversifying their economic plans. Served by high oil prices, the country's non-oil and gas GDP has outstripped that attributable to the energy sector. Remarkably, non-oil and gas GDP now constitutes 64% of the UAE's total GDP. This trend is reflected in Abu Dhabi with substantial new investment in industry, real estate, tourism and retail. As Abu Dhabi is the largest oil producer of the UAE, it has reaped the most benefits from this trend. It has taken on an active diversification and liberalization programme to reduce the UAE's reliance on the hydrocarbon sector. This is evident in the emphasis on industrial diversification with the completion of free zones, Industrial City of Abu Dhabi, twofour54 Abu Dhabi media free zone and the construction of Industrial City of Abu Dhabi (ICAD). There has also been a drive to promote the tourism and real estate sectors with the Abu Dhabi Tourism and Culture Authority and the Tourism and Development Investment Company undertaking several large-scale development projects. These projects will be served by an improved transport infrastructure with a new port, an expanded airport and a proposed rail link between Abu Dhabi and Dubai all in the development stages (Entrepreneur.com, 2009)

5.3 Abu Dhabi 2030

The booming UAE economy, as outlined in the previous chapters, is fuelling infrastructure development on an unprecedented scale. This has been depicted as a 'new era of economic transition', characterized by a public-private partnership that is gradually taking over the role traditionally held by government in infrastructure development. Housing, tourist, industrial and commercial facilities, education and

healthcare amenities, transportation, utilities, communications, ports and airports are all undergoing massive redevelopment, radically altering the urban environment in the UAE. Reform of property laws has also added impetus to urban development.

A driving influence in the Emirate's urban planning programme is Plan Abu Dhabi 2030. Plan Abu Dhabi 2030 was created to deliver upon the vision of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the United Arab Emirates and Ruler of Abu Dhabi, for the continued fulfillment of the grand design envisaged by the late Sheikh Zayed bin Sultan Al Nahyan and the on-going evolution of Abu Dhabi as a global capital city.

This initiative is continuing to help Abu Dhabi Emirate identify and then respond to current and future development needs, thus establishing a 'best-of-breed' planning culture and introducing recognised guiding development principles. This extensive strategic planning process capitalizes on Abu Dhabi's advantageous location, natural assets, climate and unique culture, which, when combined with its safety and care for the environment, make it an excellent visitor destination.

The consequences of this development programme are that it brings about increased disruption, heavy traffic congestion and reduces the cleanliness of certain areas. Although the bulk of construction is taking place in specially designated development zones outside, or on the fringes of, the existing urban areas - the impact is still significant across the Emirate.

The aims of Abu Dhabi Vision 2030 were partly social and partly economic; to use the booming oil revenues wisely to create a sound economy, to make Abu

Dhabi a great place to live, learn and do business, and to create an environment that respected the past while setting new standards for the future. Abu Dhabi Vision 2030 provides an overarching statement of direction. Individual government entities and the major enterprises of Abu Dhabi have all been developing their own strategies in line with those goals. However, the two most important and most extensive are the Abu Dhabi Economic Vision 2030 from the Abu Dhabi Council for Economic Development (ADCED), and the Abu Dhabi Urban Planning Vision 2030 from the Abu Dhabi Urban Planning Council, which was created specifically for the purpose. Both include a lot of detail about where we're going and how we are going to get there. Both took effect in 2008 too, and after the first five years they are ripe for reappraisal. In fact, 2008 was an unfortunate starting point, the year of the US credit crunch and the start of a global economic slowdown that included falls in oil prices and tougher credit markets. As a result, some of the initial Vision 2030 ideas had to be revised – though not the basic principles (Abu Dhabi Week, 2013).

Through several policy statements, the Plan Abu Dhabi 2030 specifies land use, building heights and transportation plans for the entire metropolitan area of Abu Dhabi. Under the Plan, the city is projected to grow to over three million people by 2030. As a result of the increase projected population, Abu Dhabi Plan 2030 provides for large new areas of Emirati housing, inspired by the traditional family structures of the local community, and a diverse mix of affordable housing options for all the citizens and residents of Abu Dhabi.

The Abu Dhabi 2030 establishes a long-term strategy for achieving the primary goals of safe and secure society and a dynamic open economy. Within the

strategy, the Government has identified nine pillars that underpin the envisioned social, political and economic future:

- A large, empowered private sector.
- A sustainable knowledge-based economy.
- An optimal, transparent regulatory environment.
- A combination of strong and diverse international relationships.
- The optimization of the Emirate's resources.
- Premium education, healthcare and infrastructure assets.
- Complete international and domestic security.
- Maintaining Abu Dhabi's values, culture and heritage.
- A significant and on-going contribution to the federation of the UAE.

Realization of the nine pillars are focused on four key areas of activity: Economic Development; Social and Human Resources Development; Infrastructure Development and Environmental Sustainability; and Optimization of Government Operations (ADDED, 2012).

The Abu Dhabi Government has issued its Policy Agenda 2007-2008 outlining its key goals and initiatives across all portfolios of government. Policy Agenda 2007-2008 contains detailed policy statements in portfolios as diverse as: planning and economy; energy; tourism; health; education; labour; civil services; culture and heritage; food control; urban planning; transport; environment, health and safety; municipal affairs; police and emergency services; electronic government; women; and legislative reform (Elewa, 2007).

5.4 Abu Dhabi Executive Council

Abu Dhabi Executive Council is the local executive authority of the Emirate of Abu Dhabi. It assists the Ruler to carry out his duties and powers. The Council holds quarterly meetings in Abu Dhabi to discuss issues and memos referred to it by Abu Dhabi's departments and governmental authorities, concerning the progress of government-sponsored projects, the development of services and the improvement of governmental performance in Abu Dhabi. The Executive Council is chaired by HH Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces. Its membership is formed by chairmen of the local government departments, some local authorities and other members appointed by the Ruler.

The Executive Committee has the power to make all project-related decisions, such as negotiations, change orders, etc. It coordinates with relevant entities to study the subjects that should be elevated to the Executive Council, such as bills. The Executive Committee oversees the implementation of its resolutions through the General Secretariat divisions.

Pursuant to Resolution No. (15) of 2007 issued by The Secretary General, Executive Council subcommittees were formed and comprised of government department chairmen or representatives holding undersecretary or equivalent positions. The powers of each subcommittee were identified according to its scope of work. The following subcommittees are established:

- Economic Development Sub Committee.
- Social Development Sub Committee.
- Infrastructure and Environment Sub Committee

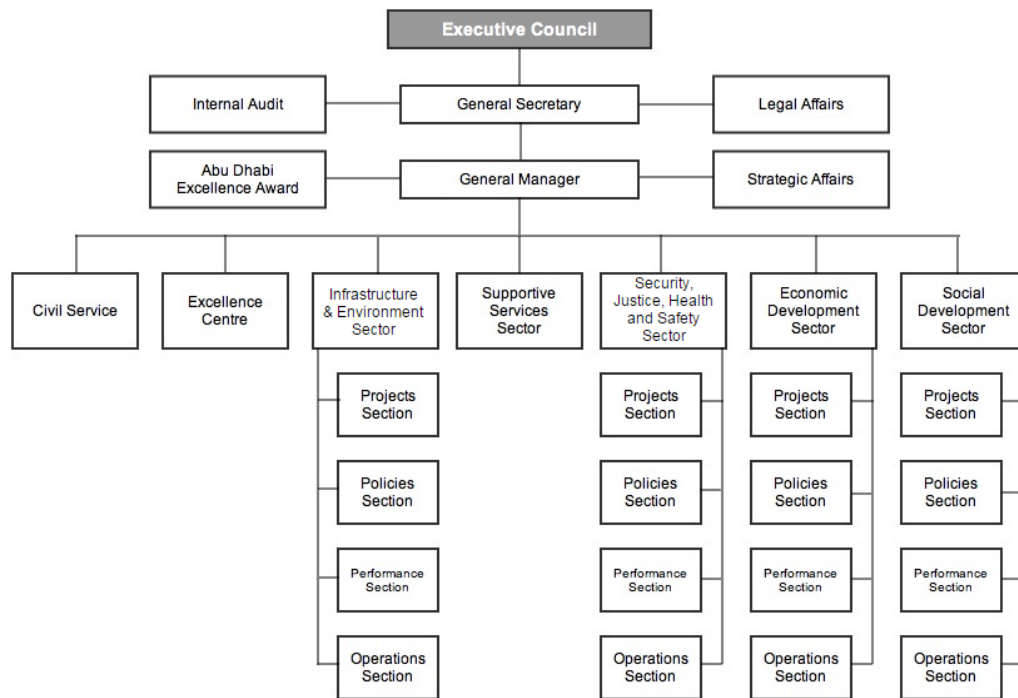


Figure 5-3 General Secretary of AD Executive Council Organisational Chart
(Source: GSADEC, 2014)

5.5 Abu Dhabi Infrastructure Sector

The infrastructure sector in Abu Dhabi is centralized and although the agencies in the sector enjoy a certain level of autonomy the Executive Council (the executive arm of Abu Dhabi government) is responsible for communicating the government's policies, developing strategies to operationalize these policies, approving projects and overseeing overall performance in the sector Figure 5-3 illustrates the structure of the Executive Council. The Infrastructure Sector comprises four specific areas; transportation, utilities, urban development and telecommunications. Each one area encompasses a number of agencies as depicted in figure 5-4

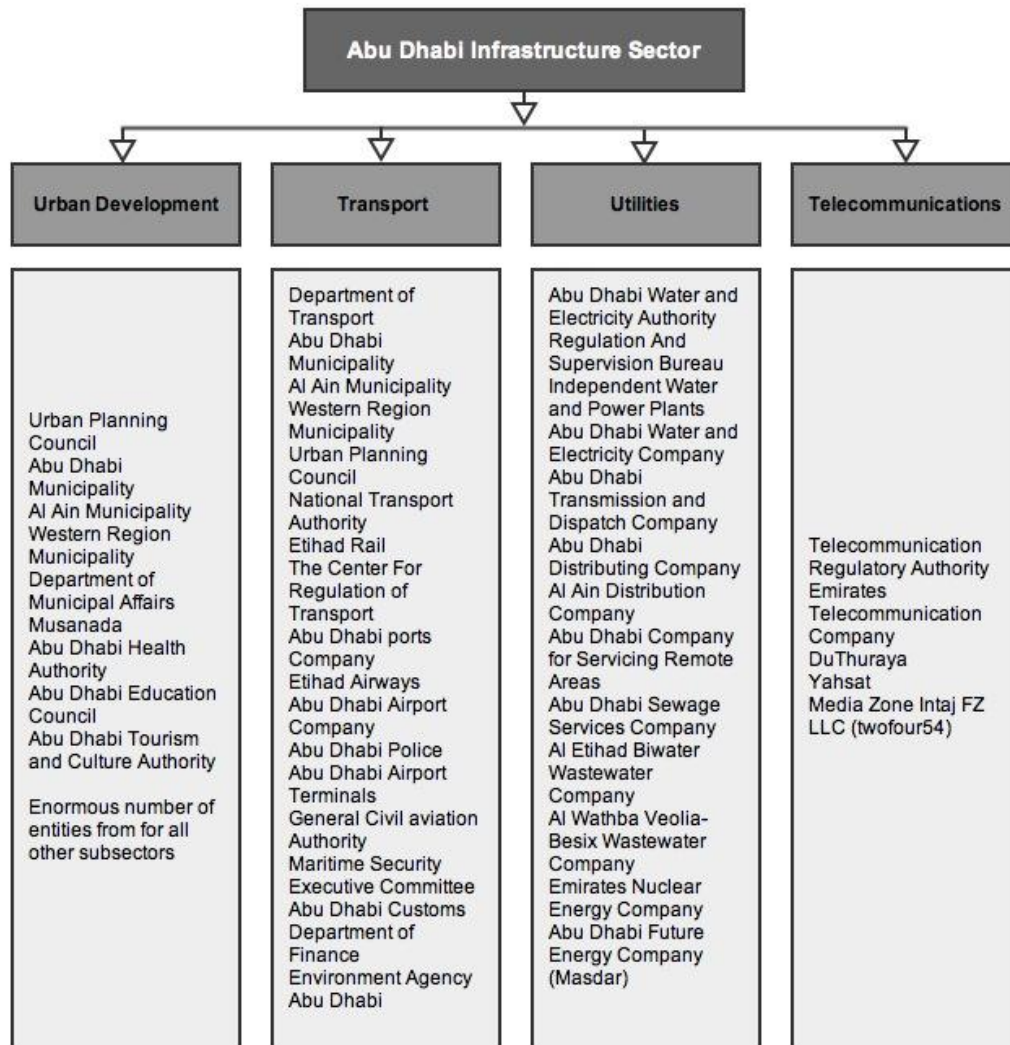


Figure 5-4 The Structure of Abu Dhabi Infrastructure Sector
 (Source: GSADEC, 2014)

5.6 Urban Development Infrastructure

The Urban Development infrastructure consists of a number of diverse resources.

These are the Land, surface and space management (Zoning and population density, building functionality mix, land rehabilitation); the Eco-management of natural resources, energy and waste (water resources management, air quality improvement, waste management, soil and underground quality, energy savings and renewable energy); the Social development and healthcare (social inclusion and economic viability of population, social and communal space, access to culture and tradition, infrastructure access to non-favourable persons, access to

fast aid); the Level of economic and labour activity development (development of social economy, sustainable tourism, modification of consuming behaviour); the Transport and mobility (access to public transport, non-motorized transportation, logistic transport, intermodal transport framework) and the Cultural and Legacy enhancement (contribution to local identity, legacy rehabilitation, quality of landscaping, quality of public and built-up area) (GSADEC, 2012)

Urban Development goals are mainly articulated around selected and distinctive Abu Dhabi cities and towns that are great places to live and work in as well as to visit. According to the Policy Agenda 2030 (2011), the strategic priorities for urban development include:

- Attractive, liveable and sustainable urban development;
- An urban fabric that facilitates vibrant cultures in harmony with strong unique local traditions;
- Timely and equitable provision of land and public housing;
- Municipalities that engage the community in a consultative and decision making role;
- Infrastructure and community facilities and services that meet the needs of a growing population;
- Ensuring an urban plan (model) is developed and periodically reviewed for every region in the Emirate of Abu Dhabi with zoning and clear guidelines for land use;
- Integrating the traditional way of living with new environmentally sustainable lifestyle choices that will emerge in a continually evolving culture through flexibility and creativity;

- Leveraging the private sector and local expertise to deliver quality municipal services at a reduced cost.

Since 1971, Abu Dhabi has evolved from having no sealed roads and only a small number of permanent buildings through to being one of the most important modern economic centres, both regionally and globally.

The Policy Agenda highlighted ‘infrastructure development and environmental sustainability’ as one of the four policy areas. However, it is important not just to look at this policy in isolation, for they are intrinsically linked together and interdependent in determining the overall success of the Emirate.

To create first class cities and encourage sustainable economic growth requires coordinated economic and urban planning strategies. Economic and urban planning decisions must therefore be complementary and share the same overall vision. The Abu Dhabi Government has recognised that the world’s leading cities are those that use both economic and urban planning in tandem to create sustainable, vibrant, attractive and livable cities that stand the test of time.

The Government of Abu Dhabi has identified how crucial this link is to the evolution of the Emirate’s cities. It is proactively developing its cities, in particular its capital’s Metropolitan Area, in line with economic forecasts, population estimates, real estate forecast trends analysis and diversification programmes to ensure growth is sustainable and appropriate to demand, both locally and internationally (UPC, 2013).

To ensure the development of professionally designed and well-managed urban environments throughout the Emirate, complete with world-class transport and

infrastructure systems, supported by measured economic growth, The Urban Planning Council (UPC) was created by Law Number 23 in 2007. In addition to managing the development of Metropolitan Abu Dhabi, the UPC is also tasked with the simultaneous development of the Al Ain and Al Gharbia regions, to enable them to keep pace with that of Abu Dhabi City. It is an important policy priority to achieve an Emirate-wide distribution of economic activities and associated benefits (UPC, 2014).

The Urban Development Council (UPC) created the Estidama (“Estidama” means sustainability) programme of sustainability in 2008 to revive the environmental and cultural sensitivities that were embedded in the traditions and lifestyles of Emiratis for thousands of years for the benefit of all people present and future. Estidama is the only sustainability programme to take the culture of the country into account to form a well-rounded and holistic approach to sustainability (Clarion Associates, 2008).

The General Secretary of Abu Dhabi Executive Council works with a number of Governmental stakeholders to successfully combine the strategies, plans and initiatives from these stakeholders into comprehensive plans that cover development from many angles. This helps to ensure that developments are supported by the correct utilities infrastructure, community facilities, such as schools, medical centres and mosques and safe, pedestrian-friendly streets. This then ensures that complete communities are delivered across the Emirate.

Through the UPC, the General Secretary of Abu Dhabi Executive Council published the revolutionary Plan Abu Dhabi 2030 (now known as Plan Capital 2030) Urban Structure Framework Plan in 2007, offering a vision for the

evolution of Abu Dhabi City and providing a blueprint for Metropolitan Abu Dhabi's long-term success. This was followed in 2008 by Plan Al Ain City 2030 Urban Structure Framework Plan, which covers the City of Al Ain. Plan Al Gharbia 2030 Regional Structure Framework Plan, which covers the western region of the Emirate, was released in 2011. The framework plans were created using a range of tools, from research and analysis and technical charrettes, to engaging with the public to ascertain their concerns, ideas and local knowledge to support the creation of informed plans. The framework plans have been devised to cover the whole Emirate, the UPC has been able to create a list of overarching principles that apply across Abu Dhabi; from large cities to more rural settlements; from the coastlines to the desert.

The UPC has initiated an infrastructure framework plan to address more efficient design and delivery of infrastructure to new development at a regional and building scale. The framework plan is addressing more efficient utilization of land for utility rights-of-way, provision of land for renewable energy production, and provision for smart grid and metering technologies. Additionally, the infrastructure plan investigates the cost and benefits of centralized versus decentralized utility plants such as district cooling, desalination and sewage treatment to optimize the efficiency of the plants and their supporting networks (Madden, 2012).

5.6.1 Achievements

As part of the execution process for Abu Dhabi 2030 with regard to the urban development, Abu Dhabi Government has accomplished a coherent urban planning that is consistent with population and economic needs. In addition to completing the framework plans for entire Abu Dhabi Emirates and detail Master

Plans with phasing implementation approach. In addition, the government has planned and developed policies that ensure coherent and consistent planning after so many workshops for data collection, Creation, and sharing to ensure all stakeholders agencies have equivalent base line information.

To achieve an attractive, livable and sustainable urban development, the government has called for more coordination and collaboration between government agencies to implement mega strategic projects, and reviewed the developer led master plans to ensure provision of community amenities, efficient circulation, adequate parking, and appropriate land use mix since 2008. Also, major focused efforts was made in introducing and integrating sustainable design, development and products through the piloting and implementation of sustainable lightening, the introduction of sustainable landscape and irrigation practices, and the experimentation with green road infrastructure and sustainable design. Moreover, a major achievement in livability has been the introduction and spread of pocket parks that has had a huge impact on livability of neighbourhoods as communities and families now have access to parks and playgrounds within walking distance of their homes. That resulted to major enhancement and achievement in city image involving the improvement in external appearance of buildings, shops, and signage.

To promote an urban fabric that facilitates vibrant cultures in harmony with strong unique local traditions, the government created equitable policies that are in line with local tradition or practices to ensure balanced land uses, provision of community facilities, opportunities for public art, and are led by design principles that support unique local tradition, and to guarantee provision of community

amenities, efficient circulation, adequate parking, and appropriate land use mix that also support diverse cultures.

The municipalities made efforts to engage the community in a consultative and decision making role through conducting multiple public consultation and outreach workshops, adoption of digital media to engage the community in urban planning and provide tools to inform design and decision making, and good process in the initiative to foster customer and client feedback as main driver for service delivery enhancements. As the communities have acknowledged and welcomed the increased engagement, the municipalities have established the following forms of engagement such as community town halls “multaqa”, community surveys that engage the community in and obtain feedback and suggestions on type of amenities, service levels, and design of parks; community Engagement and Collaborative Action programme such as “Asematy” which enable the community to suggest and work directly on community improvement initiative; Customer Service Surveys, and Client (Consultants and Contractors) Surveys for “Trakhees”.

The government worked in creating an infrastructure and community facilities and services that meet the needs of a growing population by designing master plans that ensure balanced land uses, provision of community facilities, improved circulation and allocation of services and phasing plans allow infrastructure providers to plan accordingly. In addition to ensure provision of community amenities, efficient circulation, adequate parking, and appropriate land use mix that also support diverse cultures, the development of the “Community Facilities Planning Standards” to ensure appropriate provision of community facilities,

development of the Utilities Corridor Design Manual, development and implementation of the Public Realm Design Manual, and development of the Mosque Development Guidelines.

In order to provide guide lines for entities across the emirate, main regulations and laws introduced by planning agencies such as “Estidama” Sustainability Initiative, an overarching framework for measuring sustainability, Abu Dhabi Urban Street Design Manual, Abu Dhabi Public Realm Design Manual, Abu Dhabi Community Facility Planning Standards, Abu Dhabi Utility Corridor Design Manual, Development Codes (Abu Dhabi, Al Ain, Al Gharbia), policies that are in line with local tradition or practices, development of the “Community Facilities Planning Standards”, and development of the Mosque Development Guidelines.

5.6.2 Challenges

According to the State of Emirate Report (2012), the Urban Development Sub-sector has been experiencing some challenges and issues with regard to governance, planning, services, finance and human resources.

With regard to governance and planning, there have been some key master planning issues, which lead to project delays, duplication of work between UPC, Municipalities, and DoT and lack of visibility on resources and funding requirements are as follows:

- Lack of integration between master plan and implementation plan;
- Limited information on environmental conditions (geotechnical, typographic, air quality, groundwater) leading to urbanization in inappropriate areas;

- Lack of clarity in upfront ownership of projects and roles of government entities from initiation to commissioning. SLA between entities are also lacking;
- Sequencing for delivery of key infrastructure is not known and therefore developments and infrastructure can be proposed that are out-of-sequence;
- Limited integration between planning, economic development and social welfare, which causes misalignment on the required attractiveness level of cities.

In addition, there are some issues with project impact assessment; Lack of a timed and coordinated development impact assessment, which impacts developers financially. Moreover, data accuracy and availability; Incorrect or missing data used in the creation of the framework plans especially unreliable population and socioeconomic data.

Regarding the services, there are some challenges such as the issues with land, surface and space management: Plans and policies are often beyond the existing capabilities of the implementers without the need for further resourcing; Eco-management of natural resources: Ability to effectively implement the Estidama Rating System within the Municipal system. Current operational challenges in undertaking through construction; Economic activity development: The Urban development sector lacks reliable and publicly accessible data to assess urban development plans in the context of economic indicators, supply vs. demand, and government priorities; Social development (infrastructure): Disconnected between the planning of community services and facilities and the funding sources and delivery programmes for actual implementation. Inadequate provision of community facilities adversely impacts access to education, health, religious, and

social facilities; civil society welfare: Inter-government response to social welfare issues is piecemeal and fragmented between different agencies with often-limited coordination. Need for more proactive response; Cultural and heritage enhancement: Communication between custodian entities is sometimes fragmented – lack of coordination and certain instance contradiction in goals preservation of cultural identity and cosmopolitanism; No Objection Certificates (NOCs): Lack of responsiveness between entities and delays in NOC issuance and clearance. High number of NOC for pre-construction and during the construction phase is delaying the execution of projects; Execution standards: Projects execution standards are not always up to par and quality of finishing is generally low; Technical requirements: Conflict in technical requirements for design and execution from deferent regulatory entities (i.e. road layout and alignment: UPC, DoT, and AD Police) leading to delays in commissioning process; and Tendering issues: Tendering issues that are causing project delays (8-10 month lead time) such as:

- Conflict between entities internal tendering process and government tendering committee, especially in supplier evaluation (as the tendering committee apply the classification of DED grading license and entities use a track record evaluation system, tendering committee is mainly financial driven while entities are mainly solution and quality driven;
- Needs for multiple official approvals affecting the leading time of tendering process and in certain instance is incurring high penalties cost;
- No clear demarcation in joint tendering process (technical at entity level and financial at Musanada level);
- No clear WoG guideline on sourcing strategies and tendering process;

- Non standardized tendering approach between department and authority leading to inequality between entities in terms of lead time and reputation among the private sector contractors/ providers

Also, there are some issues with Land/ Plot allocation: Land/ plot allocation issues such as increased land transaction and improper allocation of land as per the master plan result in ad hoc growth and urban sprawl as well as places development pressure on areas that may not be suitable for financially viable for development; land registry and classification system is not standardized (incomplete records of previously allocated lands); and Government inability to retrieve lands where development has not been initiated

In terms of finance, there are some challenges with the Urban Development Sub-sector; Capital projects portfolio: Management of capital project portfolio can be enhanced in terms of delivery speed and investment allocation and optimization finances; Public vs. private sector participation: Uneven participation between public and private sector in urban land development while main developments are fuelled through direct government funding; and Sourcing strategies: Lack of economic efficiency in sourcing strategies (i.e. lack of long term and strong relationship with contractors and suppliers due to the opportunistic approach of entities and delays in response time leading to price inflation from the service provider's end. No whole of government centralized approach to ensure leverage of economy of scope and scale at a WoG level.

With regard to human resources, there is a critical shortage of skilled personnel especially among UAE citizens in the following areas: Civil Engineers, Architects, Structural, Geotechnical, Environmental Engineering and Design,

Environmental Assessment/Remediation, Landscape Architecture and Design, Urban Planning and Urban Design, Land Use Planners, and City Image Specialists (Visual Design Specialists).

5.7 Transportation Infrastructure

The Transport infrastructure includes three specific areas; the surface transportation, the maritime transportation and aviation. The surface transportation consists of busses, roads and highways, railways, parking, and intelligent transportation systems, air transportation support structures, aircraft ground handling and catering, passenger services, cargo services, business and recreational aviation, maintenance and repair, and air traffic control services. The maritime transportation encompasses maritime public transport, and waterways management, container and general cargo port. Aviation includes all civilian airways, aircraft maintenance and airport management (GSADEC, 2012)

According to the Abu Dhabi Vision 2030 (2011) and the State of the Emirate Report (2012) including a number of other sources such as the strategic plans of the Department of Municipal Affairs (2008) and the Department of Transport (2008) the strategic priorities of the Transport Sub-sector

- Creating a transport that is multi-modal and well integrated with the existing and future urban and regional development;
- Deployment of a fully integrated intelligent transportation system to serve the various transport modes and to provide accurate real time operational data and traveller information;
- Providing safe and secure, comfortable and affordable travel experience;

- Minimise negative impact on the environment and providing environmental sustainability;
- Clear allocation for role and responsibilities between the various public and private organisations involved in the delivery, supervision and management of transport services.

5.7.1 Surface Transportation

Public transport within the GCC region is mainly confined to buses and a number of ferries. (With the exception of a rail network in the Kingdom of Saudi Arabia and a Metro system in Dubai) As such, public transport within the GCC has encountered few of the major problems seen throughout the rest of the world. Within Abu Dhabi Emirate, public transport is currently 600 buses and 2 ferries. Passenger numbers are growing rapidly due to the increase of population. Total passenger journeys undertaken on Abu Dhabi public transport are recorded as shown in the figure 5-5 below:

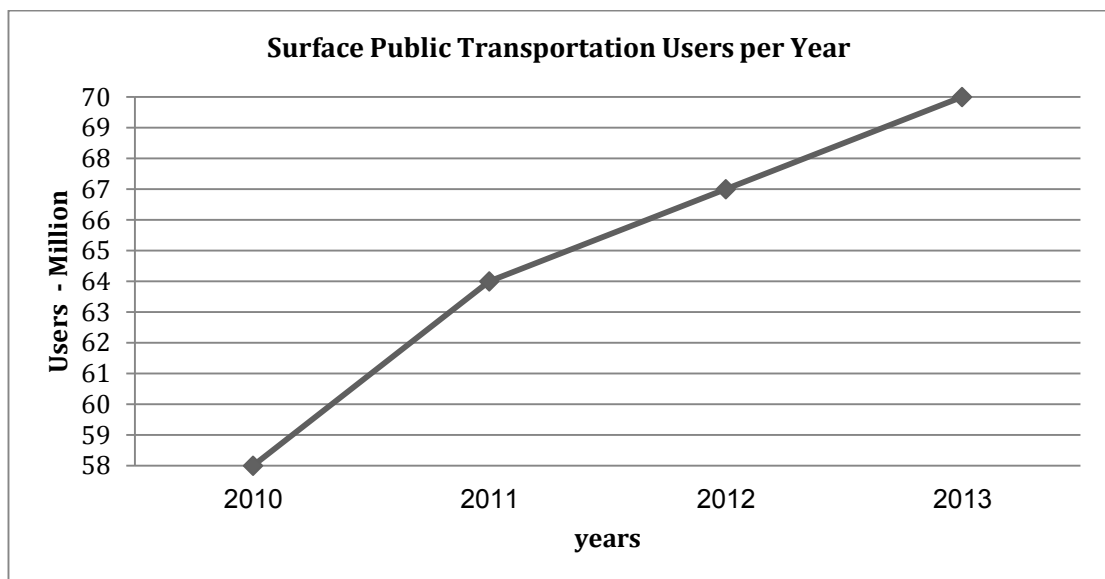


Figure 5-5 Surface Public Transportation Users per Year
(Source: DoT, 2013)

Comprehensive plans for a rail and public transport network in Abu Dhabi are well developed in line with the Surface Transport Master Plans (STMPs) including Abu Dhabi Surface Transport Master Plan (ADSTMP), Al Ain Surface Transport Master Plan (AASTMP), and Al Gharbia Surface Transport Master Plan (AGSTMP), where each STMP identifies the transport system needed to support UPC's Structure Plans for each region in 2030. The inspiration for this is Plan Abu Dhabi 2030, an urban structure framework providing an overarching structure for planning and development efforts over the next quarter of a century, which anticipates a trebling of the city's population to over 3 million. Further planning for Al Ain and AlGharbia regions, which followed the publication of Plan Abu Dhabi 2030, raises the projected population for the Emirate to 5 million by 2030. Plan Abu Dhabi 2030 offers a unified vision for Abu Dhabi's future and provides policy directions in a variety of areas including the natural environment, land use, transport, open space, urban design, housing and the economy (DoT, 2009)



Figure 5-6 Surface Abu Dhabi Surface Transport Master Plan ADSTMP
(Source: Emirates Projects Magazine, 2014)

The first freight rail line opened in Al Gharbia in 2013. This line will transport granulated sulphur from the oil and gas fields to Ruwais for export. Further expansion of the rail passenger and freight network across the United Arab Emirates and linking to the GCC is planned 2013–2018 (Venture Middle East Centre, 2011).

Etihad rail has signed a number of agreements; one of the larger being the construction with Dubai Ports World of an Intermodal freight terminal at Jebel Ali Port with capacity for 5 million containers per year. To put this in perspective, a single train will have the capacity for 260 containers, which will remove 130 trucks from United Arab Emirates roads (Etihad Rail Company, 2013)

A dedicated transport police department was formed in 2012 within Abu Dhabi Police and in partnership with the Department of Transportation. The Abu Dhabi Transport Police Department deployed onto the bus network in 2013 and is

planned to expand across the rest of the Emirate of Abu Dhabi in the following years. In the public transport system in Abu Dhabi there is low-level crime; pickpockets; criminal damage (vandalism) and minor sexual assaults. Yet, there are concerns with overcrowding on some routes, which can become a concern in the event of an accident. Critical and major incident response capabilities between emergency services and partner agencies will need to include transport undertakings in their planning, training, testing and exercising (ADP Traffic Department, 2013).

The series of new transport undertakings being developed will in the near future form the hub of a comprehensive integrated public transport system, and railway network. This will require a coordinated specialist transport police presence across the Emirate of Abu Dhabi and United Arab Emirates in order to ensure the safety and security of the United Arab Emirates transport network.

Throughout the GCC region, policy concerning roads policing appears fragmented. This has resulted in many of the GCC members to progress their own plans with little evidence of effective coordination between the countries. The total volume of GCC countries construction projects of roads and bridges currently existing and planned is estimated at around US\$142 billion (GPCA, 2011). With Abu Dhabi's US\$25 billion ground transport project, the volume of roads and bridges will reach US\$58 billion in the United Arab Emirates – 40% of the total size in the GCC region. The main goal is to raise the level of road safety and decrease traffic congestion in the region (Frost and Sullivan, 2012). Experts also suggest that Abu Dhabi is the leading GCC country in relation to road safety. The vision of Abu Dhabi Police Traffic and Patrols Directorate is to achieve zero

fatalities on the roads of Abu Dhabi by 2030. The Strategic Plan adopts advanced integration methods to deploy SMART Traffic Systems and GIS systems to control traffic light networks and traffic volumes on bridges. Plans include introducing SMART traffic reporting systems, personnel management systems and major improvements to the ADP Traffic and Patrol facilities. The plan is based upon a number of pillars that includes constant updating to match global standards, deployment of GIS and the application of artificial intelligence systems and programmes (Kogler and Saade, 2013)

The plan will be implemented in three phases; phase 1 involves restructuring and instituting relationships with key partners, phase 2 will involve the application of a unified mechanism for all functions and departments within ADP Traffic and Patrols Directorate, and phase 3 involves a technical plan to develop systems and central programmes that support the implementation of SMART traffic systems to manage traffic safety - this will be the first of its kind in the world.

Abu Dhabi Department of Transport is constantly updating the transportation element of its 20-year plan to meet the challenges presented by the spiraling increase in traffic on Abu Dhabi's roads (Davids, 2011). Looking to the future, Abu Dhabi Public Transport Department are also taking into account the impact of the massive new developments on the surrounding areas. This involves vastly improved road and bridge networks in Greater Abu Dhabi, including the islands of Saadiyat, Hodairiyat, Mishairib and Lulu and the onshore satellite towns of BaniYas, Shahamahand Al Wathba, as well as major redevelopment of the road network on Abu Dhabi Island, including the Corniche and internal roads such as Hamdan, Khalifa, AlSalam, Falah and Hazza streets. As per the Surface Transport

Master Plans (STMPs), major road projects have been completed; Sheikh Zayed Tunnel, Sheikh Zayed Bridge, Al Hedairyat Bridge, Al Ruwais bypass road, Madinat Zayed-Ghyathi Road, AlAin-Alwagan Road, and AlMafrq Multi-Layer Interchange Project (DOT, 2013)



Figure 5-7 Sheikh Zayed Bridge, Abu Dhabi
(Source: Hufton and Crow, 2014)

Meanwhile, work continues on the much-needed US\$245 million Abu Dhabi third crossing project, approach roads and interchanges. In addition, the transport plan envisages revamping the public transport system, including the provision of additional buses (together with air-conditioned bus stops), and restrictions on taxis in the central area. The most significant proposal, however, is the construction of a metro system that would eventually linkup with the Dubai Light Rail to ensure smooth travel for metro users between the two emirates.

Category	2008	2009	2010	2011	2012
Fatality rate per 100K population		22.7	19.3	15.9	15
Lane (KM)			7,865	9,176	10,009
Bus Rout		12	75	75	100
Licensed Motor Vehicles	561,748	675,026	743,049	785,076	812,125
Percentage of roads in good conditions			75	88	90.5
Bus Ridership (million passenger trips)		6	50	58	59

Table 5-1 Abu Dhabi Traffic Demographics
(Source: ADP Traffic Department, 2013)

Future transport undertakings planned for Abu Dhabi are Bus Rapid Transit Loop in 2016, Light Rail Tram System in 2018, and Metro Rail System in 2020 (DOT, 2014).

5.7.2 Aviation

The significant increase in economic, business and tourist activity in the country has led to a corresponding expansion in airport and related infrastructure in the UAE. As per Abu Dhabi vision 2030, the total investment on airport development over the coming 20 years will exceed US\$ 20.4 billion. This figure includes redevelopment of Abu Dhabi International Airport, Al Ain International Airport, Al Bateen Executive Airport, Sir Bani Yas Island Airport, and Delma Island Airport. The sum total of these projects ensures that the UAE has become the largest investor in airport development in the Middle East (Khaleej Times, 2013). According to experts in the aviation industry Annual tourist arrival numbers have risen from 1.8 million visitors in 2010 to 2.7 million in 2013 and is expected to reach 7.5 million by 2030 providing significant airline growth opportunities.



Figure 5-8 Abu Dhabi International Airport, Architecture Perspective
(Source: Airport Technology, 2013)

Abu Dhabi Airports Company (ADAC), which replaced the Department of Civil Aviation early in 2006 and became a formal commercial entity in September 2006, is now responsible for all airport operations in Abu Dhabi and is focusing on core activities at the airport. ADAC's overall role is to spearhead the development of the aviation infrastructure within the Emirate of Abu Dhabi. That is why, in addition to its flagship airport, Abu Dhabi International Airport, it is responsible for the operation, management and development of four other airports in Abu Dhabi: Al Ain International Airport, Al Bateen Executive Airport and the airports on the islands of Delma and Sir Bani Yas. ADAC also plans to create an Airport Free Zone and is considering taking on a strategic partners shareholder (ADAC, 2014).

In 2012, Abu Dhabi International Airport handled 12.5 million passengers, up from the 12.4 million in 2011, up from the 10.9 million in 2010, an increase of 13.9%, and 9.7 million in 2009, and an increase of 27.8% over that year. Hence, The airport handled almost 115 thousand flights, an increase of 2.5% over 2010 and 12.4% over 2009 (ADAC, 2013). However, the major new expansion plan for the airport, which got underway in mid- 2010, will significantly increase these figures. Abu Dhabi is in a position to deliver the massive growth of its airport to the emirate's foresight three decades ago in choosing a site within easy reach of the growing city of Abu Dhabi, and yet with sufficient space to allow for its future expansion. Costing an estimated US\$ 8.2 billion, the Abu Dhabi Airport master plan involves the construction of a new 220,000 square-metre, mid-field passenger terminal, a second runway, 4100 metres in length, and 2000 metres from the existing runway, as well as maintenance facilities and other commercial development on land immediately adjacent to, and north of, the existing airport.

Work commenced on the new category 111 all-weather runway in 2011 following the signing of a US\$ 2.9 billion contract between Abu Dhabi Airport Company (ADAC) and a private company partner (World Economic Forum , 2013). Another key part of the project is the provision of a substantial increase in cargo facilities, with an ultimate handling capacity of around 2 million tons of freight a year. Etihad Airlines has identified airfreight, in particular transit cargo, as one of the key growth areas and will be a major user of this facility, although the other 55 or so airlines using Abu Dhabi International Airport will also benefit. The multi-phase project is being overseen by the Supervision Committee for Expansion of Abu Dhabi International Airport (SCADIA) with the mandate to oversee its execution up to the stage of the delivery of a fully-functional facility. Overall, the project will see a doubling of the existing airport land area to 3400 hectares, with dedicated buffer zones to the north and south. The new facilities will be designed for an initial handling capacity of 20 million passengers a year by 2017 and an ultimate capacity of 50 million passengers a year. Developing Abu Dhabi International Airport as the primary gateway to the Emirate has resulted in accomplishing the new North Runway, Terminal 1A and 2, Etihad Terminal 3, Air Traffic Control Tower, and Midfield Terminal Complex (The Aviation Week, 2011).

Abu Dhabi is the hub of Etihad Airlines. Etihad's fleet of 88 aircraft operates more than 1400 flights per week, serving an international network of 84 passenger and cargo destinations. Etihad Airways also owns nearly 30 percent of Air Berlin, Europe's sixth largest carrier and 40 percent of Air Seychelles. The table below shows the Etihad Airlines performance over the past four years:

Category	2010	2011	2012	2013
Number of Aircrafts	57	64	70	88
Destinations	79	81	86	86
Number of Passengers (Millions)	7.1	8.3	10.2	12.1
Cargo carried (Tons)	263,313	310,188	367,837	410,651

Table 5-2 Etihad Airways Performance
(Source: Etihad Airways, 2013)

Also, Abu Dhabi is the base for Abu Dhabi aviation, which is the largest commercial helicopter operator in the Middle East, operating 58 helicopters, and 3 fixed-wing aircraft. The bulk of the company's business activity is in support of Abu Dhabi Offshore Oil and engineering and construction companies. Other business activities include medical evacuation, survey, photography and charter. Additionally, all aerial spraying of crops in the UAE and the majority of aerial spraying in Oman is carried out by Abu Dhabi Aviation.

Abu Dhabi Aviation owns 50% of Royal Jet. It is based in Abu Dhabi a charter operator aimed at the luxury market between the UAE and Europe (Abu Dhabi Aviation, 2014). In addition to Etihad Airways, Abu Dhabi Aviation and Royal Jet, Abu Dhabi is the hub for Maximus Air, which is the largest all-cargo airline in the UAE and amongst the biggest operating in the wider Middle East region. Revenues turnover of Maximus Air went from US\$ 12 million in 2005 to US\$ 110 million in 2011 (Maximus Air, 2014).

Theses multibillion-dirham projects will provide the capital city with an ultra-modern gateway to the world. It represents a major part of the long-term strategy for Abu Dhabi to become one of the leading aviation, tourism and business centres of the region as the aviation industry now contributes around 8% to Abu Dhabi's non-oil GDP (GCC Aviation, 2012)

5.7.3 Maritime

Abu Dhabi's mainland coastline is approximately 764 kilometres long and its waters include around 215 islands and a diverse and rich marine environment, which includes fragile wetlands, mangroves and an internationally important dugong population. These marine areas are essential tools for driving economic growth, particularly economic diversification, as they help in attracting greater numbers of tourists (UPC, 2014)

According to Abu Dhabi Plan Maritime 2030, the long-term vision for the Maritime Strategy is for a 'safe, secure and sustainable maritime domain for Abu Dhabi'. The Strategy addresses a number of issues, including transport, safety, security, emergency planning, sustainable development, and environmental protection, and recognises the need for effective integrated governance, systems and processes. The Strategy establishes a shared vision for the future and provides maritime stakeholders with a unified strategic direction to guide the development of new and enhanced maritime-related programmes. To achieve the goals of the Maritime Strategy, the Abu Dhabi Maritime Strategic Plan 2012-2016 is the first in a series that was prepared on a five-year cycle. The components of the Plan include spatial mapping of use and human activities for urban growth, national and Emirate-wide security; resource use and conservation; marine transport; industrial, ports and other water dependent uses; recreation and tourism; heritage; and infrastructure (DoT, 2013).

Abu Dhabi Ports Company (ADPC) is the master developer and manager of ports and industrial zones in Abu Dhabi. It manages eleven commercial, logistics, community and leisure ports. ADPC operates all commercial, logistics, community and leisure ports in the Emirate of Abu Dhabi, including Zayed Port,

Khalifa Port, the Free Port, Musaffah Port and the five Western Region Ports in Al Gharbia (Western Region) that support local industry, fishing, tourism, logistics and leisure activities. It also operates the New Musaffah Channel, which links Musaffah Port to the sea (ADPC, 2014).

Mina (Port) Zayed in Abu Dhabi City is the emirate's main general cargo port, whilst the terminals at Jebel Dhanna / Ruwais, Ummal-Nar, Das Island, Zirku and Mubarras islands handle the vast bulk of the UAE's significant crude oil and gas exports. The port covers a land area of 510 hectares and has 21 berths with a total length of 4,375 metres (Gulf News, 2013). There are over 143,000 m² of covered warehousing space and cold storage facilities with a capacity of 20,000 tons (Khaleej Times, 2010).

In addition, Abu Dhabi Ports Company has built a major new flagship state-of-the-art, deep-water Khalifa Port, with adjacent industrial zone, at Al Taweelah at a cost of US\$ 2.18 billion for the first phase. The port is handling all of Abu Dhabi's container traffic following the 100% TEU traffic transition from Mina Zayed in late 2012. Also, Khalifa Port has the first semi-automated container terminal in the region, the only one for 5000 kilometres. Khalifa Port Phase 1 capacity of 2.5 million TEUs and 12 million tones of general cargo a year and an expected capacity of 15 million TEUs and 35 million tones of general cargo by 2030 (The National, 2013).

ADPC is also developing Kizad (Khalifa Industrial Zone Abu Dhabi). Located adjacent to Khalifa Port, Kizad serves a range of logistics and manufacturing investors and is destined to grow into one of the world's largest industrial zones. By 2030, Khalifa Port and Kizad are expected to contribute up to 15% of the

emirate's non-oil GDP (Construction Week, 2013). The first-phase development of this megaproject reflects an investment of US\$ 7.2 billion and has been described as the “single most important project in Abu Dhabi's economy”(Morison Menon Inc., 2011)



Figure 5-9 Kizad, Abu Dhabi
(Source: World Maritime News, 2013)

5.7.4 Achievements

The State of Emirate Report (2012) states that Surface Transport Master Plans (STMPs) for Abu Dhabi, Al Ain, and the Western Region have been approved and put in action where each STMP identifies the transport system needed to support UPC's Structure Plans for each region in 2030. As well the Freight Master Plan has been completed. In addition, The Bus Master Plan and Walking and Cycling Master Plans have been completed and issued as ridership has increased from 3,000 people per day in 2007 to 159,000 people per day in 2011 and mode share is up from 1% in 2007 to 4.3% in 2011.

According to the Department of Transport (2013), major road projects have been completed; Sheikh Zayed Tunnel, Sheikh Zayed Bridge, Al Hedairyat Bridge,

AlRuweis bypass road, Madinat Zayed-Ghyathi Road, Gaga Bridge, AlAin-Alwagan Road, and AlMafrq Multi-Layer Interchange Project.



Figure 5-10 Sheikh Zayed Tunnel, Abu Dhabi
(Source: SBD, 2014)

With respect to policy and regulation, the government deployed the Environment, Health, and Safety Management System (EHSMS) legislation, Introduced a revised air navigation procedures to minimise environmental impact and airline costs; started the Implementation of Service Level Agreements (SLAs) at Abu Dhabi International Airport (AUH) and improved facilitation; and developed and strengthen relationships with all other aviation organisations in UAE.

ADAC has been working with international partners in developing Abu Dhabi International Airport (AUH) as the primary gateway to the Emirate; built the New North runway, Terminal 1A and 2, Etihad Terminal 3, and New Air Traffic Control Tower. In addition to the refurbishment of terminal 1, refurbishment of existing South Runway, and modifications of Terminal Complex. Moreover ADAC Secured Free Zone status at 3 airports and development of initial

warehouse facilities at AUH, and established Al Bateen Executive Airport as the only dedicated private jet airport in the region.

With regard to the maritime public transport, DoT Maritime Sector owns and operates two ferries in Delma Island. In addition, Abu Dhabi Ports Company has seen a significant increase in the throughput of its major ports in recent years

5.7.5 Challenges

The State of Emirate Report (2012) stated some challenges facing the Transport Infrastructure Sector in Abu Dhabi with respect to governance, planning, and infrastructure.

In surface transport there is a lack of clarity about the demarcation of responsibilities between the DoT, UPC, Municipalities, NTA, and EAD and lack of effective coordination between stakeholders, and Limited integration between transport plans, urban plan and developers leading to inefficient allocation of road capacity (an additional complexity is the uncertainty about the rates and distribution of population, land use and economic growth). Also, Regulation and policy regarding integrated road freight governance are still under developed as well as lack of balance between the current infrastructure parking needs and future requirements. With respect to infrastructure, there is an increased congestion and limited road network expansion potential due to geographical constraints on Abu Dhabi Island in addition to slower-than-planned progress on approval related to high-capacity public transport system. Moreover, there is a need to enforce international standards in road development and maintenance.

There some challenges facing the Aviation industry with respect to governance, planning, infrastructure, and services. In one hand and with respect to governance

and planning, at the federal level there are gaps that are not being addressed (for example, Annex 9 – Facilitation) and the GCAA is undertaking responsibilities for which is not legally mandated (for example, environmental protection and air service negotiations). In best practice administration policy matters and international negotiations are dealt with by a ministry, which also oversees the safety regulator. The GCAA also is both regulator and service provider representing a conflict of interest. As a consequence, there is a reduced focus on safety and security and increased costs to the industry and less effective representation of the UAE's interests in international relations. Moreover, because the UAE's aviation area is now a significant global force and it is a major contributor to the economy, it is in the national interest to recognise the institutional framework according to best practices that are the present time need improvements. In addition, some key aviation plans and manuals are either pending approval or are still in progress. In the other hand and with regard to infrastructure, continues construction delays of AUH have caused Etihad Air to postponed receiving some contracted planes. In top of that, there are services issues; continued growth of Abu Dhabi's aviation sector requires timely delivery of traffic rights with bilateral partners. In some of most important markets, there is growing resistance to the expansion of carriers from the Gulf Region. Also, there are inconsistent passenger and cargo processing requirements between different Emirates in the UAE, which is disadvantaging Abu Dhabi in particular. Although advancement in avionics, navigation and communications technology has made it possible to manage airspace more efficiently, the benefit will be fully exploited only when air traffic management functions are optimized. Additionally, the continued success of Etihad, and of Abu Dhabi Investment Authority (ADIA) is

critically dependent upon efficiency of the hub. The current situation is that the facilities on the south side of the airfield have reached capacity during peak hours. Moreover, there is a critical shortage of skilled personnel especially among UAE citizens in aviation.

Governance and Planning with maritime sector is confronting some issues such as; the roles of each authority involved in the management of the waterways and the regulatory oversight of the maritime sector are not clearly defined and there is a lack of coordination with ADPC. Also, ADNOC's monopoly discourages establishing alternatives fuel supply business in Abu Dhabi ports undermining their international competitiveness. Moreover, ADPC requires the legal powers and resources to fully monitor and control the private jetties and some established facilities. Likewise, there is no a specific entity responsible for maintaining and removing Buoys and Beacons.

With regard to the maritime infrastructure, the land-based facilities on both Delma Island and Marsa Jabel AlDhanna are aged and rudimentary. In addition, Maritime Public Transport services can only be operated safely during daylight hours until infrastructure improvements are implemented. In addition, according to the freight community, the maritime sector faces an encroachment problem.

5.8 Utilities Infrastructure

The utilities infrastructure consists of all activities related to power generation, water desalination, transmission, distribution and supply and after sales services operations and wastewater activities including collection, treatment, and disposal of wastewater (ADWEC, 2012)

The water, wastewater and electricity Sectors in the Emirate of Abu Dhabi consists of specialised companies responsible for the different stages of the provision of water and electricity to customers plus the collection, treatment and disposal of wastewater.

The water and electricity companies were created in 1999, when the Sector was restructured or ‘unbundled’. This included the formation of the Abu Dhabi Water and Electricity Authority (ADWEA), which retained sole ownership of these companies at the time. However, in 2000, the first Independent Water and Power Producer (IWPP), a joint venture (JV) between a foreign partner and ADWEA called Emirates CMS Power Company, was created (RSB, 2013).

A public joint stock wastewater company was created in 2005 with the transfer of assets from the two Abu Dhabi municipalities to form the Abu Dhabi Sewerage Services Company (ADSSC). This unbundled structure contrasts significantly with a vertically-integrated sector, in which one entity (normally a government) would own and be responsible for the whole supply chain; from the provision of primary fuel to the supply of electricity or water to customers’ premises and possibly the collection of wastewater products. The Abu Dhabi Sector structure is known as a Single Buyer model because there is no competitive pool arrangement; all production output is purchased by the Single Buyer, ADWEC (RSB, 2013).

The production of electricity and the desalination of water are dominated by large-scale operators using conventional technologies such as gas turbines and thermal desalination, common in the region. Such arrangements, where depleted steam from steam generators is used to help desalinate water, are known as co-

generation operations. However, emerging alternatives are also in use, including wind and solar power for electricity and reverse osmosis (RO) for water (UN, 2014)

The Regulation and Supervision Bureau (RSB) is the independent regulator of the water, wastewater and electricity Sector in the Emirate of Abu Dhabi. Its powers, duties and functions are set out in various Abu Dhabi laws. The main duty of the Bureau is to ensure secure supplies of electricity and water to the people of the Emirate of Abu Dhabi. However, the laws also impose a range of general duties on the Bureau; this section explores how we regulate the Sector to ensure the overall objectives of all Sector companies are met in full (RSB, 2014).

The majority of large-scale production companies are privately operated and partly owned (40%) by foreign investors. All electricity and water output is sold to the Abu Dhabi Water and Electricity Company (ADWEC), known as the Single Buyer. This model creates a high level of certainty between producers and ADWEC through long-term (typically 20 years) Power and Water Purchase Agreements (PWPAs), more commonly referred to as ‘off-take agreements’ (RSB, 2013).

Category	2009	2010	2011
Subsidies to Power (US\$ billion)	1.13	1.50	1.68
Subsidies to Desalinated water (US\$ billion)	1.44	1.91	2.14
Subsidies to Wastewater (US\$ billion)	0.31	0.44	0.46
Total (US\$ billion)	2.88	3.85	4.28

Table 5-3 Abu Dhabi Utilities Subsidies
(Source: ADWEA, 2011)

According to the Abu Dhabi Water and Electricity Agency (ADWEA), Abu Dhabi Sewage Services Company (ADSSC) and Abu Dhabi Economic Vision 2030 (2011), the strategic priorities for utilities are:

- Ensuring sustainable delivery of electricity and water by securing supply sources, energy efficiency and demand-side management;
- Ensuring available power and water capacity to meet demand through an optimized energy portfolio that includes conventional, renewable and nuclear energy sources;
- Managing future electricity needs through demand management and energy efficiency;
- Securing fuel supply to the generators;
- Delivering a quality of customer service;
- Providing reliable, secure, safe, and cost effective sewage services;
- Improving the efficiency and effectiveness of all sewage to provide a more reliable and secure services to the citizens of Abu Dhabi.

5.8.1 Electricity

With accordance to Abu Dhabi Vision 2030, the escalating scale of urban development, that outlined previously is impacting significantly on the demand for electricity. Annual demand growth peaked in the UAE at 14.1% in 2010, and continued to be strong in 2013 with an increase of more than 30%. In fact, the UAE has the highest projected increase in demand within the GCC region, which is expected to continue to grow at a minimum rate of 10% per annum until 2020, far outstripping the world average of 3% per annum. Plans are, therefore, being formulated to increase the UAE's electricity generation capacity by as much as 60%.

Approximately 97% of production is fuelled by natural gas and the remaining 3% is produced by diesel generation or steam turbines (primarily in the Northern

Emirates). The UAE commenced importing natural gas from Qatar in late 2006. The gas was transported via Dolphin's 370-kilometre export pipeline to a terminal at Taweelah in Abu Dhabi, from where it was piped to the centres of use, such as Fujairah's new power and water complex and Dubai's Jebel Ali complex. The table below illustrates the power generation in Abu Dhabi and Northern Emirates:

Category	2009	2010	2011
Power Generation Abu Dhabi (GWh)	34,715	39,172	43,243
Power Generation Northern Emirates (GWh)	3700	10,916	13,360
Total (GWh)	38,415	50,088	56,603

Table 5-4 Power Generation in Abu Dhabi and Northern Emirates
(Source: ADWEA, 2012)

While Abu Dhabi has approximately 10% of the world's oil reserves, it has committed to diversifying away from its economic dependence on oil by placing a greater emphasis on renewable energy. By 2020, Abu Dhabi will generate at least 7% of its energy from renewable sources (Kane, 2012). Renewable energy currently accounts for a small percentage of Abu Dhabi's energy profile at less than one percent. Abu Dhabi's geography and climate gives it a competitive advantage when it comes to solar energy potential. With an average of 10 hours of sunlight / day, it has considerable potential to capture significant amounts of the sun's radiation. As part of the Masdar development initiative, a 10 MW solar photovoltaic power plant has been constructed to supply some of the city's energy demands. Other alternative energy facilities are being incorporated into a newly developed Plan 2030 for Al Gharbia, located in the western region of the emirate of Abu Dhabi (Madden, 2012).

ADWEA, in collaboration with Australia's Commonwealth Scientific and Industrial Research Organisation, is also investigating the feasibility of using solar

energy to assist in powering air-conditioning units during times of peak demand. The Abu Dhabi Economic Vision 2030 includes a comprehensive programme for economic sustainability and diversification that will reduce reliance on oil and gas and capitalise on renewable energy supply. In March 2013, Abu Dhabi inaugurated its Shams1 Concentrated Solar Power Plant (CSPP). At 100 MW, it is the largest renewable energy project in the Arabian Gulf. It is also the UAE's first project financed solar power facility (The National, 2013). The solar power station is located approximately 120 kilometres southwest of Abu Dhabi and 6 kilometres from Madinat Zayed on the road from Tarif to the Liwa Oasis (Sills & Daya, 2010).



Figure 5-11 Shams1 Concentrated Solar Power Plant, Abu Dhabi
(Source: Helioscsp Solar Thermal Energy News, 2014)

According to Abu Dhabi Vision 2030 a total of four nuclear energy plants will be constructed by 2020, after obtaining regulatory approvals. The first two plants are already under construction and are now more than 57% complete, with the first plant (Baraka Nuclear Power Plant) scheduled to commence commercial operations in 2017. In May 2014, Emirates Nuclear Energy Corporation ENEC

took the delivery of the first Reactor Vessel (RV), which is one of the largest components in a nuclear energy plant. It also acts as one of the many defense-in-depth barriers to ensure safety of the plant. Controlled nuclear reactions occurring inside the vessel release energy that is then converted into electricity (Sophia, 2014)



Figure 5-12 Baraka Nuclear Power Plant, Architecture Perspective
(Source: Khaleej Times, 2010)

5.8.2 Water

Historically, all the UAE's water requirements were met from groundwater obtained from shallow, hand-dug wells and the traditional falaj system of aquifers. Over the past two decades, rapid economic development, coupled with steep population increases and a push to achieve self-sufficiency in food supplies, have placed ever-increasing pressure on the UAE's precious natural water resources. This is a real challenge for a country with no rivers and little rainfall. Water consumption in Abu Dhabi alone is expected to increase to 5.858 billion cubic metres by 2020. Since the 'transit' labour and tourist population are major

consumers of water in the Emirates, the rate of consumption may outpace the actual population growth rate (UAE Yearbook, 2007).

Currently, around 65% of all the water used within the United Arab Emirates is supplied from groundwater; the remainder is provided by desalination and recycled water. Due to the arid environment surrounding the Emirates, groundwater renews itself slowly, causing supplies to diminish. In 2010, the average withdrawal of groundwater decreased by 6.2% to 2,250.9 million cubic metres. And the quantity of treated wastewater was recorded as 246.6 MCM. Within Abu Dhabi Emirate, Abu Dhabi city was understood to account for about 74% of treated wastewater, while the share of Western Region was less than 3.6% of the total. Water also remains a vital resource for Abu Dhabi due to its geographical location and social and demographic composition. The availability of water is therefore a particularly urgent concern for both the public and the government (Kamal, 2013).

Although groundwater still plays a significant role in meeting agricultural demand throughout the Emirates, and more than half of the water distributed by the federal authority (FEWA) in the Northern Emirates is sweet groundwater, a high proportion of the UAE's requirements is being met by an extensive gas-fired desalination programme, with Abu Dhabi accounting for around half of the total desalinated water production in the UAE. Water production, as distinct from capturing groundwater, reached more than 195 billion gallons in 2004. Demand is increasing as a result of growing populations, war and the worsening effects of climate change, raising the prospect that some countries could face severe water shortages in the decades to come.

According to the Environment Agency (2013), Abu Dhabi Environment Vision states a growing population therefore means a future need for increased water supplies, and as groundwater levels diminish there will be more reliance placed on energy and carbon intensive desalination processes.

As a desert city, Abu Dhabi faces a significant resource imperative related to water. While desalination represents an obvious solution to future water needs given Abu Dhabi's proximity to the Gulf, it is expensive both in terms of energy and dollars, as well as its potential cost to the environment due to the production of brine concentrate that must be disposed of. Only 4% of the water in use today is reclaimed from wastewater streams, a logical source of future irrigation. As Abu Dhabi moves forward in its planning, a water balance model must be established and managed rigorously. (UPC, 2012)

There are two main sources of water in Abu Dhabi Emirate: Desalinated seawater and groundwater. While groundwater is used for agriculture in Al Ain and Liwa, drinking water is provided almost entirely from desalinated seawater across the Emirate. In 2008, groundwater contributed 71% to total water demand for all purposes, desalinated water 24% and treated wastewater 5% (UAE Interact, 2009).

In 2010, there were eight seawater desalination plants in Abu Dhabi owned and operated by eight joint ventures: Al Taweelah A, Al Taweelah B, the 5 Umm al Nar plants and Al Mirfa plant. These joint ventures between the government and foreign companies, which are allowed to own up to 40% of the shares, are called Independent Water & Power Producers (IWPPs). They operate under Build-Own-Operate (BOO) contracts with the government.



Figure 5-13 Al Taweelah B Desalination Plants, Abu Dhabi
(Source: ACC, 2014)

Statistics originated from Environment Agency EAD (2006) stated that 90% of groundwater in Abu Dhabi Emirate is saline, in some cases up to eight times as much as seawater. There are only two freshwater aquifers. Natural groundwater recharge is estimated at about 300 million cubic metres per year. Brackish groundwater is mostly used for the irrigation of date palms, which are relatively salt-tolerant. Recharge dams have been built on "wadis" in order to prevent floodwater to flow into the sea, recharging it instead to aquifers. Unplanned and uncontrolled groundwater withdrawals, especially for agriculture and forestry, total over 2,000 million cubic metres per year and have resulted in declining groundwater levels and quality.

Category	2009	2010	2011
Water Consumption (Million m³/annum)			
Abu Dhabi Emirates	961	963	999
Northern Emirates	37	46	53
Water Collected and treated (Million m³/annum)			
ABU Dhabi Island	74	94	95
ABU Dhabi Mainland	99	87	91
Al Ain	52	53	56
Western Region	9	8	10
Recycled Water Used (Million m³/annum)	124	133	148

Table 5-5 Abu Dhabi Water Supply

(Source: ADWEC, 2012)

About half of the annual water production from all sources is used for irrigation of green spaces, as well as in agriculture. The other half is used for domestic uses. Freshwater use per capita is about 650 liter per day, including water supplied for the irrigation of green spaces. As of 2009, in Al Ain "due to constraints on both the transmission and distribution networks, up to 45 percent of customers (were) on a restricted (intermittent) supply (AADC, 2012)

Investment in desalination plants is financed by the private sector through BOO contracts. Investment in water distribution and sewerage infrastructure is financed by the government through subsidies to the respective public companies. Investment in both power and water production and distribution was more than US\$36 billion from 1999 to 2008. Since power and water are produced and distributed by the same companies, separate figures for investment in water infrastructure are not available (RSB, 2009).

According to Abu Dhabi Vision 2030, water management initiatives have included the restoration of the traditional falaj irrigation systems, the building of delay and recharge dams, well -drilling and aquifer testing and exploration. In addition, water conservation measures are being implemented throughout the Emirates, especially in the agricultural and amenity-planting sector where plant suitability, crop replacement and drip irrigation techniques are being promoted to save water. Emirates such as Abu Dhabi are also educating the general public about the importance of water conservation.

Concerns have risen in recent years over the depletion of groundwater resources. A new law was brought into force in 2006 (No. 6 for 2006) conferring the

responsibility to regulate and license activities such as' drilling a new well, deepening an existing well, increasing a well's diameter, boosting water recovery by using a pump, replacing an old well, transporting or selling well water 'on the Environment Agency - Abu Dhabi (EAD). The law also obliges owners to maintain farm wells, pumps, metres, pipes and irrigation conduits.

In addition, an integrated water resource database for the Emirate of Abu Dhabi will be established following a full-scale survey of wells and reservoirs by EAD. The central database will be accessible to all authorities concerned, including Abu Dhabi Municipality and ADWEA.

5.8.3 Sewage

According to the Regulation and Supervision Bureau RSB (2009) approximately 550,000 cubic metres of wastewater is generated in Abu Dhabi every day and treated in 20 wastewater treatment plants. Almost all of the wastewater is being reused to irrigate green spaces (Gulf News, 2009). While most wastewater treatment plants are publicly owned and operated, four large new plants have been built by joint ventures under Build-Own Operate Transfer (BOOT) arrangements. One such contract for two plants was awarded in 2008, one in Abu Dhabi itself with a capacity of 300,000 cubic metre per day and one in Al Ain with a capacity of 130,000 cubic metre per day (Cleantech Group, 2008). Contracts for two other plants were awarded to Bi-water under a similar structure. According to Plan Abu Dhabi 2030 A Strategic Tunnel Enhancement Programmeme (STEP) is to be implemented between 2008 and 2015 to establish a tunnel that will comprise 40 kilometres of deep sewerage tunnel and two new large pumping stations to relieve Abu Dhabi Island (UAE Interact, 2008).

Strategic Tunnel Enhancement Programme (STEP) is a huge gravity-driven hydraulic wastewater network tunnel currently being constructed by the Abu Dhabi Sewerage Services Company (ADSSC). The construction activities started in 2009 with the prequalification process commencing earlier in August 2008. The project, which is scheduled for completion in 2015, is being carried out with an investment of US\$ 1.9 billion. The project forms a crucial part of Plan Abu Dhabi 2030, which is a comprehensive plan of developing Abu Dhabi to accommodate the increasing population in the city, which is anticipated to reach three million by 2030. The project is expected to supply 15 cusec of grey water for irrigation. ADSSC currently treats nearly 450,000 m³ of wastewater a day. It will be capable of treating 800,000 m³ of wastewater when the STEP project is realised (Water Technology, 2014). The tunnel project is a milestone in Abu Dhabi Government's investments in large-scale projects to develop the infrastructure with careful consideration to the environment (The National, 2013).

In addition, the model green city called Masdar City is to be supplied by a desalination plant to be powered with solar energy. Green spaces and agriculture near the city are to be irrigated with grey water and reclaimed water.



Figure 5-14 Masdar City, Architecture Perspective
(Source: Bustler, 2009)

5.8.4 Achievements

Part of the Abu Dhabi achievements when it comes to water is the ability to consistently meeting the demand of the public with regards to the power and water requirements at the required standards. As well as developing the Emirate National Grid ENG, which started in 2006. Additionally, Abu Dhabi was able to contribute to Demand Side Management (DSM) in as per the acceptable SAIDI and SAIFI levels (IAEA, 2013).

The Emirate of Abu Dhabi was successful in completing the Strategy-operations alignment and in identifying process gaps by established a comprehensive strategic planning and performance management framework for the whole sector. Furthermore, ADWEA commenced the privatization programme to involve the private sector in the development of the generation capacities of the Emirate securing reliable power and water supply and succeeding in transfer of modern technology and international expertise in efficient operation. Addressing the demand for Northern Emirates: in 2007, ADWEA signed an agreement with

FEWA to supply power and water to the Northern Emirates. Now, exports constitute approx. 30% of the energy generation.

As a direct result of exporting power and water to the Northern Emirates, ADWEA was able to save around US\$ 3 billion in spared liquid fuel resulting in the reduction of Diesel subsidies to the Northern Emirates.

Also, the UAE completed the Integrated Gulf Network (GCC Link) initiative with the aim to increase efficient utilization of power generation capacities and provide a safety reserve from neighbouring GCC states in case of emergencies; in 2010, UAE network was connected to Oman and in 2011, to Saudi Arabia (ENEC, 2012).

Moreover, in March 2013, Abu Dhabi launched SHAMS1 in Masdar City, the 100-megawatt solar-thermal power project and the world largest concentrated power plant, as well as expanding the power and water utilities to serve 1.7 million people.

A major achievement was selecting Al Gharbia (Western Region) to host Abu Dhabi's first four nuclear power plants, to be constructed by an international consortium west of Ruwais. As the work has already been commenced to establish the first two nuclear power plants.

5.8.5 Challenges

The State of Emirate Report (2012) defined some challenges facing the Utilities Sub-sector in Abu Dhabi with respect to governance, planning, infrastructure, services, and finance.

In governance and planning, defusing rules and responsibilities on the sector was one of the biggest challenges the emirate of Abu Dhabi has faced, the power and water sector structure and management ceased to be in full compliance with Law (2) of 1998, as ADWEA assumed the role of the Abu Dhabi Power Corporation ADPC with RSB taking the role of policy maker and has been issuing policies on behalf of ADWEA, as the 1972 regulations on electricity and water exemption does not clearly state which entity has the power to authorize exemptions. Another confusion which is present in Abu Dhabi is that the sector is overregulated in terms of revenues, costs, operations and services limiting the ability of the sector's entities to set cost-reflective tariffs. Law (18) of 2006 states that tariffs, exemptions, and fees must be approved by the Executive council; however, this has not yet been implemented.

Additionally, the total combined exemption in Abu Dhabi for 2009 and 2010 reached around 1.5 Billion. However, the true cost incurred by the government in the subsidies is around 4.1 Billion because the exemption bill is non-cost reflective.

In Services, shortage in natural gas supply is pushing the sector to burn expensive back-up-fuel (BuF) with a much higher unit cost (approx. 10 times higher). In 2011 alone, though BuF constituted only 3.5% of total MMBTU consumed, its tag price was around 26.4% of total fuel costs of the sector. Moreover, if consumption trends do not change, it is estimated that the UAE will consume 83% of 2030 Energy Production levels and hence the question of supporting the growth of basic industries versus supplying feedstock to its power and water sector remains a strategic issue to overcome.

It is foreseeable (subject to forecasting assumptions) that the Abu Dhabi Emirate could face power and water shortage as early as 2016, and the heavy depletion natural aquifers due to unsustainable methods of farming has diminished the quantity and quality of groundwater. The increased reliance desalinated water poses water security risks, as reserve capacity is limited to 24 hours in the event of a crisis, such as an oil spill in the Arabian Gulf. Desalination is also an energy intensive process, which imposes an additional challenge on the energy agenda of the Emirate (EAD, 2009). Also, Sustaining the first commercial solar power plant in the UAE and GCC, Shams 1, will be the biggest challenge that Abu Dhabi will face with regards this area due to the high cost, technical requirements and expertise in maintaining this plant.

In finance, the current tariff structure and cost trends have imposed significant subsidies on the sector reaching US\$ 14 billion in 2011 and expected to reach unsustainable levels of US\$ 8.3 billion by 2020. The cumulative subsidy is forecasted to reach US\$ 56 billion by 2020 if no action is taken in terms curbing costs or increasing revenues. Moreover, standard assets/inefficient assets utilization due to overcapacities, driven by demands over-estimation; there are cases where utilization is very low, Saadiyat Island 1.2%, Reem Island 5%, Yas Island 22%, Raha Beach 5%. In addition, exemption bill paid by ADWEA do not reflect the subsidy paid by the Abu Dhabi government to cover for the difference between the cost of production and the exempted tariff.

5.9 Telecommunication Infrastructure

The telecommunications infrastructure consists of communication technologies that help in enhancing the efficiency and productivity of the government, economy, and individuals in the society (TRA, 2011)

Telecommunications in the United Arab Emirates is under the control and supervision of the Telecommunications Regulatory Authority (TRA), which was established in 2003. From 1976 to 2006, the Emirates Telecommunications Corporation (Etisalat) was the sole telephone and telecommunications provider for the UAE. And while there were exceptions for free zones and modern housing developments, for the majority of the UAE, Etisalat held a monopoly on business and personal telecommunications services. In February 2006 this monopoly became a duopoly when a new telephone company and Internet Service Provider, du was established to offer mobile services across the UAE and Internet and TV services to some free zone areas. Earlier du provided triple play services to free zone areas under the name Emirates Integrated Telecommunications Company (EITC) (American University, 2013)

The UAE telecommunications sector is among the strongest and advanced in the Arab world. Operators are well supported by the government's initiatives and established policies. The sector's expansion is being fuelled by the sustained growth of its customer-base, rising consumer purchasing power, and advanced infrastructure. Industry is evolving due to changing technology and consumer patterns. Voice services (landline and mobile), the traditional income generators of the sector, have been on a downtrend in the last six years. Other services including internet and data services, on the other hand, have persistently increased their share of the business (Alramz Securities, 2014)

The UAE ranked 2nd of all the Arab states in the 2012-2013 Networked Readiness Index (NRI) study issued by the World Economic Forum (2013) and 25th among all 144 countries assessed. Also, with regard to the individual

indicators analysed, the UAE ranked first among the Arab states in terms of accessibility of digital content; business-to-consumer Internet use; the availability of latest technologies; and low software piracy rates.

According to the TRA (2012), the UAE Telecommunications sector plays an extremely important role in the economy. In 2012, it contributed around 5% to the UAE GDP and employed 7,961 people, 40% of the sector's employees were Emirati. The UAE ICT sector witnessed a 15.2% increase in internet revenues in 2012 with a total of 957,816 subscribers with revenues estimated by US\$ 1.04 billion.

Category	2009	2010	2011	2012
Mobile Revenues (US\$ billion)	4.85	5.01	5.43	5.55
Fixed Revenues (US\$ billion)	1.04	0.88	0.79	0.73
Internet Revenues (US\$ billion)	0.67	0.74	0.90	1.04
Total (US\$ billion)	6.56	6.63	7.12	7.32

Table 5-6 Telecommunication Sector Revenues
(Source: TRA, 2013)

Abu Dhabi Economic Vision 2030 (2012) stated that telecommunication services sector is one of the strategic sectors that form the Emirate's engines of economic growth and diversification, where Abu Dhabi Government defined the following strategic priorities:

- Enabling reasonable access to world-class technology (mainly broadband);
- Enforcing stronger Information and communication Technologies (ICT) curricula in the secondary school system;
- Rolling-out of modern information services infrastructure;
- Setting policies and standards based on recent technological advancements and best practices;

- Encouraging investment, innovation, development and education in e-services.

‘Mobile’ services accounted for 56% of industry revenue in 2012, with ‘Other’ services such as internet and data taking in 35% and ‘Fixed Line’ coming in last at 9%. The average revenue shares of the Mobile, Others and Fixed Line segments from 2007 to 2012 were at 58.68%, 26.42% and 14.90%, respectively.

5.9.1 Telephone

Since 2008, the number of Fixed Line subscriptions has been growing at slower rates. Total subscribers in 2012 increased by less than 5%, in contrast to the double-digit growth common during the earlier part of the decade. Most of the increase came from new Du subscribers, with the company’s market share of the sub-sector improving from 24% in 2010 to 31% in 2011.

Overall Fixed Line ARPU is dropping ahead of the infrastructure sharing between Etisalat and Du scheduled by the end of the year. Consumers prefer the convenience of mobile phones and internet telephony (VoIP), and increasing competition between the operators has been putting pressure on margins because of discount service rate offerings. The slide is expected to continue in line with regional and global trends.

National mobile penetration rates – at more than 146% as of 2012 – are one of the highest not only in the region but in the world. The figure is artificially skewed, though, as it includes inactive users. The propensity of consumers to use multiple SIM cards for business, personal and other lifestyle purpose is a main contributor to the unusually high rate. Another factor is the high traffic of temporary residents

such as tourists and businessmen. However, the high level of tele-density is also indicative of a saturating market.

5.9.2 Internet

According to Alramz Securities (2014), UAE had around 3,604,065 (70% of the population) internet subscribers as of end-2012, representing an internet user penetration rate of 42%. Etisalat and Du thus face various growth opportunities punctuated by the impending implementation of infrastructure sharing. Du has the additional prospect of operating on a national presence.

The overall growth in internet subscription has followed the growing number of broadband subscribers. By end-2012, broadband subscribers made up 60% of the total, boosted by network improvements from operators and a surge in smart and media device usage. Smart devices, which have become increasingly less expensive, have driven up the popularity of internet and data services. In 2013, data subscribers more than doubled to 38,271 with the inclusion of virtual leased line services. The government and the private sector are also leading the demand for data services that enable their organisations for electronic transactions. On the retail side, the UAE's young, expat-dominated and affluent population has been demanding more high-tech data and multi-media devices. These devices in turn drive higher yield on Internet and data traffic for operators. More growth is expected in light of growing device sophistication and more efficient connectivity, especially when Du following Etisalat launches their LTE infrastructures.

Major enhancements in 4G LTE network includes enhancing of indoor coverage to improve customer experience. The 4G networks extensively covers 88% of the country's populated areas. During 2014, a large number of base stations were

deployed for indoor coverage and to enhance customer experience. The total number of indoor base stations has reached 6000. This will further boost indoor coverage capabilities in buildings, malls, and airports. Having established the region's most solid, future-ready 3G and 4G LTE networks to meet the growing needs of the UAE's highly connected environment, the company upgraded the country's fastest mobile Internet at speeds of 150Mbps, reaching 300 Mbps recently. A phased upgrade to 4G LTE (A) is now making way for ultra-speeds for mobile users (ZAWYA, 2014).

In line with the economic growth and demand of the UAE's western regions, The Government plans of network expansion in the Western Region, are on track. Also more than 300 base stations were added on the boarder and desert areas of the country to enhance its coverage.

To meet strong surge in data consumption in the UAE, Etisalat's fibre-to-the-home network (FTTH) has also enabled an ultrafast residential Internet network speed of up to 1Gbps. The company's extensive FTTH network has helped rank UAE a global leader in terms of fibre-optic penetration, which covers more than 85% of the country's populated areas. Having invested tens of billions in the FTTH network, Etisalat continues to develop its fibre optic infrastructure and ranked Abu Dhabi as the world's first Capital to be fully fibre-connected.

As the first in the region to have successfully tested Voice over LTE (VoLTE) and enhanced Single Radio Call Continuity (eSRVCC) implementation back in May 2013, Etisalat is well on track to launch the service to customers in the UAE depending on handsets availability. VoLTE will allow customers to use 4G LTE technology for both data and voice services on a single device.

In support to the UAE government's SMART initiatives and Abu Dhabi Vision 2030, Etisalat will deliver the needed solutions on its vast fibre and cellular 3G and 4G LTE capabilities as well as in-depth machine-to-machine (M2M) experience.

5.9.3 Space Technology

The government-owned Emirates Institution for Advanced Science and Technology (EIAST) was established in 2006 to promote advanced research and satellite technology in the UAE. Emirati investments in space include TV broadcast and government purposes company Yah Satellite, mobile satellite company Thuraya Satellite Telecommunications, and Dubai Sat-1, and Dubai Sat-2 (Malek & AlWasmi, 2014).

The UAE Space Agency was established, and its first objective is to conduct a fully indigenous mission to Mars by 2021. Emirates Institution for Advanced Science and Technology (EIAST) is working on launching the first 100% Emirati-made satellite by 2017. Khalifa-Sat, the first Arab-made satellite will be entirely manufactured by experts from the UAE. The project already has investments exceeding US\$ 5.4 billion. The new agency will maximize the contribution of space industries to the national economy (Mustafa, 2014).

5.9.4 Achievements

Regarding the telephone services, the State of Emirate Report (2012) stated that in Abu Dhabi, 100% of the population is covered by mobile network and the market penetration rate of 197%, one of the highest in the world due to Etisalat efforts and achievements which has helped to become the regional leader in mobile data communications ranking 1st among Gulf Cooperative Countries (GCC) and 4th

Arab countries. The UAE has a 61% adoption rate for smartphone devices and has launched one of the regional first Long Term Evolution (LTE) network through Etisalat and has achieved highest LTE speed test in the world reaching 300Mbps, as well as launching Internet Protocol Television (IPTV) services throughout the country and rolling out of IP telephony throughout the emirates.

With respect to internet services, Etisalat has launched fibre optics lines to the mainstream with speeds up to 30 mbps for individuals and up to 100 mbps for businesses, as well as reduced pricing and repackaging goods allowing for higher customer penetration in medium-tier services.

5.9.5 Challenges

According to the State of Emirate Report (2012) With regard to telephone services In Abu Dhabi, phone calls pricing continue to be an issue as many users are dissatisfied with the price of national and international mobile phone calls and complain regarding quality of customer services. Additionally, there has been a poor public awareness for any new packages and services due to limited channel of advertising, also there has been a decline in the usage of fixed landlines due to preference of mobile phones which offer better international minutes package, even the satellite phone service is too expensive limiting it to military, maritime, and industry use on.

Also, Internet services in Abu Dhabi continue to offer relatively high cost for entry-level broadband services, which affect broadband penetration rate and accordingly UAE rankings in multiple ranking systems. Additionally, there has been high rate of complaints from the users regarding slow response time to resolve technical issues and can take months in some cases.

5.10 Summary

The booming Abu Dhabi economy, as outlined in the previous chapters, is fuelling infrastructure development on an unprecedented scale. This has been depicted as a ‘new era of economic transition’, characterised by a public-private partnership that is gradually taking over the role traditionally held by government in infrastructure development. Housing, tourist, industrial and commercial facilities, education and healthcare amenities, transportation, utilities, communications, ports and airports are all undergoing massive redevelopment, radically altering the urban environment in the UAE. Reform of property laws has also added impetus to urban development.

Abu Dhabi has the opportunity to substantially improve the living standards of its inhabitants over the next two decades. By focusing on ambitious development plans for a limited number of anchor sectors it will generate attractive job opportunities for Nationals and other residents, diversify its economic base and create investment opportunities throughout the region. The main sub sectors in the infrastructure sector for Abu Dhabi build on its existing resources and comparative advantages. The development of these sub sectors will require parallel public and private investment in supporting and enabling the sub sectors to meet the needs of the infrastructure sector and the growing demand created by the expected population increase.

The development plan of the infrastructure sector whether economic anchor or supporting will require active involvement and investment from both the private and public sectors. The extent to which Abu Dhabi forecasts materialize will also depend heavily on the evolution of plans in the most highly-productive sub sectors, namely Urban Planning and Utilities. Abu Dhabi will play a leading role

in driving the execution of the UAE infrastructure sector development strategy, through the active promotion of investment opportunities, strategic initiatives and public/private partnerships.

This chapter has introduced Abu Dhabi's infrastructure sector and an overall picture of the situation has been painted. It is, clearly, evident that despite the many achievements of the sector over the years there are still challenges that are persistent and problems that deteriorate. These, in turn, hinder overall capabilities and strategic fit, as it has been argued in chapter one and discussed in detail in chapters two and three.

In fact, as stated in chapter one, the lack of strategic fit in Abu Dhabi's infrastructure sector over the past few years is also recognised by the government and it is acknowledged that it continues to deteriorate. Indeed, the overall situation has not yet been resolved and these issues have become 'permanent residents' in governmental evaluations (GSADEC, 2013)

To summarize, the specific challenges currently are:

- Limited ability to embrace public demands and respond to the changing external environmental conditions;
- Review and evaluation mechanisms are, at large, absent and/or limited and success measurement techniques are ineffective and not properly aligned against objectives;
- Strategic planning and strategy development processes are weak and incomplete and do not incorporate the views of key stakeholder groups;
- Lack of focus and commitment towards implementation of strategies;

- Lack of organisational flexibility and ability to change as and when it is required;
- Communication gaps between departments and between central government agencies;
- Unclear systems and processes for acquiring appropriate resources and developing relevant capabilities;
- Limited transparency, accountability and due diligence;
- Limited information on environmental conditions (geotechnical, topographic, air quality, groundwater) leading to urbanization in inappropriate areas;
- Lack of clarity in upfront ownership of projects and roles of government entities from initiation to commissioning. SLA between entities are also lacking;
- Master planning issues: Key master planning issues which lead to project delays, duplication of work between UPC, Municipalities, and DoT and lack of visibility on resources and funding requirements;
- Lack of integration between master plan and implementation plan;
- Conflict between entities internal tendering process and government tendering committee, especially in supplier evaluation (as the tendering committee apply the classification of DED grading license and entities use a track record evaluation system, tendering committee is mainly financial driven while entities are mainly solution and quality driven. Non standardized tendering approach between department and authority leading to inequality between entities in terms of lead time and reputation among the private sector contractors/ providers;

- Execution standards: Projects execution standards are not always up to par and quality of finishing is generally low.

These performance-related aspects have triggered inefficiencies in the various sub-sectors and have led to a blame culture among departments and antagonism that, in turn, have become detrimental to the overall performance of the sector.

Consequently, this study determined the reasons that create the problems highlighted in the infrastructure sector as discussed in this chapter in order to evaluate the causes that create ‘strategic drift’ in the area and attempt to provide guidance for improving overall performance, competitive advantage, sustainability and strategic fit – in line with the research aim and research objectives stated in chapter one.

Some of the problems encountered over the years are that, in certain cases, policies developed are not addressing the real issues of the public and in other occasions relevant policies are not developed due to the bureaucratic challenges that the overall sector is experiencing. In addition, a substantial communication gap has been identified between the public and the government that has also increased the mismatch between policy development, implementation of projects and overall performance in the sector.

Chapter 6: Global Prospective In Infrastructure Sector

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Global Prospective In Infrastructure Sector

6.1 Introduction

As the previous chapter discussed the Infrastructure Sector in Abu Dhabi, the main goal of this chapter is to see how the infrastructure sector in some major and advanced cities is managed. This chapter will be discussing six different smart cities around the world to explore worldwide practices with regard to infrastructure sector management. The discussion will include general information about each city before digging deep in to more details about the governance systems, economy, and demographics. Also, the infrastructure sector is looked with regard to leadership and management practices and strategies. Moreover, some of the ongoing and planned projects are explored in addition to the presentation of some case studies that are related infrastructure. Then, some of the issues and issues and challenges that are facing these cities are viewed. Finally, lesson learned from viewing and studying the infrastructure sectors of the six cities. The six cities that would be benchmarked are New York (United States), London (United Kingdom), Hong Kong (Hong Kong), Singapore (Singapore), Sydney (Australia), and Frankfurt (Germany).

6.1.1 Total Land Area and Population

Based on (table 6-1), the ranking of Global Cities Index seems to be directly proportional to the number of population in the city. However, the number of population and the land area for each city is not directly proportional. This is shown in (figure 6-1). Sydney shows the highest deviation wherein the population is 4.6 million but its land area has an estimate of roughly 12,370 square kilometres.

Table 6-1 shows the land area, the population, the global cities index ranking, and the Innovation cities ranking.

City	Total Area (1000 KM ²) ¹	POP'N (Million) ¹	Global Cities Index Ranking 2014 ²	Innovation Cities Survey Ranking ³
New York, United States (NY)	1.2140	8.4000	1	2
London, UK (LDN)	1.5720	8.3000	2	3
Hong Kong, Hong Kong (HKG)	1.1040	7.2000	5	20
Singapore, Singapore (SIN)	0.7161	5.4000	9	27
Sydney, Australia (SYD)	12.367	4.6000	14	17
Frankfurt, Germany (FFT)	0.2483	0.6915	23	30

Table 6-1 Overview of the Cities' Global Ranking

(Source: Google. (2014), AT Kearney Korea LLC. (2014), and 2thinknow. (2014))

In order to determine the population density, the total population is divided by the total land area. (Figure 6.1) shows the population density of each city. Based on calculations, the highest density city is Singapore with 7,540.85 people per square metre. The lowest densities are Sydney with a value of less than 400 people per square metre.

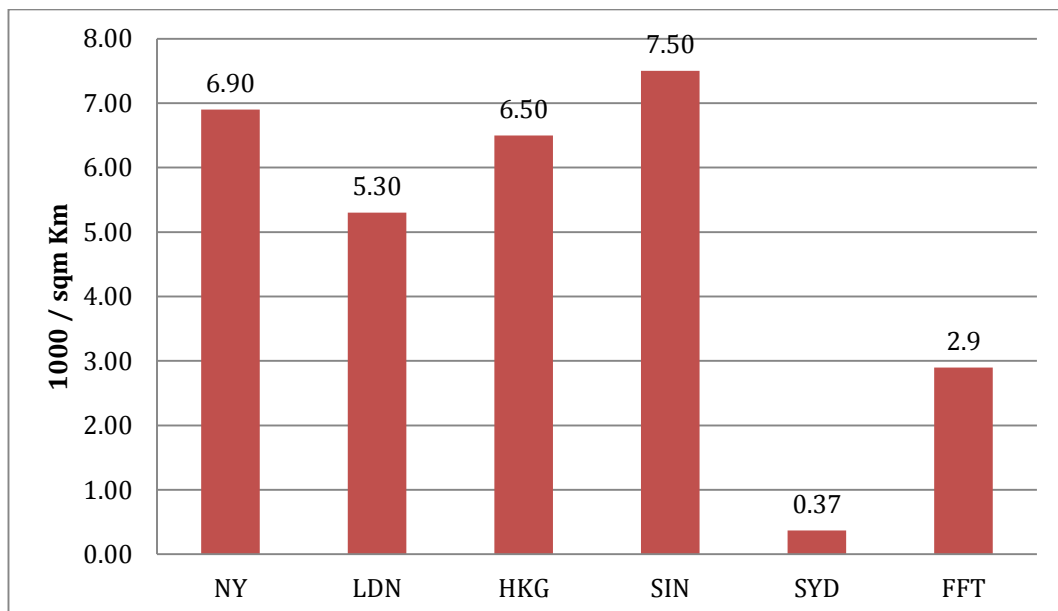


Figure 6-1 Summary of the Cities' Population Density

6.1.2 Global Cities Index Ranking

Global Cities Index (GCI) Ranking was chosen as a metric of comparison between the eight cities in the study. The Global City Index is a study created by ATKearney to compare 84 cities all over the world. The GCI use 5 dimensions to compare these cities all over the world that are business activity, human capital, information exchange, cultural experience and political engagement. Figure 6-2 shows a summary of the rankings of each city from 2008 to 2014 and their index scores.

First dimension is the business activity. It is measured based on all the business undertakings happening in the city. The number of major business corporations having their headquarters in the city and the business fulfillment centres in the city is included in the measure which is around 30% of the score. Second is the human capital, which is the ability of the city to attract talented individuals, based on size of foreign-born population, the quality of education, international schools, international student population, and number of residents with university degree. It is also around 30% of the score. Third dimension is the information exchange; it is the measure of how the news and information goes around in and out of the city. Basis of measurement are accessibility to media sources like the major television news channels, internet penetration, international news bureaus and freedom of expression. Weighted score for this dimension is 15%. Fourth Dimension is cultural experience; this measures the attraction, international events and diversification of a city. Tourism is one of the basis of measurement for this dimension as the score weight is 15%. Fifth dimension is the political engagement, which measures how a city can create an impact in global policies. The basis of measurement for this dimension is the number of embassies and

consulates; international organisations; and local institutions with international reach. Political conferences hosted by the city are another basis for this dimension which worth 10% of the total weight.

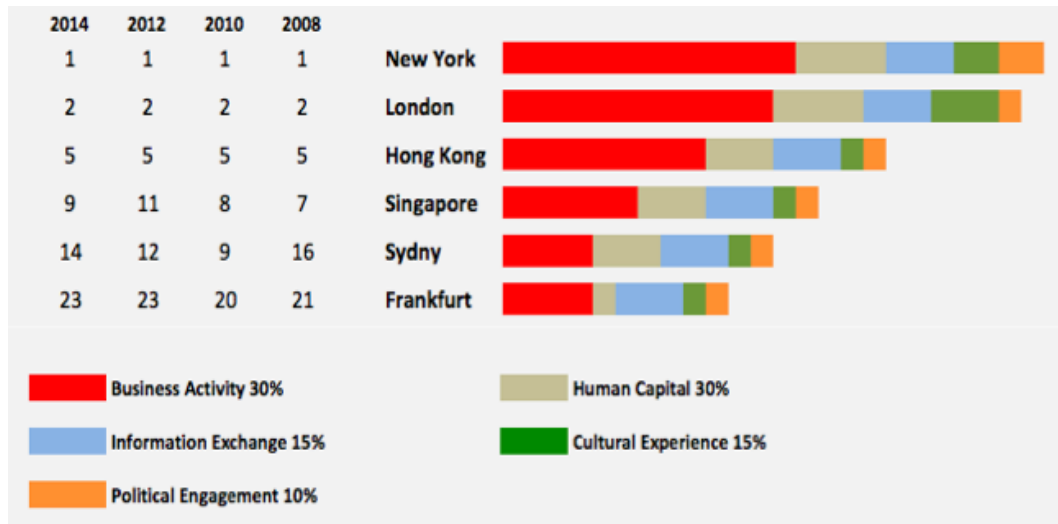


Figure 6-2 The Cities' Global Competitiveness Index Ratings 2014
(Source: AT Kearney Korea LLC, 2014)

Based on (figure 6-2), New York and London are going head to head on the scores. New York has the highest score on almost all dimensions except for the cultural experience dimension where London gets a higher score on it. On the other hand, from the other 6 cities, Hong Kong has the highest score on business activity followed by Singapore, Frankfurt, Sydney. In terms of human capital, Hong Kong is still the highest. Sydney and Singapore are close in scores in human capital but still higher than the other cities followed by Frankfurt. Sydney has the highest score in information exchange, followed by Hong Kong, Singapore and Frankfurt. Frankfurt, Sydney and Hong Kong are high on Cultural experience.

6.1.3 Innovation Cities Survey Ranking

The Innovation Cities Survey Ranking (ICSR) is the benchmarking of cities based on their innovation. Four hundred and forty six cities were benchmarked in order to obtain the report (2thinknow, 2014). All the cities in the index were based on a

three Factory Summary scores. These three Factors are Cultural Assets, Human Infrastructure and Networked Markets. The three factors are broken down in 31 segments and then broken down into another 162 indicators.

Cultural Assets factor is the culture of the city and is measured based on cultural and social events, arts and media, sports and cultural infrastructures like museums and galleries. Human Infrastructure factor is the soft and hard infrastructure in the city. These include public transportation, financial standing, schools, hospitals, public roads, law, health care and telecommunications. Lastly is the Networked Markets factor, which is the measure of the city's link and influence in global markets. These include geography, import and export market, market size, global influence, and diplomacy.

The cities are further classified based on their index scores. There are 5 classifications; Nexus (High connection for multiple economic and social innovation segments), Hub (Dominance or influence on key economic and social innovation segments, based on global trends), Node (Broad performance across many innovation segments, with key imbalances), Influencer (Competitive in some segments, potential or imbalanced) and Upstart (Potential steps towards relative future performance in a few innovation segment). The cities that had scored below the upstart band were not classified because the index score was below 50% (2thinknow, 2014).

City	Class	Innovation Cities Survey Ranking
New York, United States (NY)	NEXUS	2
London, UK (LDN)	NEXUS	3
Sydney, Australia (SYD)	NEXUS	17
Hong Kong, Hong Kong (HKG)	NEXUS	20
Singapore, Singapore (SIN)	NEXUS	27

Frankfurt, Germany (FFT)	NEXUS	30
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Table 6-2 Classification and Ranking of the eight smart cities
(Source: 2thinknow, 2014)

In terms of innovation, there is a change in rankings for the cities that are being reviewed in this study. New York and London had maintained their position in the first and second spot. However, Sydney had gone higher from the rest of the cities. All of the six cities have a classification of Nexus meaning that they all have high nexus for multiple economies and social innovation segments which also means that all of the eight have scored high in the Innovation cities survey ranking.

6.2 Governance, Demographics, and Economy

This section of the chapter is discussing more detail on each city with regard to government system, demographics, current city infrastructure, urban innovation and sustainability.

6.2.1 Governance

Each of the cities that would be discussed has a ruling system where the government system of each city is different from each other. A summary of the government system is provided in Table 6-3

City	Government Unit	Head of Government
New York, United States (NY)	5 Boroughs	Mayor
London, UK (LDN)	32 Boroughs, City of London and GLA	Mayor & London Assembly
Hong Kong, Hong Kong (HKG)	18 District Councils	Chief Executive
Singapore, Singapore (SIN)	5 Development Councils	Mayor
Sydney, Australia (SYD)	9 Councils	Mayor
Frankfurt, Germany (FFT)	47 Municipalities	Mayor

Table 6-3 Summary of the Cities' Government Systems

New York and London are both comprised of boroughs; New York is made up of 5 boroughs (Perez, 2010) and London is divided into 32 boroughs (GLA, 2014). Both cities are governed by a Mayor. However, London is shared between the

boroughs, the city of London and the Greater London Authority (GLA). The boroughs and the city of London are headed by the mayor and the GLA is headed by the London Assembly. Hong Kong has a very different government system compared to the other cities where the head of government is the Chief Executive. It does not have a mayor to govern it (HKSAR Government, 2014). Singapore does not have a local government and the councils do not represent the local government. Representatives in the councils are nominated and not elected where the town councils act as maintenance agencies not to govern as they are headed by the mayor and the representatives (Commonwealth Local Government Forum, 2014). Sydney (Sydney, 2014) have a mayor and councilors to head the local government. Deputy Lord Mayor in Sydney is elected by the councilors. Frankfurt is made up of 47 municipalities composed of 93 elected representatives and 16 local authority bodies. Mayor heads the representatives and the authority bodies (City of Frankfurt, 2014)

6.2.2 Demographics

Certain demographic factors were selected for the study, which are the life expectancy, income gap, forecasted population in 2020, literacy rate, and poverty rate. The life expectancy is a measure to describe the population health (Australian Institute of Health and Wellness, 2014). Income Gap is the measure of the minimum income and the highest income earned in the city. Population forecast in 2020 is a projection of the current population until the year 2020. Literacy Rate is the percentage of the population age 15 and above who can, with understanding, read and writes (World Bank, 2014). Poverty Rate is defined as the percentage of population who are living below the minimum level of income

deemed inadequate for a particular country. Table 6-4 shows a summary of the following demographics per city.

City	Life Expectancy (yrs)	Income Gap (per annum) USD	Forecast population 2020 (m)	Literacy Rate (%)	Poverty Rate (%)
New York, United States (NY)	80.9	9,320 - 188,697	8.7	75	19.9
London, UK (LDN)	81.2	13,465 - 94,727	9	83	28
Hong Kong, Hong Kong (HKG)	83.35	14,544 - 921,485	7.7	93.5	19.6
Singapore, Singapore (SIN)	82	19,256 - 465,725	6.2	96.5	N/A
Sydney, Australia (SYD)	81.4	15,509 - 65,283	5	99	15
Frankfurt, Germany (FFT)	79.6	8,921 - 247,808	As 2014	99	15.6

Table 6-4 Summary of the Cities' Demographics

Life Expectancy

Based on life expectancy, people who live in Hong Kong live the longest. The people in the country are expected to be alive until they are 83.35 years of age (World Population Review, 2014). Followed by Singapore with 82 years as per the report from WHO (World Population Review, 2014). Sydney and London are next in line and almost have the same life expectancy at 81.4 (Health Statistics NSW, 2007) and 81.2 (London Councils, 2014) respectively. The European Countries have the lowest life expectancy with 79.26 years in Frankfurt (Smashing Lists, 2011).

Income Gap

Based on research most of the cities have a wide income gap. New York has \$188,697 as its highest income and \$9,320 as the lowest (World Population Review, 2014). In London, its \$13,465 in the bottom 10% percentile and top 10% is \$94,727 (Collinson, 2014). In Hong Kong, values are at \$279 a month to \$17,720 a month (Hu & Yun, 2013). Singapore has an income disparity \$463 - \$8,956 per month (Department of Statistics Singapore, 2014). Sydney has in the top 10% of population \$1,255 per week and on the bottom 10% is \$298 per week

(Australia Bureau and Statistics, 2014). In the salary survey it has shown that in Frankfurt income gap is \$743 – \$20,651 (Salary Explorer, 2014).

City	Income Gap USD		Difference USD
	Low	High	
Hong Kong, Hong Kong (HKG)	14,552.18	921,951.33	907,399.14
Singapore, Singapore (SIN)	18,663.09	451,380.72	432,717.63
Frankfurt, Germany (FFT)	8,950.85	248,634.60	239,683.75
New York, United States (NY)	9,320.00	188,697.00	179,377.00
London, UK (LDN)	13,574.73	95,496.65	81,921.92
Sydney, Australia (SYD)	15,589.59	65,621.29	50,031.70

Table 6-5 Summary of Income Disparity between Cities based on difference

Forecast Population 2020

Forecasted population by 2020 in New York is around 8.7 million according to the (World Population Review, 2014), which shows an increase of 3.57% from the current population. This can be attributed to the fact that more people are moving in the city and the overall population in New York had reached its peak (World Population Review, 2014). In London, it is forecasted that the population will grow to 9 million by 2020, which is around 8.4% growth. Based on London officials, the increase in population is estimated to be driven by the number of births than deaths and migration will account less than a fifth in the growth of population (Doughty, 2012). In Hong Kong, the population is estimated to grow to 7.7 million at 6.94% increase from the population now. Singapore population will have a 14.81% growth resulting to 6.2 million people. Based on analysis from World Population Review, the trend in population growth will be a result of the number of migrants entering the country (World Population Review, 2014). In Sydney, the population growth is estimated to be 5 million attributing to 8.69% growth (Your Mortgage, 2014). Frankfurt is a unique case; based on studies there will be 0% population growth for the next 5 years (Planungsverband Ballungsraum,

2005). If ever there is an increase in the population, it could be due to migration (Planungsverband Ballungsraum, 2005).

Literacy Rate

Having a high ranking in the GCI does not mean a complete Literacy rate in the population. Based on statistics, New York City has a 75% literate people of the total population of the city (Literacy Partners Inc, 2014). In London, 1 in 6 people struggle for literacy showing a literacy rate of 83% (Jama & Dugdale, 2012). The Asian Countries, Hong Kong and Singapore have 93.5% (World Population Review, 2014) and 96.5% (Department of Statistics Singapore, 2014) literacy rates respectively. Sydney (Index Mundi, 2014) and Frankfurt (API Global, 2013) share a figure of 99% in the Literacy Rates.

Poverty Rate

Sydney has the lowest number of population in the poverty line which is at 15% (Wade, 2014) followed by Frankfurt at 15.6% (Spiegel Online, 2012). Hong Kong and New York poverty rate are at 19% (World Vision Canada, 2014), 19.6% (World Population Review, 2014), and 19.9% (Literacy Partners Inc, 2014) respectively. The highest poverty rate among the cities compared is London with a rate of 28% (Trust for London, 2014). However, there is a unique case in Singapore. An official poverty line is not identified as of the moment; poverty rate in Singapore is unknown (Wong, 2013).

6.2.3 Economy

In order to have an overview of the economy on each city, the macro-economic statistics of its home country has been taken into consideration in this study. Limited research materials were available per city. Table 6-6 shows a summary of the macro-economic statistics for each home country of the city.

Based on the statistics provided, the United States have the highest GDP among all reviewed countries where the country with the lowest GDP is Singapore. Gross Domestic Product (GDP) is the measure of all finished goods and services rendered (Investopedia, 2014). However, based on annual growth of GDP, Hong Kong comes in at first and Singapore second at 3.7%. GDP per capita is the total GDP divided by the population in the area. Based on the statistics shown above, most of these countries have a high concentration of income in the service sector where Hong Kong's GDP is composed of 93% from the service sector. Lowest percentage of Unemployment is Singapore and Hong Kong with both less than 4% unemployed.

Country	GDP USD	GDP Growth (%)	GDP/Capita USD	GDP Composition (%)	Unemployment (%)
United States (NY)	17.528 T	2.8	54,980	Agri. – 1.1 Industry – 19.5 Service – 79.4	6.4
United Kingdom (LDN)	2.828 T	2.9	48,830	Agri. – 0.7 Industry – 20.5 Service – 78.9	6.9
Hong Kong (HKG)	344.5 B	3.7	40,175	Agri. – 0 Industry – 6.9 Service – 93	3.1
Singapore (SIN)	304 B	3.6	55,568	Agri. – 0 Industry – 29.4 Service – 70.6	2
Australia (SYD)	1.436 T	2.6	61,137	Agri. – 3.8 Industry – 27.4 Service – 68.7	6.2
Germany (FFT)	3.876 T	1.7	47,893	Agri. – 0.8 Industry – 30.1 Service – 69	5.2

Table 6-6 Economic Overview per Home Country
(Source: Global Finance, 2014)

In order to further understand the economy per city, a short description of the economy of each city is provided below.

New York

New York City has the largest regional economy in the United States (IHS & Global Insight, 2012). Wall Street in Lower Manhattan has been categorised as the world's leading financial centre and is home to the New York Stock Exchange and NASDAQ which are the world's largest stock exchanges by market capital and trade activity (Reuters, 2011). The GMP of New York City shows a high value of \$1.33T, which ranks first in the country and behind GDP of only 12 nations (IHS & Global Insight, 2012). The city has a high abundance of advance service sector firms. It is considered to be a global centre for the advertising industry referring to Madison Avenue and the high technology sphere which is Silicon Alley.

London

London is considered to be among the top largest city economies in the world. The city has a GDP of \$884 billion, which amounts to 17% of the nation's total GDP. Its economy is larger compared to some European Nations. The dominant sector of the economy used to be in manufacturing in the nineteenth century. At present, the city has the financial and business services as the dominant sector, showing an almost 50% of the total annual export of goods and services (Overall is total \$57 billion annual export of goods and services, financial and business services account for about \$8.6 billion) London is home to many financial institutions and considered as a main centre for foreign exchange having more maximum number of US dollars than New York and more Euros than all other cities in Europe combined. It is also the home of London Stock Exchange which is the largest in the world and accounts for 32% of global transactions (UNCSBRP, 2014).

Hong Kong

Hong Kong is considered to have a free market economy. The city is highly dependent on international trade and finance where the value of goods and services trade is four times its GDP. There are only four commodities that have excise duties, which are hard alcohol, tobacco, hydrocarbon oil and methyl alcohol. The natural resources of the city are limited; food and raw materials are imported. Hong Kong is the premier stock market of the firms in China who are seeking to list international. In 2012, there are 46.6% firms of companies from Mainland China are listed in the Stock Exchange. These companies accounted about 57.4% in the exchange's market capitalization (Forbes, 2014).

Singapore

Singapore can be classified as a highly developed economy. It practices a free-market as well like Hong Kong. The city has an open and corruption-free environment with stable prices and a GDP per capita that is higher compared to most developed countries. The city relies on exports especially on the consumer electronics, IT products and pharmaceuticals. The city has attracted major investments in medical technology and pharmaceuticals and has the reputation of Southeast Asia's financial and high-tech hub (Forbes, 2014). The city has a high level of foreign reserves and has the strongest independent credit rating for long-term foreign-currency debt in Asia (Monetary Authority of Singapore, 2014).

Sydney

Sydney is considered to be the financial centre of the Australian economy. There are more than 451,000 businesses in the city and it offers a highly competitive base to expand. A fifth of the GDP in Sydney is made up of Financial and Insurance services where professional, scientific and technical services accounts for 9% followed by manufacturing at 7% and wholesale trade at 5.3%. Around

half of Australia's top 500 companies and two thirds of regional headquarters of multinational corporations are based in Sydney (Regional Development Australia Sydney, 2014).

Frankfurt

Frankfurt's economy is mostly concentrated in the service sector particularly the financial and banking industry. It is called the city of banks or Mini Manhattan. XETRA stock exchange is located in Frankfurt and this is considered to be the second largest stock exchange in Europe. Messe, Frankfurt is the third largest convention centre in the world, which is mainly used for large business conventions (The Sunday Times, 2014). The city is the financial capital of Germany and is home to more than 400 banks and financial institutions (Easy Expat, 2014).

6.3 Infrastructure Sector

6.3.1 Leadership and Management Practices (Strategic Planning)

City	City Planning Document	Duration of Plan
New York, United States (NY)	PlaNYC	2007 - 2030
London, UK (LDN)	London Infrastructure Plan	2050
Hong Kong, Hong Kong (HKG)	Hong Kong 2030	2030
Singapore, Singapore (SIN)	Concept Plan	50 years
Sydney, Australia (SYD)	The State Infrastructure Strategy	2032
Frankfurt, Germany (FFT)	The Masterplan by 2030	2030

Table 6-7 The Cities; Strategic Plans Summary

New York

New York's planning go way back to 1807 wherein uncontrolled development and public health epidemic had plagued the city. New York City's Common Council had petitioned for streets plan for Manhattan which had established the Commissioners' Plan after four years and created the grid of 12 north-south avenues and 155 east-west streets of New York (Wessner, 2011). The city

government is collaborating with city agencies, private sectors and its residents in its plans to create a better New York (The City of New York, 2014). A vision is made in order to have guides in the future; PlaNYC was created to address the current problems of the city. It addresses the climate change, aging infrastructure and evolving economy and the action plans that have to be put in to action.

London

Planning of the city has been going on based on records in Large Model Association (LMA) collections since the sixteenth century (The City of London, 2014). Development of London has been continuing since the Great Fire in 1666. The city had planned its infrastructure during its expansion in the nineteenth century, and the renewal of the damages in war. The city government recorded every detail of change and its plans in the course of history. Historically, preserved building records were kept by the Greater London Council. The city had been planned by architects and the government agency to provide a better future. The sewerage system planned by Joseph Bazalgette in the 19th century was collaborated with the Metropolitan Board of Works. The construction of Thames Water reservoir and water supply networks were also kept since in the 16th century (The City of London, 2014). The documents and improvements in the city only shows the dedicated commitment of architects and engineers to the city to improve it and hence, the city of London is following in their footsteps to preserve history and make London a better place to live in. Currently, the city of London is implementing the London Infrastructure Plan until 2050. The plan covers transport, energy, waste, water, green, digital connectivity and social infrastructure (Arup, 2014).

Hong Kong

Hong Kong can be deemed to be a city that started in the period of the British rule. Hong Kong has become a colonial entrepot. The city was chosen and developed for its position, its location near Guangzhou, which is the only Chinese port open to foreign traders. The city was built based on racial segregation and up until the present, it is very evident in the city (Mar, 2002). Planning of the city is government initiated using a top-down approach. The government of Hong Kong has developed Hong Kong 2030 in order to have a Territorial Development Strategy. It serves as a guide to future development, setting up of strategic infrastructure and implementation of government policy targets. The strategy plan is based on forecasts as to how the city would be able to respond to its needs in the next 20 to 30 years. The plan was created to make Hong Kong 'Asia's World City' (Government of Hong Kong, 2006). One unique feature of the plan is that there are two scenarios mapped out by the planners to anticipate any changes in the future. The scenarios are based on population growth in the area (Government of Hong Kong, 2006). Action plans would differ depending on the forecast of the near future.

Singapore

Leadership capability, a visionary prime minister a strong finance minister and civil servants that are dedicated to serve the city is a must for the city to establish the infrastructures at present. The government had to make sure that the public sector is based on efficiency, meritocracy and corruption is not tolerated. During the planning process the government used two specific planning reports, these are the Winsemius Report and the State of Singapore Development Plan 1961-1964. The Winsemius Report is a 10-year plan concentrated on building up industrialization while The State of Singapore Development Plan is a plan that

supports Winsemius Report wherein infrastructure development is necessary to create industrialization (Mody, 1997). These reports led the city to establish the Economic Development Board (EDB), which is an agency that takes lead on the industrialization and attract foreign investment and the Industrial Estates, specifically the one in Jurong. There have been four sources of funding that the government used in order to invest on the new infrastructures: getting loans from private institutions, revenue surpluses from the industrial estates, foreign grants and transferring of government funds to development plans. The two factors that made the projects a success was the government's strict policy on budgetary control and the government fiscal policy wherein the employer and employee are mandated to give compulsory savings and contribute to the Central Providence Fund (Mody, 1997). At present the government has a Concept Plan that looks fifty years in the future and takes into consideration housing, recreation, utilities and transport. This serves as a single vision on where the government want to go in advance and what particular actions it must do in order to meet the demands of the population (Insight Magazine, 2014).

Sydney

There have been records that the city planning in Australia had started since 1788 (Troy, 1995). At present, the plans for the state including the city of Sydney is geared towards improvement of public transport, urban and regional roads, health, education, water, sports and culture (Infrastructure NSW, 2014). In 2011, the government had created Infrastructure NSW, which is a separate entity that is concentrating on the infrastructure planning of New South Wales. The organisation is consulting with the government agencies to deliver its strategy to the government (Infrastructure NSW, 2012). The basis of funding priorities for

the project was based on the estimated impact on the economy of NSW. The strategy stresses out that improvements on existing assets are necessary before making any expensive infrastructures. A multi-criteria assessment to gauge the strategic fit, economic impact and delivery risk is used to evaluate the potential projects that the city would be doing.

Frankfurt

The planning of the city of Frankfurt had started since the year 1925. Johannes Von Miquel and Franz Adickes had a vision to make Frankfurt the focal point of city planning reform. The plan incorporated unique land use, city planning, concepts in management and a leftist ideological thrust (Mullin, 1977). Frankfurt had joined in a joint city planning programme with its neighbouring cities and countries, which helped the city to share its planning and get ideas from other cities as well in order to get the best practices (European Union, 2010). Currently, the city has a strategic guideline, the Master plan, for the next 20 years which would give the city a model for long-term development (Albert Speer & Partner GmBH, 2014).

6.3.2 Present Infrastructure

City	Present Infrastructure Urbanization, Transport, Utilities & Telecommunication
New York, United States (NY)	<ul style="list-style-type: none"> • 141 Airports • 17,420 bridges • 390 miles inland waterways • 37 Freight Rail Roads • Transit Systems • Citi Bike • Digital Hub • Water Reservoirs • Wastewater Treatment Hub • Power from Renewable Resources
London, UK (LDN)	<ul style="list-style-type: none"> • Bus and Rail transport • HS1 Railway • Tram • London Heathrow Airport
Hong Kong, Hong Kong (HKG)	<ul style="list-style-type: none"> • Port of Hong Kong • Hong Kong International Airport • Airport Mainland Coach • SkyPier • Exhibition Centres • Industrial Parks • Solar Power for Water Heating Systems and Buildings
Singapore, Singapore (SIN)	<ul style="list-style-type: none"> • ICT Technology for public security • Fibre Network for seismic activity • Continued development of Industrial Estates • Changi International Airport • PSA Singapore Terminals • Mass Rapid Transit System • Electronic Road Pricing • High Tech Traffic Monitoring • Waste water treatment • Broadband Penetration Rate 115.2%
Sydney, Australia (SYD)	<ul style="list-style-type: none"> • Port Botany • Sydney Strategic Road Network • Bus, Rail, Ferry • Opera House • Harbour Bridge • Renewable Sources
Frankfurt, Germany (FFT)	<ul style="list-style-type: none"> • Frankfurt Flughafen AG – Airport • Airport City • Rail and Motor Infrastructure • Train Stations • DE-Cix Internet node • Heating Network • Power from Renewable Energy Sources

Table 6-8 Summary of the Cities' Present Infrastructure

New York

New York is considered to be a very mobile city. Navigation through the city can be done through different transport modes such as the 141 public use airports, the

17,420 bridges constructed in the city, the 390 miles inland waterways, the 37 freight rail roads, 114,546 public road miles, and the transit systems. The transit systems that the city has are the motorbus, the heavy rail, light rail and commuter rail (American Society of Civil Engineers, 2013). Aside from public transport, the city promotes the use of bicycles to navigate within the city which is called the Citi Bike System which is operated by the NYC bike share. The system has thousands of bikes at hundred different stations around the city where station locations are based on the highly populated area, and transit needs. Citi Bike has a touchscreen kiosk, a map of the service area and surrounding neighbourhood and a docking system that releases the bikes for rent with a card or a key (Citibilke, 2014).

New York established its first all-inclusive digital hub in its tech ecosystem. It serves as a link to every company, investor, events, jobs, blogs, videos, resource and organisations in all its boroughs (Digital NYC, 2014).

Water in New York is supplied by a network of 19 reservoirs and three controlled lakes. Used water in the city goes into the extensive wastewater treatment system. The wastewater treatment plant cleans the waste water of over 6,000 miles of sewer pipes, 135,000 sewer catch basins, more than 494 permitted outfalls for discharge of sewer overflows and storm water and 93 wastewater pumping stations. The water is transported to 14 treatment plants throughout the city (New York Power Authority, 2014). The city of New York produces 32.286 Gigawatt-hours of renewable energy every year. Among the producers is the Niagara Power Plant, which is also being shared with Canada (New York Power Authority,

2014). In 2013, 23% of the state's electricity generation came from renewable energy resources (US ENergy Information Administration, 2014).

London

Currently, London has a network of busses and rail transport system that transport millions of people daily (England Forever, 2014). Its railway system dates back to 1825 and had been a pioneer public transport for other countries around the world. The city introduced the HS1 railway system, which is a high-speed railway that decreased the travel time from London to Paris (Goodall, 2013). The tram system is also gaining popularity in the recent years. The city is famous for the second largest and busiest airport in the world; Heathrow Airport. The airport serves as the epicentre of the local infrastructure and has the second largest traffic of international passengers in the world (England Forever, 2014).

Hong Kong

Hong Kong is located in the heart of East/Southeast Asia. The city has been the regional transportation hub and southern access to China. From Hong Kong, most parts of East Asia can be reached in five hours flight. There are 40 Mainland cities that are linked to the city by air services. Hong Kong has a deep-water port, which is considered to be one of the busiest and most efficient globally. The port is connected with 80 international shipping lines. It is estimated to provide over 400 container liner services per week that connects to over 500 destinations around the world. Its airport, the Hong Kong International Airport (HKIA) at Chek Lap Kok handles more than 700 flights a day operated by over 80 airlines. The city had linked air, land and water transportation through the Airport-Mainland Coach station and the SkyPier airport ferry terminal. The coach operates around 200 trips per day carrying passengers from the airport to 40 destinations around Hong

Kong. The SkyPier is a cross-boundary service to the ports at Shekou, Shenzhen, Macao, Dongguan and Zhongshan. Another project that the city should be proud of is the Hong Kong Convention and Exhibition Centre in Wan Chai North. It has 64,000 square metres of exhibition space. There are other exhibition sites around the area, which are Hong Kong International Trade and Exhibition Centre in Kowloon Bay which can also be used for any exhibition activities. Another newly opened Exhibition centre in Chek Lap Kok is AsiaWorld-Expo (AWE) in 2006 with a total of 70,000 square metres of rentable space. Hong Kong had established industrial parks that concentrate on information technology, high technology, research and design (R&D) as well as design and branding. These are Cyberport, Telegraph Bay, the Science Park at Pak Shek Kok and InnoCentre at Kowloon Tong (Government of Hong Kong, 2006).

In terms of renewable energy, since 1980 the government has been using solar water heating in pools and in slaughter houses (Government of Hong Kong, 2014). Automatic weather stations around Hong Kong are powered with solar energy. Some buildings like the Wanchai Tower, the Science Park and the Electrical and Mechanical Services Department Headquarters are also using solar power systems to generate electricity.

Singapore

Singapore has developed a lot of its infrastructures to meet the present needs of the people. In order to create a secure environment, the government is investing in ICT technology to put cameras for security (Cohen, 2014). Singapore has created industrial landscapes to stimulate its economy, a big example is Jurong Town Cooperation (JTC) (Singapore German Chamber, 2014). Electronic Road Pricing (ERP) is a set of automated tolls all around the city has been implemented

(Cohen, 2014). ERP has minimised the number of cars on the road and limited it to around 800,000 (Insight Magazine, 2014). The MRT metro system railway is also a smart railway system that transport almost 2 million people daily in 2009 (Insight Magazine, 2014). The city has a very sophisticated traffic management that allows the monitoring of flow, dispatch emergency services and detect obstructions on the road (Cohen, 2014). A part from the land transportation system, the city also has a sophisticated Airport that is Changi International Airport. The airport handles about 70 million passengers a year, caters to 80 airlines in over 50 countries and handled 1.86 million tons of cargo in 2008 (Trade Chakra, 2008). Its water transportation is also another aspect that the city can be proud of. PSA Singapore Terminals operates four container terminals and 2 multipurpose terminals that connect all types of vessels to a system of 200 shipping lines with connections to 600 ports in 123 countries (Trade Chakra, 2008). The port takes one fifth of the world's total container shipment and it also has one of the world's largest refrigerated container ports with over 5000 reefer ports (Trade Chakra, 2008). In order to sustain its utilities, the city has created a water management programme wherein there is rainwater catchment, wastewater recycling plant and desalination (Cohen, 2014). These improvements led the city to export its management expertise overseas (Cohen, 2014). The city is home to the most wired country in the world with a household penetration rate of 115.2%. The city ties with the United States as the least expensive place in the world to make a phone call or browse the internet using a broadband connection (Trade Chakra, 2008).

Sydney

Sydney is the hub of Australia's largest airport, which currently has more than 45 percent of international traffic (Infrastructure NSW, 2012). Sydney airport caters to more than 100,000 airline passengers daily. Its water transportation is Port Botany that is considered to be the second busiest container port in Australia and is estimated to handle more than \$60 billion of trade yearly. The port moves about 5,000 containers on average daily. Sydney has developed its strategic road network also known as SSRN (Sydney Strategic Road Network). The network is comprised of the Sydney Orbital Network, the M4 Motorway and Parramata Road corridor and the links that connect the Sydney Orbital to F3 and F6 highways. It is the most important road network in the state. It transports the bulk of the container freights and acts as the feeder and supplier for other nodes. Sydney has the bus, rails and ferries to transport the public around. Sydney also houses the Opera House and Harbour Bridge which is considered to be famous icons in Australia (Infrastructure NSW, 2012). Electric energy is being supplied by a range of different sources. Fuel sources include black coal, natural gas, coal seam methane gas and renewable energy sources such as hydro, wind, biomass and solar (Trade and Investment: Resources and Energy, 2014).

Frankfurt

Frankfurt has the third busiest airport in Europe. In 2000, the airport has transported 40 million passengers (Easy Expat, 2014). Its airport is considered to be one of the most significant global hubs in air traffic. It has a capacity of 53.5 million passengers and an annual freight volume of 2.2 million tons. This makes it the largest freight airport in Europe (Frankfurt Main Finance, 2014). Its strategic location makes it the most significant metropolitan centre where someone can fly from Oslo to Rome and London to Moscow within 1-3 hours. Because of this

location, it is called the Airport city. A part from its aviation hub, it has a large area of attractive facilities and real estates for businesses and residential (Fraport, 2012). Its rail and motor infrastructure made it the main hub of German and European long-distance transport. Currently, more than 300,000 vehicles pass the motorway interchanges. Another strategic infrastructure is the train stations in Frankfurt which is considered to be the second largest European train station (Messe Frankfurt, 2014). It is where the freight traffic route converges (Frankfurt Main Finance, 2014). Currently, the city has planned a public transport where any place within the city vicinity can be reached within 30 minutes on public transport (Goethe University Frankfurt am Main, 2014). In terms of telecommunications, the city has DE-CIX internet node which is considered to be the most significant data nodes of Europe in the areas of the most significant data nodes of Europe in the areas of air traffic control, broadcasting, meteorology and outer space. It has a data volume equivalent to 883,000 DVDs (Frankfurt Main Finance, 2014). The network is fibre optic and is strategically passing through the metropolis and goes through the Main River (Messe Frankfurt, 2014). In terms of power supply, the city has four large and ten decentralized heating networks. These are based on 170 decentralized block type thermal power stations and five combined and heat and power stations. These plants produced more than 50% of the power and supplies thermal heat in the large parts of the city. Currently the airport, trade fair and Commerzbank high-rise are connected to these plants for heating (Frankfurt Green City, 2014). Frankfurt had invested on solar power systems and currently is feeding 5.5GWh of electricity into the grid. The number of solar power plants in the city is more than 700 (Frankfurt Green City, 2014). Waste timber and green wastes are also used to feed the biomass power station in Frankfurt-Fechenheim.

The plant produces electricity for around 20,000 households and heat for industry and commerce. The power station was built to process and purify wasted timber and uses the flue gas purification process to neutralize substances such as glue, paint, wood preservatives and pesticides in contaminated timber. This timber is used to feed the power station. Green wastes from parks and gardens and bio-waste collected all throughout the city are fed to RMB Rhein-Main Biokompost GmbH to create approximately 1.65 million m³ of biogas annually. This is converted to electricity and heat in two block-type thermal power stations (Frankfurt Green City, 2014).

6.3.3 On-going and Planned Major Projects

City	On-Going and Planned Major Projects
New York, United States (NY)	<ul style="list-style-type: none"> • Housing Projects • Installing a 100Mega-Watt solar power to city-owned buildings • Increase power using renewable energy resources • Upgrade Railway System • Improve Pedestrian Lanes • Promote Electric Cars
London, UK (LDN)	<ul style="list-style-type: none"> • Housing Projects • HS2 Railway • New Airport at Thames Estuary • Develop Roadwork • Cycling Infrastructure • Garden Bridge • River Pier Enhancement • Development of Cross Rail • Age Capping of Vehicles • Create Sustainable Buildings • All London Green Grid • Hydrogen Fuel Cells • Thames Estuary 2100 Project • Flood risk Management Programme
Hong Kong, Hong Kong (HKG)	<ul style="list-style-type: none"> • South Island line • Hong Kong section of Guangzhou-Shenzhen-Hong Kong Express rail link • Tuen Mun Western Bypass • Hong Kong-Zhuhai-Macao Bridge • Lok Ma Chau Loop • Kai Tak Development • West Kowloon Cultural District • Energy Efficiency labelling • Power from renewable Sources • Promote Electric Vehicles
Singapore, Singapore (SIN)	<ul style="list-style-type: none"> • Develop Software in Urban Planning • ICT Technology – earthquake sensing • Reduce CO² by 2030 • Improve target in NEWater by 50% • Next Generation Broadband Network
Sydney, Australia (SYD)	<ul style="list-style-type: none"> • Housing Projects • 3D Interactive Model • Improve Rail Infrastructure • Improve and create new and existing roads • Power from Renewable Resources
Frankfurt, Germany (FFT)	<ul style="list-style-type: none"> • Create and Develop new and existing homes • Development cycling infrastructures • Maintain, and increase green spaces and parks • New Terminal for the airport • Gateway Gardens District • Reduce Noise Pollution • Expand Heating System • Power from Renewable Sources

Table 6-9 Summary of the On-going and Planned Major Projects of Viewed Cities

New York

The city of New York is currently constructing housing projects in line with its 10-year plan. The plan is to build and preserve 200,000 units to support the low and middle class New Yorkers (The City of New York, 2014). The city had made plans to reduce its greenhouse gas emissions by 80%. In order to address this, the city will be installing a 100Mega-Watt solar power to city-owned buildings, implement performance standards to newly constructed buildings, and develop interim energy performance targets to existing buildings through voluntary reductions and new regulations (The City of New York, 2014). Increase in solar power capacity by 250 MW in privately-owned properties is encouraged by the government. This will enable neighbourhoods to group purchasing and community-shared power. New York City has initiatives to upgrade and maintains its current public transit system. Moreover, the city aims to move more buses to move quicker to protect residents from crashes. Initiatives to create pedestrian islands are also being installed to improve transit and decrease crashes. Driving of electric cars is also initiated (PlanYC, 2014).

London

London is currently planning to add new affordable housing to the public. Based on a study made by Arup, it can be assumed that the city would be creating an addition of 42,000 units per annum. A Development for transportation is included in its project. HS2 is one of the projects that have been going on for the past few years, which is a high-speed railway line that should significantly reduce the journey time from London, the Midlands and Northern England (Goodall, 2013). A new airport is being planned at Thames Estuary and enhancement of current London Heathrow Airport would be in progress (Arup, 2014). A plan to develop road works is mapped out at the 'World City' project, which includes road

schemes, cycling infrastructures, river pier enhancements and the Garden Bridge. Improvement of existing rail links would also be done and extension of rail tubes. Development of Cross Rails are also being developed (Arup, 2014). London has the vision to clean up the bus fleet, cap the age of the taxis and private hire fleet (Greater London Authority, 2014). Standards for the Low emission zone and uptake of electric and other low emission vehicles are included in the plan. Aside from this, energy efficiency is aimed at 55,000 homes that will go through the RE:NEW programme and 400 public buildings will be undergoing the RE:FIT programme. The Mayor has plans for a greener city, the All London Green Grid is the plan that the government had put on in order to increase the number of green spaces around the city. These include development of parks and planting of trees (Greater London Authority, 2014). The city has plans to use Hydrogen fuel cells for its public transportation, residential and businesses (Greater London Authority, 2014). Thames Estuary 2100 project, which is a project that aims to cope with the rising sea levels, increased storm surges and replacement of existing flood defences on the Thames. Flood risk Management programme is being implemented to avoid flooding in the area (Arup, 2014).

Hong Kong

Hong Kong is planning to improve its rail infrastructures, roads, cultural infrastructure, exhibition spaces, and improve technology and public housing. For its rail infrastructures, the city has the construction of South Island line and the Hong Kong section of Guangzhou-Shenzhen-Hong Kong Express rail link, which are estimated to be completed on 2015. Rail connection between the Hong Kong and Shenzhen airports is under study (Hong Kong Special Administrative Region Government, 2011). Tuen Mun Western Bypass and Hong Kong-Zhuhai-Macao

Bridge are two road infrastructure projects that are currently being studied and constructed. The bridge will be 29.6 km, 6 lane main bridge and 6.7 km undersea tunnel across Pearl River Estuary (Lu, 2012). Lok Ma Chau Loop is an area that is being developed by the Hong Kong-Shenzhen Joint Task Force, which is a development plan to create a hub for cross-boundary human resources development which can be identified as a knowledge and technology exchange zone. Kai Tak Development is a zoning plan that aims to increase social infrastructures like public housing, cruise terminals and other supporting infrastructures. Another infrastructure that is being developed is the Hong Kong Boundary Crossing Facilities; this is a 130-hectare artificial land northeast of the airport at Chek Lap Kok. The facility will serve as a hub for transportation and will provide facilities for clearance of goods and passengers (Lu, 2012). West Kowloon Cultural District is a project developed for the arts and cultural sector. This will be a new piece in the city with a mix of residential and commercial use and has an area of 17 venues dedicated for arts and culture. Completion of the project is estimated to be till 2020. Hong Kong also has sustainability projects to address the climate change. The government aims to cut down current emissions to 52-67% having the year 1997 as the base. The government has issued that the newly registered vehicles must meet the Euro IV standard and motor vehicle fuel the Euro V criterion (Government of Hong Kong, 2012). Energy Efficiency labeling for electrical appliances will be mandatory. The government plans to increase the use of natural gas for local electricity generation and the replacement of conventional traffic lights with LEDs. A budget has been allocated to promote the use of Electric vehicles, there are over 400 charging stations across the

territory, and allocated budget for electric buses that the franchised bus companies can buy to test performance and routes (Government of Hong Kong, 2012).

Singapore

As an on-going project, the city will continue to maintain and improve its industrialization and its transportation infrastructure (Insight Magazine, 2014).

The housing projects are also underway and in order to create a better planning, the government had signed an agreement with EDF and Veolia to develop software that would create sustainable urban planning solutions to the Housing Development Board's towns (Webb, 2012). To address its possible threat on seismic waves, the government had a plan roll out of a fibre network in every area to install sensors in public housing buildings that will sense the tremors and send a real-time SMS to city engineers to request building inspections (Cohen, 2014). In terms of connectivity, Next Generation Broadband Network or NGNBN would be rolled out and deployed. This is a nationwide fibre-based broadband network to be in line with the government's strategy (Budde Comm, 2014). Plans to improve the capacity of reach of NEWater are currently in place. It is estimated to increase its reach from 30% to 50% in 2030. The city also plans to reduce its carbon dioxide emissions by 2030 (Cohen, 2014).

Sydney

Sydney has plans to increase its housing by 220,000 new homes by 2031 (Your Mortgage, 2014). To improve its planning, the city had launched a 3D interactive model of the city to show and communicate the potential uses and benefits of the city as a whole in concept planning that was shown to the key staff of the federal state and the local government (Regional Development Authority of Sydney, 2014). The government plans to increase the reach of its rail infrastructure in

Epping Hills, expand the capacity of highways to increase freight in Port Botany. It also plans to link and expand the major highways like the F3-M7, M2 –F3 and widen F3 and F5 (Your Mortgage, 2014). As of the moment, there are additional electric plants under construction; there are 13 wind farms, 1 bio-energy, and 1 biogas that are located all throughout the state to increase capacity of energy generation. An additional 37 electric plants are under study for approval by the government.

Frankfurt

Like in its history, the government of Frankfurt has conceived a master plan for the next 20 years. Development of new housing is included in the plan; renovation and maintenance of existing housing estate in the 1970s were also part of it (Albert Speer & Partner GmBH, 2014). The city had created ecologic, social, economic, energetic and aesthetic criteria in order to maintain sustainability. Development of infrastructures for cyclists in the inner city and regional destinations are incorporated in the plan to make the city more people and environmentally friendly. Green spaces and parks will be linked to the regional green areas and existing walk trails (Albert Speer & Partner GmBH, 2014). To further improve the airport, Fraport is creating a new terminal at the south of the airport (Fraport, 2014). This provision will provide additional 75 aircraft parking positions and connect Skyline elevated train and the central automated bagging handling system which is expected to be finished in 2016/17 (Fraport, 2012). In the year 2020, Gateway Gardens District will be developed that will provide new spaces for businesses, hotels, conference facilities, entertainment and leisure and shopping outlets (Fraport, 2012). Frankfurt aims to improve public transport and encourage cycling. It has created the Reduction of Noise Pollution Plan to reduce

noise in certain areas of the city (Frankfurt Green City, 2014). This plan includes introduction of traffic calming measures at road junctions, setting speed limits, improvement of road surfaces and diversion of traffic from sensitive areas. In terms of utilities, the twin towers of the Deutsche Bank and the Westend university campus are planned to be connected to the heating system from the thermal plants. Public Participation Schemes has been used to enable solar powered systems to be fitted in the managed properties of the Housing Association in Frankfurt (Frankfurt Green City, 2014)

6.3.4 Case Studies related to Infrastructure

City	Case Studies
New York, United States (NY)	<ul style="list-style-type: none"> • Subway Line • Wastewater Treatment Solution
London, UK (LDN)	<ul style="list-style-type: none"> • London Overground Railway • Docklands Light Railway • Olympic Park
Hong Kong, Hong Kong (HKG)	<ul style="list-style-type: none"> • SUSDEV 21 • SARS Outbreak 2003
Singapore, Singapore (SIN)	<ul style="list-style-type: none"> • Water Treatment Solution • Car Policy • Smart Card Innovation • Railway Transit Improvement
Sydney, Australia (SYD)	<ul style="list-style-type: none"> • Desalination Plant
Frankfurt, Germany (FFT)	<ul style="list-style-type: none"> • Low Emission Zone • Provisions to use Electronic Vehicles

Table 6-10 Case Studies Summary

New York

The New York subway was a private industry before and then it has been taken over by the government. The first two networks were constructed by two private companies in the 1920s. The government agencies were deeply involved in the planning of the routes of the subways where It has provided subsidies through the building of the IRT in the 1900 and the expansion of the lines and creation of the BRT subways in 1911. The subways are very important in the growth and expansion of the city that resulted to population growth and urban expansion of the city (Lee, 2012).

Another case of infrastructure development in New York is the wastewater treatment; in the late 1890s and 1900s, the Dutch settles in the lower tip of Manhattan. Their supply of water was taken from streams, ponds and shallow wells and when the population grew, demand for fresh water has risen up and there was no existing system to dispose sewage. The water supply was contaminated and this had caused waterborne diseases such as yellow fever and cholera which later led to the creation of the wastewater treatment plants in Brooklyn (Coney Island Water Pollution Control plants) and the Jamaica Water Population Control Plant in Queens (New York Power Authority, 2014).

London

The use of public transportation in London is growing that every day 3.7 million people use the underground and 6.4 million takes the bus. London had lacked investment before; tube network is always congested and stations closed because of overcrowding. In order to address the issue, The London Overground Railways had been rebranded and improved. It accommodates a total of 120 million passengers a year, which is up by 33 million since 2008. The Docklands Light Railway also carried 66 million passengers last 2008 and now it is accommodating 100 million passengers annually.

In 2005, when London won the bid for the Olympic Park, many protests have taken place by the East London activists (Knapp, 2012). The Olympic Park has been created in order to provide venue for the 2012 Olympic Games. After the event, the park has to be renovated or developed in order to create a legacy (Olympic.org, 2013), and the park now is a venue for major sports, musical and cultural events (Olympic.org, 2013).

Hong Kong

Hong Kong Government had been using city plans since the preparation of the Abercrombie report in 1948. The plan was made in response to the need to rebuild the city and the gaining number of migrants from Mainland, China. Since then there were five other reports created by the government which are the Colony Outline Plan 1970, Hong Kong Outline Plan 1979, Territorial Development Strategy (TDS) 1984, Revisions of Territorial Development Strategy 1986/1988 and Territorial Development Strategy Review 1996. However, these plans had only given general directions and do not have quantified recommendations. The previous plan in 1996 had been the first strategic land use planning study. Environmental conditions were assessed and a separate Planning Environmental assessment was done. Sustainability concept had also been introduced which led the government to conduct studies and create the project SUSDEV21 or “Sustainable Development of the 21st Century” (SUSDEV21). The project’s purpose was to create the concept to suit the present Hong Kong and create plans for a user-friendly system that could give a basis for policies, allocation of resources, plans, and programmes.

In May 2005, the First Sustainable Development strategy of the Hong Kong government was Urban Living Space, which is up until now a challenge for the government. In 2003, there was an outbreak of SARS at Amoy Garden which prompted the government to review the building’s drainage systems, air ventilation and urban design. These considerations were incorporated in the new proposal strategy of Hong Kong (Government of Hong Kong, 2006).

Singapore

Singapore has a lot of improvement done in the infrastructure ever since the start of planning in the 1960's. In 1963, the city had experienced water functionality problems that made the government establish the national water agency, PUB that deals with the collection, distribution and reclamation of water in the city. The city created a water catchment area in the heart of the city which is called NEWater where wastewater is collected and treated to produce potable water. As of the moment it meets 30% of the city's water needs (Webb, 2012).

In Singapore, the city congestion has always been a problem to the city and as a response the government had to improve the transport infrastructure and car policy ownership. It established an auction and certificates of entitlements for car ownership and road tolls as well. The government introduced smart card innovations for the residents to pay for road tolls, bus travels, taxis, the metros and shopping (Webb, 2012). The city improved its railway system to attract the public to use public transportation. The city has the mass rapid system and the light rapid system that caters for the public (Encyclopedia of the Nations, 2014).

Sydney

In the beginning of 2000, Australia experienced drought across the nation where the government had to create desalination plants in NSW in order to alleviate the problem. Sydney desalination plant is powered by 100% renewable energy that is generated by wind farm in Bungendore. The plant can supply up to 250 million liters of water daily as it supplies 15% of the water in New South Wales.

Frankfurt

The Environmental crisis on greenhouse gas emissions has created a major impact to the city, on October 2008; the city had established a 110 KM² low emission zone in Frankfurt (Frankfurt Green City, 2014). To further improve the situation,

in the beginning of 2012, the city created an ordinance that vehicles entering the low emission zone must have a green badge on their windcreens. Any car does not have the sticker that passed through the emission zone will be fined €40 and have a penalty point on the drivers license. This is also a technique to promote the use of electric vehicles and make information more easily accessible. The government had different variations of electric vehicles including the electric bicycles ("Pedelects"), e-bikes (scooters), electric cars, electric delivery vans and electric buses (Frankfurt Green City, 2014).

6.4 Issues and Challenges

City	Issues and Challenges
New York, United States (NY)	<ul style="list-style-type: none"> • Growing Number of Homeless People • Increasing Demand in Housing • High Housing Costs • Climate Change
London, UK (LDN)	<ul style="list-style-type: none"> • Increasing Demand in Housing • Rising Poverty Rate • Reliance of Power on National Grid • Climate Change
Hong Kong, Hong Kong (HKG)	<ul style="list-style-type: none"> • Credit Expansion • Tight Housing Supply • Climate Change
Singapore, Singapore (SIN)	<ul style="list-style-type: none"> • Tall buildings at risk from Seismic Waves • Unemployment • Inadequate Public Housing • Growing inflation Rate • High Cost of Living
Sydney, Australia (SYD)	<ul style="list-style-type: none"> • Need new homes in existing suburbs • High Housing Costs
Frankfurt, Germany (FFT)	<ul style="list-style-type: none"> • High Cost of Living • Homelessness

Table 6-11 Summary of Issues and Challenges Facing the viewed cities

New York

New York faces a growing number of homeless people where the city has over 50,000 individuals currently residing in city shelters. The growing population becomes a threat to the city that an increase in housing is necessary. New construction of housing is insufficient to meet demand and the city also has a high cost of housing (City of New York). On top of that, according to the New York City Panel on Climate Change, the city will be experiencing an increase of average annual temperature by 2 to 3° Fahrenheit and 4 to 6.5° Fahrenheit by 2050. Sea Levels are also expected to rise by 4-10 inches in 2020 to 11-30 inches by 2050. Global Competitiveness is always a challenge to the city to sustain its position on top of the globe. Transportation is a challenge that also goes with the increasing population where the ridership of subways is at its highest in 60 years (PlanYC, 2014). New York also suffers from deteriorating infrastructure, the 6,362 miles of gas lines around the city is around 56 years old and more than half

of it is made up of unprotected steel, cast iron, corrosive and leak prone materials. Public housing towers dating back through the 1950s and public hospital buildings are also half a century old. Even subway signals are more than 50 years old.

London

London has been experiencing few issues; inadequate housing is one issue that the city has to address where real-estate prices are going up as the number for social rent is falling and high renting costs (Hill, 2013). As of the moment, GLA had estimated a need of 48,840 units per annum to address the problem (Arup, 2014). London has to improve its unemployment rate of 7%; it is estimated that one in three people in London is unemployed causing high level of debt in the city. Eight percent of households show that it is in arrears with bills and half of these owe around £500. Rising poverty is also an issue, unemployment and high debts has a negative effect on the amount of collected taxes that partially must contribute to the improvement of the city's infrastructure (Riley, 2011). London is heavily reliant on its supply for electricity and gas from the national grid making the residents vulnerable to price increase (Greater London Authority, 2014). There have been records of flooding around the country which makes London city exposed to harsh weather conditions (Arup, 2014).

Hong Kong

Hong Kong is currently experiencing credit expansion and tight housing supply which caused housing properties in the city to go higher and inflation rate to rise. In 2012, inflation rate in the country was 4.1%. It is getting hard for low and middle class earners to afford adequate housing (Forbes, 2014). An outbreak of the disease SARS (Severe Acute Respiratory Syndrome) is enough evidence that

the environment of the city is under pressure due to the growth of population and urban development accompanied by high consumption of energy and huge amount of waste generated (Government of Hong Kong, 2006). The population increase had also put stress on mobility where at the moment 90% of trips in Hong Kong are made through public transport, 36% of which are carried out by the railways. Since the city is trying to be green, adaptation of the rail is the best course of action to cut down greenhouse gas emissions from motor vehicles. There is need for more efficient cross-boundary transport; in 2006 there was an estimate of 219,000 Mobile Residents in the city and in 2036 the number is estimated to grow to 426,300 passengers which is more than double.

Singapore

Most people in the city live in high rise buildings and 77% of the country's surface is covered with built infrastructure. Based on the Earth Observatory of Singapore, these buildings are built on soft soil sites that are at risk of earthquakes if the quakes are of considerable duration. The city lies on 700 km from the Sumatran Mega thrust, which is a very active fault between the tectonic plates of Eurasia and Indo-Australia (Earth Observatory of Singapore, 2013). Although the nation has only 2% unemployment rate, the government needs to address the matter such as assigning the Economic Development Board to deal with the problem. Inadequate public housing is also another problem. The Housing and Development Board has been given the responsibility of resolving the matter (Trade Chakra, 2008). Its growing inflation rates pose a threat to the economy that the government is seeking to engage in economic restructuring to find ways to increase the income of low wage earners by giving its support to productivity improvements.

Sydney

Passenger volumes in Sydney are estimated to double in 2031 from 40 million to 80 million where accommodation can be a pressing challenge for the city. In terms of cargo freight, the container trade is estimated to reach 7 million containers, which is almost quadruple the amount in 2011. Both Sydney Airport and Port Botany have the capacity to accommodate most of the rapid growth in demand they face over the next 20 years, yet congestion of roads around the airport and the port is being experienced.

In terms of public transport around Sydney, the limited parking areas around the city gives constraints to private car owners and thus would increase demand for public transport. The rail system is congested, very slow and unreliable according to the Infrastructure NSW report. Housing supply shortage is another problem that the government is facing (Infrastructure NSW, 2012), Sydney faces the problems of high housing costs, which contribute to the poverty rate of the city (Wade, 2014).

Frankfurt

Same as the other cities, Frankfurt has to deal with the high costs of living (Arens, 2013). Gallus area, which is about five large lots in the city, was turned over to private investors and construction companies. It is around 2,100 new apartments and condominium. Even though there is a plan for this new housing, it is not guaranteed they would be affordable for people with low income (Arens, 2013). Some of the houses have been in existence since the 1970s and renovation is necessary to be deemed as adequate living environment (Albert Speer & Partner GmBH, 2014). Homelessness in Frankfurt is also a challenge to the government because of its increasing number. Based on reports, 2,450 people are registered

without a permanent place to live and homeless shelters can only take up to 1,450 people. Evictions on rented spaces are more than 90% due to unpaid rent. Dwindling supply of publicly supported apartments is another issue; in 2002; it has dropped from 160,000 to 120,000 units where there have been an estimate of 2,600 social apartments being privatized annually.

6.5 Lesson Learned

From the review of the six cities' infrastructure sectors, there are some lessons than can be learned in terms of strategic planning. The key challenges that cities face are demands for services that outstripped resources to provide them. Cities face growing challenges affecting infrastructure for transportation and transit, water, sewer, food – climate impacts with more severe weather, more unstable weather, issues of droughts, floods, snowpack, heat; a growing disparity between rich and poor and the strain on middle class families.

Addressing these challenges requires cities to take an integrated approach to strategic planning and management and work to improve local infrastructure so that it produces a range of benefits. For example, not only looking at moving more people to public transit options but also looking to reduce trips overall by building complete neighborhoods around transit stations that include diverse incomes.

Public services face unprecedented challenges. Rising demand, changing demographics and increasingly stretched finances mean that the choice for local authorities and public service providers will be faced with crisis if their strategic plans do not complement to the future. Future demand will not only outstrip current supply of housing, public transportation, and utilities, but is likely to

overwhelm public agencies with a set of needs that do not correspond to the service models of today, and that challenge the very basis of public services.

Governments should set out a long-term strategy covering the next few decades for infrastructure sector and use this strategy to inform decisions about investment priorities. Beside they need apply learning from previous projects to speed progress and improve value for money to all projects.

Moreover, the local governments should set out who is responsible for ensuring that benefits are realised, and how that work is coordinated; and work with industry and with other departments responsible for major infrastructure programmes to understand gaps in industry capacity, and put in place plans to manage any gaps to ensure all programmes can be delivered on schedule and within budget.

6.6 Summary

In this chapter, six global cities have been reviewed and compared in light of the study of Abu Dhabi Infrastructure Sector and the causes of strategic drift. The global cities that were studied have some different and similar characteristics from each other. Infrastructures planning and management across all the cities are similar. Each city has a general strategic plan or vision to create in the future and most of them range 20-50 years. All of the cities had provided and mapped out projections and assumptions in the future and prioritize their goals in infrastructure improvement. The improvements in infrastructure were mostly based on challenges that have risen from the past. The government of each city produced action plans to address these problems to create a better quality of life to their citizens. Mode of transport, water and land space were given priority by the

cities in order to improve mobility and business with other cities and countries. Environment preservation is one of the common criteria in the strategic plan of these cities. Promotion of Electronic vehicles, creation of power from renewable sources and wastewater treatment facilities were all being considered across the cities as strategic priorities to reduce greenhouse gas emissions.

Chapter 7: Methodology and Field Design

- 7.1 Introduction**
- 7.2 Research Philosophy**
- 7.3 Research Strategy**
- 7.4 Type of Research**
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- 7.7 Reliability, Validity and Generalizability**
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- 7.9 Research Aim, Objectives, Questions, and Hypotheses**
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Methodology and Field Design

7.1 Introduction

In the previous chapters, the narratives on strategic fit from the numerous genuinely diverse perspectives in the field were examined in detail and arguments relating to the need for conducting research in the Abu Dhabi infrastructure sector in the context of the stated research aim and research objectives of this study were made.

In this chapter, the complete methodology that underpins this research is fully discussed. There are many definitions for the term ‘research methodology’. Goddard and Melville (2007) state that it is the providing of answers to unanswered questions or exploring new areas; Imy and Rose (2005) see it as a logical and systematic search for new and useful information on a particular topic. They continue by expressing that Methodology is the systematic, theoretical analysis of the methods applied to a field of study and it typically encompasses concepts such as paradigm, theoretical model, phases and quantitative and/or qualitative techniques. They maintain that a methodology does not set out to provide solutions but rather it offers the theoretical underpinning for understanding which method, set of methods or best practices can be applied to a specific case.

Rajasekar et al (2013) go further and distinguish between the terms ‘research methods’ and ‘research methodology’. They state that research methods are the various procedures and schemes used in research and are all the methods used by a researcher during a research study. They are essentially planned, scientific and value-free and include theoretical procedures, experimental studies, numerical schemes, statistical approaches and so on. On the other hand, they maintain, that

research methodology is the systematic way to solve a problem; it is the method of studying how research is to be carried out. Thus, essentially it is the procedures by which researchers go about their work of describing, explaining and predicting phenomena. It can thus be said that research methods are the methods by which knowledge is gained.

Best (1977) in agreement with Clarke and Clarke (2004) reiterates that research is the systematic and objective analysis and recording of controlled observations that may lead to the development of generalizations, principles, theories and concepts, resulting in prediction for seeing and possibly ultimate control of events.

Greener (2008) in line with Rajasekar et al (2013) equally explains that that 'research methodology' is different from 'research methods' and although these two terms are often used interchangeably in the field, research methods are the methods by which to conduct research into an area of interest and research methodology involves the methods by which to proceed in a research. He clarifies that research methods involve processes such as experiments, tests and surveys and research methodology involves the learning of the various techniques that can be used in the conduct of research and in the conduct of tests, experiments and surveys. Consequently, she maintains that research methods are about finding solutions to research problems and research methodology is about employing the correct procedures to finding out possible solutions to such research problems.

Saunders et al (2012) and in agreement with Bryman and Bell (2011) also concur and state that the term 'methods' includes the diverse techniques and procedures used to collect and analyse data such as questionnaires, observations and interviews both from a quantitative and qualitative viewpoints and the term

‘methodology’ comprises the theory of how research should be undertaken in order to arrive to informed, credible and valid conclusions.

Consequently, and in line with the above, in this chapter the particular methodology and specific research methods associated with this research are discussed at length to ensure clarity and transparency of the data collection processes in the field design of this research. In doing so, these aspects are discussed both philosophically and specifically whilst justifying their relevance for this type of an examination.

7.2 Research Philosophy

Different individuals see the world in different ways. So is the case in research and different researchers hold different philosophical standpoints, or paradigms, as most preferred when conducting research.

As one of the most famous research philosophies, pragmatism argues that the most important determinant of the research philosophy that is adopted in a research study is the research question(s), where one may be more appropriate than the other for answering particular questions. Moreover, if the research question does not suggest unambiguously that either a positivist or interpretivist philosophy is adopted, this confirms the pragmatist’s view that it is perfectly possible to work with the varied research philosophies (Johnson et al, 2007). Consequently, one philosophy may be more suitable than the other for each individual research question (Bryman and Bell, 2011; Bryman, 2012; Saunders et al, 2012).

Thus the pragmatic approach to science involves using the method which appears best suited to the research problem and not getting caught up in philosophical

debates about which is the best approach (Bryman and Bell, 2011; Bryman, 2012; Saunders et al, 2012). Pragmatic researchers, therefore, grant themselves the freedom to use any of the methods, techniques and procedures typically associated with quantitative or qualitative research. They recognise that every method has its limitations and that the different approaches can be complementary to each other (Saunders, 2012).

Tashakkori and Teddlie (1998) contend that pragmatism is intuitively appealing, largely because it avoids the researcher engaging in what they see as rather pointless debates about such concepts as truth and reality. In their view the researcher should study what interests them and what is of value to them, study in the different ways in which they deem appropriate, and use the results in ways that can bring about positive consequences within their value system.

Given the arguments in the field about the key characteristics of the varied research philosophies, the pragmatist approach is, therefore, deemed to be the most appropriate research paradigm for this study since it enables a mixed methods approach.

Johnson et al (2007) have reviewed in detail diverse articles discussing the importance of mixed methods in research and have concluded (page 129) that mixed methods research is an intellectual and practical synthesis based on qualitative and quantitative research; it is the third methodological or research paradigm (along with qualitative and quantitative research). It recognises the importance of traditional quantitative and qualitative research but also offers a powerful third paradigm choice that often provides the most informative, complete, balanced, and useful research results. Mixed methods research is the

research paradigm that (a) partners with the philosophy of pragmatism; (b) follows the logic of mixed methods research (including the logic of the fundamental principle and any other useful logics imported from qualitative or quantitative research that are helpful for producing defensible and usable research findings); (c) relies on qualitative and quantitative viewpoints, data collection, analysis, and inference techniques combined according to the logic of mixed methods research to address one's research question(s); and (d) is cognizant, appreciative, and inclusive of local and broader sociopolitical realities, resources, and needs.

Johnson et al (2007) and in agreement with Saunders et al (2012) maintain that the mixed methods research paradigm offers an important approach for generating important research questions and providing warranted answers to those questions. This type of research should be used when the nexus of contingencies in a situation, in relation to one's research question(s), suggests that mixed methods research is likely to provide superior research findings and outcomes.

Consequently, the research paradigm selected for this research study is that of the pragmatist approach and subsequently the key methodology employed throughout this research is that of the mixed methods.

7.3 Research Strategy

Research can be classified in many different ways on the basis of the methodology employed by the research study; for example, the type of knowledge that it generates, the user group or the audience of the study, the type of research problem that it investigates and so on. Some research studies can be distinguished from their quantitative and/or qualitative approach to data collection and analysis.

Others can be seen as experimental or non-experimental studies and so on. However, Babbie (2007) states that a research can be classified either as purposive, or exploratory, or formulative, or descriptive, or explanatory.

Saunders et al (2012) also agree and further state that the exploratory research method is conducted for issues that are not clearly defined. Therefore the objective of exploratory research is to gather preliminary information that helps to define problems and suggest hypotheses. This method helps in identifying the best data collection method, selection of subjects and the best research design. In exploratory research, the researcher explores a setting or a social phenomenon. Some descriptive or explanatory studies begin with explorative research criteria so that they can eventually be define better. Consequently, exploratory work provides the necessary background information needed in order to plan descriptive or explanatory research (Bryman and Bell, 2011).

The exploratory research method is basically adjoined with secondary research such as the reviewing of literature data, qualitative approaches such as informal discussions with participants and more formal approaches such as in-depth interviews, focus groups, projective methods, case studies or pilot studies (Saunders et al, 2012). All these tactics provide ways of gaining information making valuable insights to the researcher. The necessity and the main advantage of an exploratory-based research is to gain more experience and to have information helps design relevant hypothesis to conduct an in-depth investigation on the matter. Hence conducting an exploratory research helps eliminate issues that may hinder the development of relevant hypotheses (Saunders et al, 2012; Shields and Rangarjan, 2013).

The results achieved from an exploratory research can provide a significant insight into a given situation. In doing so, there are four types of exploratory data collection; literature survey, in-depth interviews, focused groups and case analysis.

On the other hand, the objective of the descriptive research method, which is very common in business and other aspects in life, is to describe things as the name suggests. For example, market potential for a product or the demographics and attitudes of consumers who buy that product, characteristics of certain groups and determination of relationships between variables. This method can be used to accomplish a wide variety of research objectives. The design in descriptive method is very different to that of the exploratory method; exploratory methods need to be flexible whereas descriptive methods require clear specifications of who, what, when, where, why, and how in the research variables (Saunders et al, 2012; Shields and Rangarjan, 2013).

In the explanatory research method, the researcher develops hypothesis before collecting any data. In this case, the researcher begins with the ideas of possible causes of the social phenomena under investigation. Generally this method tests the hypotheses based on a cause and effects type of a relationship for a particular issue. In this method, there can be several variables which can cause an issue. If the objective is to find the effect on a certain variable to the issue, explanatory research must be carried out. When implementing such a method, it is important to hold the variable that is assumed to cause the change in the other variable(s) and measure the changes in the other variable(s) (Saunders et al, 2012; Shields and Rangarjan, 2013).

A confirmatory research is a method that is used to testing a hypothesis. This method can be used to simultaneously test different hypotheses, which collectively develops the measurement model. In this case, indicators and at least two variables are necessary for developing most measurement models. Variations of the scores of variables are allocated to two main sources; the measurement error and the latent variable. The measurement of the latent variables is not observed but they are evaluated based on their common nature among the varied indicators. The measurement error can be defined as the variability of the indicators, which cannot be added to the latent variables. Consequently, this method can also be used to evaluate the reliability and validity of the factors selected for the model (Shields and Rangarjan, 2013).

Consequently, given the key characteristics of the various research strategies - and in line with the spirit of mixed methods as argued earlier, this research employs a mixed methods approach for investigating the particular issues identified in this study, as illustrated further below in the form of research objectives, hypotheses, and research questions.

7.4 Type of Research

The type of research relates to the time span, or the time horizon, that the research is conducted and there are two such types; longitudinal research and cross sectional research. Longitudinal research requires data to be collected over a long period of time, even if it is retrospectively, and is used to understand the relationship between variables that are not fundamentally interrelated. For example, social changes can only be understood by a longitudinal research where analysis of the changing conditions and events can be followed over time to understand the change agents. A longitudinal study is correlational research which

involves repeated observations of the same variables over long periods of time; often many decades. Hence, it is a type of observational study. Longitudinal studies are often used in psychology to study developmental trends across the life span, and in sociology to study life events throughout lifetimes or generations (Wilson, 2010; Saunders et al, 2012; Bryman and Bell, 2011; Shields and Rangarjan, 2013).

Cross sectional research, on the other hand, involves a far shorter time span. For example, collecting data within a few weeks and/or ranging to a few months. It is thus as if, it is a 'snapshot' in time. Clearly, the major advantage of this research type is the fast operationalization of research in the field and the consequent cost effectiveness. Hence Cross-sectional studies (also known as cross-sectional analyses, transversal studies, prevalence study) are one type of observational study that involves data collection from a population, or a representative subset, at one specific point in time (Schmidt and Kohlimann, 2008; Saunders et al, 2012).

The Time Horizon of this Study

Given the time constraints involved in an academic research as this one, it is imperative to collect the targeted data in a relatively short period of time. Consequently, it was intended to collect data for this study within a 4-5 month period – though allowances were made when delays are encountered in the process. Nevertheless, by default, this research falls in the realms of a cross sectional study.

7.5 Sampling and Data Collection Mechanisms

In this study, data are collected from two different respondent groups in the area.

Given that the infrastructure sector of Abu Dhabi is centralized, the first group is the senior management of the overall organisation.

Specifically it includes all heads and their deputies in the Infrastructure Sector of Abu Dhabi, in order to ensure that the opinions of all top level individuals are taken into consideration. Purposive sampling has been employed for this particular group of respondents in an effort to ensure that all relevant individuals are surveyed. Data were collected using qualitative face-to-face semi-structured interviews with open and semi-opened questions. It is anticipated that 12 respondents participate in the process.

Given that this study investigates the factors that cause strategic drift in the governmental agencies of the Abu Dhabi infrastructure sector in order to minimise identified gaps and achieve the desired strategic fit, an appropriate method of collecting such data is through a semi-structured interview. This is also in line with common research practice in the field (Johnson et al, 2007; Wilson, 2010; Bryman, 2012; Saunders et al, 2012). A postal questionnaire method was not considered a viable alternative because it is unsuitable for this kind of research, which requires face-to-face contact with the interviewee in order to elicit qualitative and informed data. From the interviewing methods, a fully structured approach was also excluded, because it constrains the interviewing process to a narrow range of specific questions and answers, and does not allow the respondents to talk freely about their experiences and understanding of the topic. Totally unstructured methods have also been excluded in order to avoid the risk of

missing important issues at the interview and consequently compromising the context of this research study.

Thus, the only suitable method left is that of the semi-structured interview approach with open-ended questions. Such a technique retains the informality of the unstructured method whilst it enables standardisation and comparison of findings to take place. The process also enables the interviewee to feel relaxed and encourages fuller and more genuine responses that potentially capture better the respondent's unique perspective of the issue under investigation. Equally important, in a semi-structured interviewing process, set questions can be adapted on the day to reflect the participant's style and thoughts and encourage better the general flow of answers. Such an approach ensures greater consistency, in relation to other open-ended interviewing methods, and eliminates or greatly reduces researcher bias.

The second target group consists of individuals that work in the diverse agencies of the different sub-sectors of the infrastructure sector, as illustrated in figure 7-2.

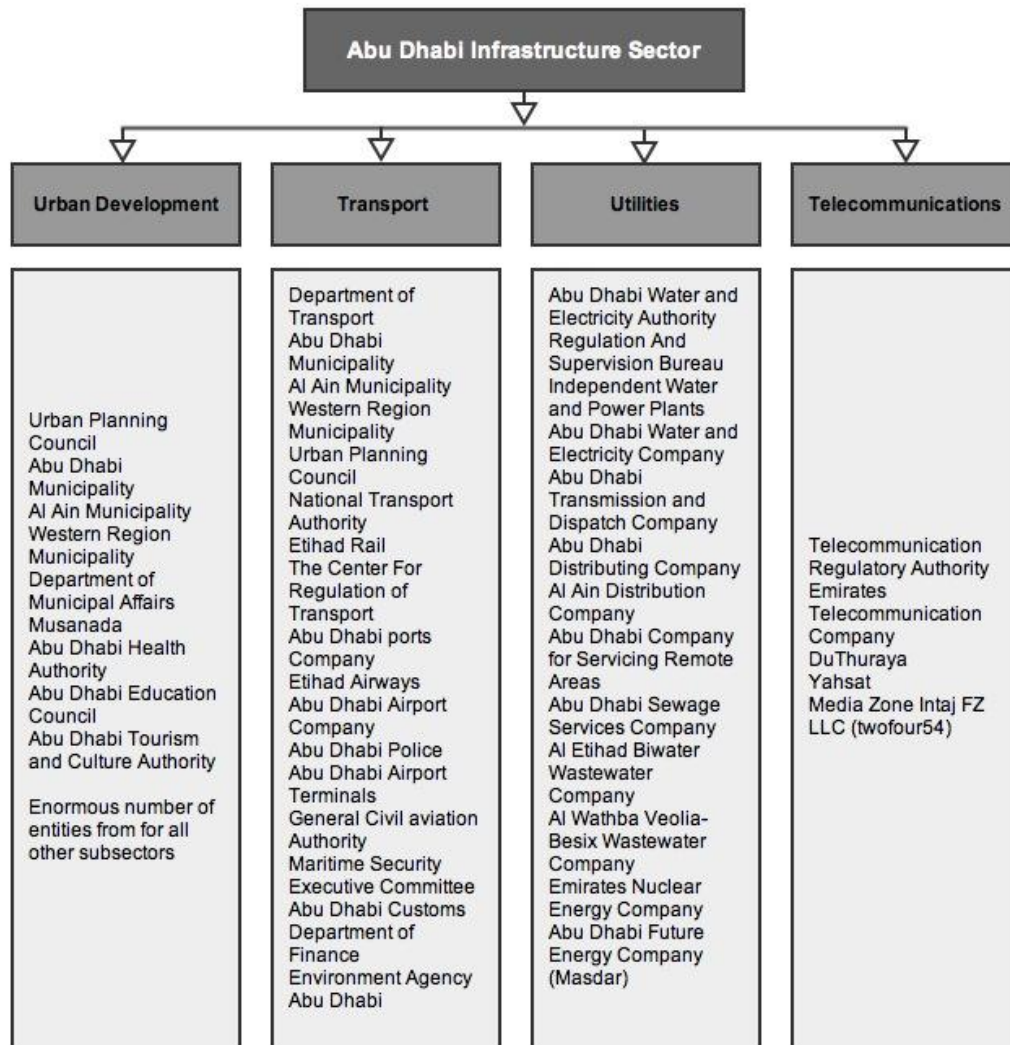


Figure 7-1 The Abu Dhabi Infrastructure Sector's Subsectors Agencies
 (Source: GSADEC, 2014)

However, the Abu Dhabi infrastructure sector employs many thousands of people. Nevertheless, given that, there are a number of distinct agencies in the sector; Stratified Random Sampling has been selected in order to ensure the most accurate representation in the sampling process of the diverse population in the area. In this type of sampling, the entire population is divided into mutually exclusive segments based on some categories of variables of interest pertaining to the research and involves sampling each of these subsets in a random manner. Clearly, the advantage of this kind of sampling is that the ultimate sample selected is representative of the entire population. In this case, the different agencies, by

default, present the different subsets required for this type of sampling. Identification of respondents in the varied sectors are carried out via the centralized payroll system in order to ensure accuracy. No particular problems were anticipated in doing that. Once the particular respondent groups had been identified random sampling took place accordingly. Respondents that work in specific agencies were not be especially looked for but rather the process of respondent selection was based on the many agencies in each of the sub-sectors, in order to keep the respondent selection at the sector level rather than at the agency level.

Data from the responded group is collected via a postal questionnaire. In order to ensure the statistical accuracy of the sample it was assumed that over 5,000 individuals are employed in the sector - in fact, this figure is very conservative. Nevertheless, bearing in mind that a confidence interval of 5% (Fernandes, 2009; Johnson and Bhattachatyaa, 2010) and a confidence level of 95% (Saunders et al, 2012) needs to be achieved 192 individuals must make the overall sample. However, given that there are four specific sub-sectors in the infrastructure sector, it was decided for reasons of simplicity to round the figure to 200 questionnaires and send out 50 questionnaires in each of the sub-sectors.

Given the size of the population in the infrastructure sector and the wide dispersion of the individual agencies a postal questionnaire is the only viable way to collect data. Consequently, data is collected via a postal survey questionnaire with closed-ended questions.

In order to ensure that both the interview-based questionnaire and the postal survey questionnaire used are free from errors they were tested twice for

effectiveness. The first time round a small number of individuals were shown the questionnaires and asked to make comments as to the ‘feel’ and ‘look’ of these. In addition, they were asked to make comments to the particular questions and if they understand the line of questioning. Feedback then was incorporated in order to ensure that questions are articulated and presented effectively.

The second time round the improved questionnaires were piloted on a small scale ‘dummy’ respondents by inviting them to participate in either the interview process and/or complete the postal questionnaire. The individuals selected for this process are not be members of the real sample of this research study. Feedback received from this trial was incorporated in the final version of the questionnaires - all in effort of ensuring that participants on the day are able to answer the given questions in a timely manner and without any further clarifications.

It is anticipated that individual interviews will last for about an hour each. The time taken to complete a postal questionnaire it is anticipated to be about 20 minutes. Interviews were recorded in order to enable the development of transcripts at a later time. However, when particular respondents requested for the interview not to be recorded and/or were seeing to be feeling uneasy about it, the recorder was turned off and key notes were taken instead in order to ensure that the respondent was providing answers to the given questions without any personal concerns over anonymity and confidentiality.

Both the interview-based questionnaire and the postal questionnaire were written in both English and Arabic. The English version was used to illustrate the questionnaires in this thesis and the Arabic was used in the field research because not necessarily individual respondents are able to read and speak in English

and/or have a sufficient command of the language. Hence, the interviews were also be conducted in Arabic in order to ensure clear understanding and articulation. Transcripts were then translated into English in order to enable the analysis and discussion of findings in this thesis.

7.6 Data Analysis

It follows logically from the arguments made earlier about employing a mixed methods approach in this study that both quantitative and qualitative techniques for analysis were also employed to analyse the data collected.

A clear feature of qualitative data is the richness and holism and the strong potential for revealing thick descriptions that are vivid, nested in a real context, and have a ring of truth that has a strong impact on the reader (Miles and Huberman, 1994). On the other hand, virtually all studies involve some numerical data that can be usefully quantified and, as such, quantification should be a part of any research strategy (Saunders *et al*, 2012).

Consequently, both qualitative and quantitative data are collected in this research although, given the nature of this research, the emphasis is on qualitative research for the reasons argued earlier. Nevertheless, qualitative data collected were subjected to content analysis. Quantitative data collected were analysed using the latest version of the Statistical Package for Social Sciences (SPSS).

7.7 Reliability, Validity and Generalizability

Whenever a measure is used as part of the data collection process, the validity and reliability of that measure is important - and broadly speaking, validity indicates the soundness of the research (Saunders *et al*, 2012).

However, the notions of reliability and validity Golafshani (2003) and Bashir et al (2009) argue that are mostly associated with sole quantitative research paradigms and are not as straight forward in qualitative research paradigms. Winter (2000) and in agreement with Bashir et al (2009), state that quantitative researchers attempt to disassociate themselves as much as possible from the research process whereas qualitative researchers embrace their involvement in their research.

Reliability and Validity are issues that have been discussed at great length in the field (Saunders et al, 2012). Specifically, reliability is about the replicability of the process of research adopted and the accuracy of the procedures and research techniques. Validity, on the other hand, is how successfully the research has actually achieved what was set out to achieve (Golafshani, 2003; Bryman and Bell, 2011).

Joppe (2000) articulates that reliability is the extent to which results are consistent over time and the accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable. In addition, he continues that validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are.

Nevertheless, both qualitative and quantitative research paradigms aim at the same result; that is, finding the truth (Bashir et al, 2009). Hence in a research project it is expected that results are reliable and valid and that can be generalized for the benefit of all audiences. In addition, it should enable replication and transferability – especially, when a research study has employed a case study

approach – and irrespectively of the intricacies of either reliability or validity, it is clearly expected that both qualitative and quantitative researchers demonstrate that their studies are credible (Patton, 2011; Bryman, 2012; Saunders et al, 2012).

Consequently, given that the methodology in any type of an investigation is the glue that holds the research study together, it is hoped that through the methodological techniques selected in this field design the notions of reliability, validity and consequent generalizability are demonstrated sufficiently in the context of this research.

Going the extra mile in this research to validate the qualitative and quantitative data, a focus group was conducted. The focus group included 10 employees from Abu Dhabi Infrastructure Sector entities where the focus group discussion guide was designed based on the findings of the data that wrer presented to enable participants to provide their feedback.

7.8 The Development and Validation of Framework

The empirical findings from the previous stages of the research study and aspects from critical review of literature were taken into consideration in the development of the framework. The developed framework uses government, society and private sector as dimensions of any government strategy formation and execution.

The developed framework was validated with 9 professionals in top and middle management positions who had over 15 years of work experience in Abu Dhabi Infrastructure Sector. The participants had been informed by e-mail about the objectives of the research study and aim of the framework. Furthermore, attached to the email was the developed framework. This e-mail was sent one week prior to the focus group session so as to create an opportunity for the participants to

review the developed framework. The selected participants were required to provide comments on the developed framework. The focus group lasted about 45 minutes and it was recorded with permission and later transcribed. Content analysis was employed as part of the analysis of the focus group.

7.9 Research Aim, Objectives, Questions, and Hypotheses

Finally, in order to complete this chapter the research aim, research objectives, key research questions and hypotheses are illustrated. Though the research aim and objectives also appear at the introductory chapter of this thesis, it is perceived that this particular repetition is worthwhile since these now are accompanied by their respective key research questions and associated hypotheses, all in effort of ensuring an as complete and holistic approach to the field design and data collection processes.

Aim

The principal aim of this research is to investigate the factors that cause strategic drift in the governmental agencies of the Abu Dhabi infrastructure sector in order to minimise identified gaps and achieve the desired strategic fit.

Objectives

To operationalise the above aim, three specific objectives have been devised that enable a logical approach to problem solving. The objectives aim to find answers to the causes of strategic gaps between the government and its agencies. Once the causes have been identified, measures will then be taken to minimise gaps and to finally improve overall strategy development and management of the government and its agencies.

Objective One: To examine the factors that cause strategic drift in the diverse agencies of Abu Dhabi's infrastructure sector.

Objective Two: To determine ways, in line with government policy and agency capabilities, in order to minimise organisational and strategic gaps.

Objective Three: To suggest agency-wide strategies for improving resources, systems, processes and overall practices in order to develop capabilities and competences and so increase performance and achieve the desired level of strategic fit.

Key Research Questions and Associated Hypotheses

In the process of pursuing the above objectives, relevant research questions and associated hypotheses have also been developed. It is acknowledged that the research questions and their hypotheses are, for the most part, based on objective one. Objective two is met from respondents' answers, given the diverse questioning of both the interview-based and postal survey questionnaires. Objective three is met via the use of the relevant theories as a result of respondent answers from the previous objectives.

No.	Questions	Hypotheses
1	Are the strategies developed by the Abu Dhabi government appropriate and realistic in line with environmental conditions?	1. Strategic drift can occur when strategic objectives are not clear
2	Are communications in the government structure open and free flowing?	2. Ineffective top-down communications can cause strategic drift
3	Are leadership and management practiced effectively throughout the governmental structure?	3. Lack of management commitment can cause strategic drift 4. Unsupportive organisational culture can contribute towards strategic drift
4	Is change embraced effectively by the various government agencies or are they subject to organisational inertia?	5. Unsupportive organisational culture creates organisational inertia 6. Organisational inertia disables effective organisational change 7. Lack of organisational change leads to strategic drift

Table 7-1 Research questions and hypotheses
(Source: The Author, 2015)

7.10 Summary

In this chapter the entire field design and data collection processes for this research study were discussed at length in relation to the stated research aim and research objectives in what it is hoped a clear and transparent manner.

It is believed that all aspects have been argued accordingly and that they are in line with the narratives in the field of the diverse concepts covered in this study – both in terms of theoretical notions as well as in terms of methodological aspects.

It is thus hoped that the overall methodology of this study has been conveyed effectively and in detail - and that the research context and direction of this study are both clear and straightforward.

Chapter 8: Results, Analysis, and Discussion

- 8.1 Introduction**
- 8.2 Quantitative Data Analysis**
 - 8.2.1 Strategic Drift and Its Causes**
 - 8.2.2 Organisational Cultural Issues Leading to Strategic Drift**
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Results, Analysis, and Findings

8.1 Introduction

This chapter is dedicated to the analysis of the obtained research data and reporting of research results. Hence, in this section of the chapter is devoted to reiteration of the key research questions and objectives as a reminder of the study's scope and focus. The next section follows to analyse the quantitative portion of research findings – the results of 200 surveys distributed to the middle management position employees in the Abu Dhabi Infrastructure Sector agencies. This section includes descriptive statistics and statistical t-test analysis results. Further, qualitative findings are presented in the following section, containing content analysis of 12 interviews conducted with top management officials in the Abu Dhabi Infrastructure Sector. This section is followed by a discussion section that correlates the findings of this study with prior research findings presented in the literature review of this research. Subsequent validation of findings is accomplished by means of analysing the focus group discussion of qualitative and quantitative findings of previous research stages with 10 employees of various Abu Dhabi infrastructure entities. In this section, respondents were asked to provide feedback on the research findings and to comment upon the obtained data, thus reflecting on the overall research outcomes. The concluding section of this chapter provides a summative review of the research findings and summarizes research limitations. The findings were taken into consideration in the development of the framework in relation to strategic management as the frame was validated through the conduction of focus group discussion with 9 employees from the sector.

As it has already been stated in the introductory chapter of this study, the primary aim of this dissertation was to examine factors causing a strategic drift in the governmental agencies of the Abu Dhabi infrastructure sector, and to subsequently minimise the identified gaps for achievement of the desired strategic fit. To fit this scope of research aims and objectives, the following set of questions was formulated:

1. Are the strategies developed by the Abu Dhabi government appropriate and realistic in line with environmental conditions?
2. Are communications in the government structure open and free flowing?
3. Are leadership and management practiced effectively throughout the governmental structure?
4. Is change embraced effectively by the various government agencies or are they subject to organisational inertia?

The study was conducted because of the abundance of research literature dedicated to the importance of strategic fit in every organisation, and the richness of practical evidence of its lack in the governmental agencies in Abu Dhabi. At present, the Abu Dhabi public sector agencies are unable to respond to public demands effectively, and to involve strategic planning and development mechanisms. These government sector agents lack focus, commitment, and organisational flexibility, which leads them to a state of strategic drift, and subsequently distances them from full realization of their potential and performance targets. In connection with these strategic inconsistencies, there is a need to identify factors causing such a severe strategic drift of Abu Dhabi agencies, and to propose efficient solutions for their elimination for achievement

of full-scale functioning of the Abu Dhabi public sector in accordance with strategic goals and public needs.

Since the research strategy selected for this study employed the phenomenology paradigm and the mixed method research design, analysis of each portion of data was different, suited to the very nature of data. Quantitative data obtained via postal questionnaires was analysed quantitatively, with presentation of key descriptive statistics and t-test comparing some of the most essential groups' answers. Qualitative data collected with the help of interviews and focus group discussion was analysed by means of in-depth content analysis to present overarching themes and ideas.

8.2 Quantitative Data Analysis

The present section of the results chapter is dedicated to quantitative data analysis for surveys distributed to 200 persons occupying middle management positions in the Abu Dhabi Infrastructure Sector agencies. 183 completed surveys were received, resulting in the 91.5% response rate. A response rate higher than 90% is a highly positive outcome of a survey, so the obtained survey dataset may be considered totally valid. Taking into account the specifics of survey questions, they are analysed in three sections: general data about assessment of strategic drift/fit and efficiency of various aspects of Abu Dhabi infrastructure sector's operations, discussion of organisational cultural issues contributing to the state of strategic drift, and a brief discussion of reasons for the organisational inertia observed in the sector, as well as its reasons and causes. Each discussion is substantiated by relevant statistical illustrations, tables, and diagrams with quantitative survey data.

8.2.1 Strategic Drift and Its Causes

There were five major categories of questions in this section focusing on the assessment of the strategic fit and drift in the Abu Dhabi infrastructure sector, and evaluation of the drift's causes. The respondents were first asked to identify the internal or external nature of strategic fit, to evaluate the successfulness of alignment of resources and capabilities with the external environmental conditions in this sector, and to rate the causes of strategic drift. Moreover, the respondents were asked to assess the efficiency of strategies and strategic objectives within the Abu Dhabi Infrastructure Sector, and to determine whether communication within these public sector entities is effective and well-planned to make this organisation achieve a strategic fit. Detailed descriptive statistics about the respondents' rankings on these five questions may be seen in Table 8-1.

Questions	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	Mean	Median	SD
Environment								
Strategic fit has an effect on external environmental performance	58 31.69%	87 47.5%	9 4.92%	22 12.0%	7 13.8%	3.91	4	1.09
Strategic fit has an effect on internal environmental performance	92 50.27%	67 36.6%	15 8.2%	9 4.92%	0 0%	4.33	5	0.81
The Abu Dhabi infrastructure sector has done a good job to match resources and external environmental conditions	55 30.05%	43 23.5%	4 2.19%	64 34.97%	17 9.29%	3.3	4	1.44
Reasons for strategic drift								
Organisational structure	82 44.81%	41 22.4%	3 1.64%	35 19.13%	22 12.02%	3.69	4	1.49

Process	29 15.85%	14 7.65%	69 37.7%	39 21.31%	32 17.49%	2.83	3	1.27
Systems	31 16.94%	21 11.48%	67 36.61%	17 9.29%	47 25.68%	2.85	3	1.38
Culture	81 44.26%	58 31.69%	13 7.1%	24 13.11%	7 3.83%	3.99	4	1.18
Communication	57 31.15%	49 26.78%	43 23.5%	12 6.56%	22 12.02%	3.58	4	1.31
Overall practices	29 15.85%	32 17.49%	36 19.67%	42 22.95%	44 24.04%	2.78	3	1.4
Strategies								
Strategies developed by the government are realistic and appropriate to environmental conditions	58 31.69%	53 28.96%	16 8.74%	30 16.39%	26 14.21%	3.48	4	1.44
Strategic objectives are set clearly for all stakeholders	27 14.75%	24 13.11%	24 13.11%	41 22.40%	67 36.61%	2.47	2	1.46
Communications								
Communications are open and free flowing	31 16.94%	28 15.3%	31 16.94%	39 21.31%	54 29.51%	2.69	2	1.46
There is an effective top-down communication	22 12.02%	11 6.01%	18 9.84%	64 34.97%	68 37.16%	2.21	2	1.33

Table 8-1 Descriptive Statistics for Strategic Fit/Drift and Its Causes

As it can be seen from Table 8-1, the majority of respondents agreed that strategic fit of an organisation affects both its internal and external performance. Overall, 79.23% of respondents agreed and strongly agreed about its impact on external environmental performance of the entity, and even more – 86.88% - recognised its impact on the internal environmental performance. Notably, more than a half of respondents assessed the strategic fit of the Abu Dhabi infrastructure sector quite positively – 30% strongly agreed that it has managed to achieve a strategic fit, while 23.5%, almost a quarter of the sample, agreed to that fact. Nevertheless, one-third of the sample, 34.97%, still disagreed with the statement, and almost

10% strongly disagreed with that idea, which shows that there is a lack of consensus regarding attainment of strategic fit by the Abu Dhabi Infrastructure Sector.

Interesting distribution of responses was observed regarding the question of reasons for the strategic drift; here, the opinions of respondents divided, which is illustrated in Figure 8-1. As it comes from the presented data, the majority of respondents supported the fact that organisational structure and culture most frequently serve as the causes for a drift (44.81% strongly agreed on the former, and 44.26% - on the latter). Communications were also largely found to be guilty of the occurrence of strategic drift – the cumulative percentage for those who agreed and strongly agreed with the statement was 57.93%, higher than a half of all respondents. Notably, the most rarely cited causes for the occurrence of a strategic drift turned out to be overall practices (46.99% either disagreed or strongly disagreed with that statement) and processes (showing the cumulative percentage of disagreeing respondents of 38.8%) – see Figure 8-1.

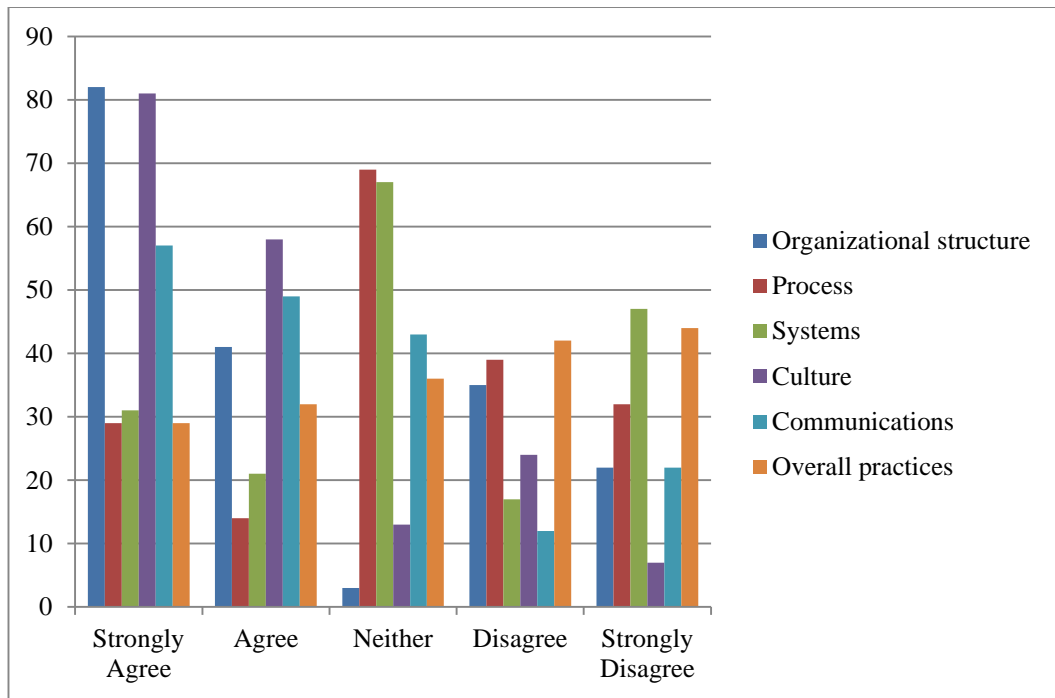


Figure 8-1 Causes of Strategic Drift

Hence, as it comes from the presented assessment of causes of the strategic drift, the majority of middle-level managers in the Abu Dhabi infrastructure sector recognised the inappropriate organisational structure, culture, and inefficient communications as the core causes for the strategic drift, which suggests the need for paying closer attention to these aspects of public sector entities' functioning for the sake of optimizing operations and attaining the fair level of strategic fit of the organisation.

Proceeding to a close analysis of the role of strategy and communication in the strategic drift, it has been identified that 60.65% of respondents agreed or strongly agreed that strategies developed by the government are realistic and appropriate, while 59% evaluated strategies as not set clearly for all stakeholders, which again brings about the problem of communication – while strategies are realistic, they are improperly communicated and pursued, which results in the strategic drift outcomes. To test that assumption, respondents were asked about

communication; only 32% of respondents agreed that communication in the Abu Dhabi infrastructure sector is open and free-flowing, while 50.82% disagreed with that statement. In terms of efficiency of top-down communication, even more respondents assessed it very sceptically; 72.13% evaluated the efficiency of top-down communication in this public sector entity poorly, while only 12% of the sample strongly agreed on its efficiency. These findings suggest that there is indeed a serious problem with communication of strategic vision and objectives in the Abu Dhabi Infrastructure Sector, which further causes a wider range of problems, inefficiencies, gaps, etc., finally resulting in a major strategic drift.

Another statistical test was undertaken to test the relationship between respondents' rankings of strategic and communication issues in terms of affecting the occurrence of strategic drift in the Abu Dhabi infrastructure sector. Correlation analysis was performed with four questions relating to the discussed assessments – see Table 8-2.

Questions	Correlations	Strategic objectives are set clearly for all stakeholders	Communications are open and free flowing	There is an effective top-down communication
Strategies developed by the government are realistic and appropriate to environmental conditions	Pearson Coefficient	-.044	-.060	-.090
	Sig. (2-tailed)	.550	.418	.227
Strategic objectives are set clearly for all stakeholders	Pearson Coefficient	-	.047	-.107
	Sig. (2-tailed)	-	.529	.148
Communications are open and free flowing	Pearson Coefficient	-	1.000	.011
	Sig. (2-tailed)	-	-	.883

Table 8-2 Correlation for Communication and Strategy Rankings

As the presented Spearman's correlation analysis shows, there is no statistically significant correlation between the answers to questions, which suggests that the respondents of this sample do not associated these three aspects with each other, and assess them in a different way. Hence, further research may be required to investigate a connection of these contributors to strategic fit or drift.

8.2.2 Organisational Cultural Issues Leading to Strategic Drift

The second section of research interest in this questionnaire was an inquiry about organisational cultural issues that lead the public sector organisations in Abu Dhabi to a strategic drift. Based on the literature analysis conducted in prior chapters, such aspects as leadership, organisational culture, and organisational structure/processes/activities are generally regarded as the key cultural issues on which the incidence of strategic drift occurs. Hence, these three aspects have been tested in this study as well. Speaking about the social and strategic influence of leadership on accomplishment of organisational objectives, the majority of respondents strongly disagreed or disagreed with the fact that leadership and management are effective in the Abu Dhabi organisational structure, and that management is committed to governmental plans and objectives on various levels of the public sector entities' functioning. From this estimate, it is evident that 67.76% of respondents strongly disagreed or disagreed with the first statement about leadership, and 71.04% disagreed and strongly disagreed with the second one about the management commitment.

Questions	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	Mean	Median	SD
Leadership and management are practiced effectively	24 13.11%	32 17.49%	3 1.64%	52 28.42%	72 39.34%	2.37	2.0	1.47

throughout the government structure								
There is management commitment to the government plans and objectives at various levels	18 9.84%	31 16.94%	4 2.19%	49 26.78%	81 44.26%	2.21	2.0	1.41

Table 8-3 Leadership Assessment in the Abu Dhabi Infrastructure Sector

However, it is still impossible to state that the sample estimated the work of leadership and management in the Abu Dhabi infrastructure sector unanimously as negative; it is necessary to keep in mind that 30.6% of the sample agreed or strongly agreed with the statement that leadership and management are effective, while 26.78% agreed or strongly agreed with the second statement – see Table 8-3. The presented data allows suggesting that the overall negative estimate of the effectiveness of leadership and management is preconditioned mainly by the fact that the middle management level-workers were questioned within this study, and they possess the first-hand knowledge of leadership and management practices popular in their workplace.

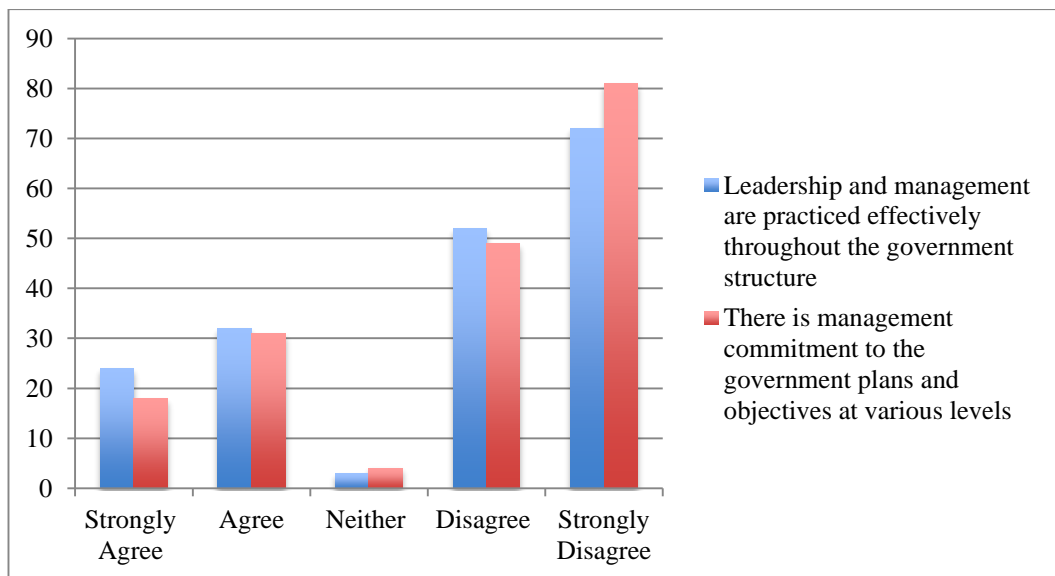


Figure 8-2 Estimates of Leadership and Management Performance

Since almost two-thirds of the sample voiced some negative estimates of the work and performance of the leaders and managers employed in the infrastructure

sector, such results suggest that there are some systematic problems in this aspect. However, both statements found almost identical distribution of answers among respondents, which may be seen from Figure 8-2. After analysing the leadership and management dimensions of the Abu Dhabi infrastructure sector, it was touched upon organisational culture and readiness to change embedded in this public sector entities. In this section of the survey, respondents were asked to identify whether the overall government culture is supportive towards its employees, and whether change is effectively embraced via the Abu Dhabi infrastructure sector's organisational culture. Distribution of answers to the first question can be seen in Figure 8-3.

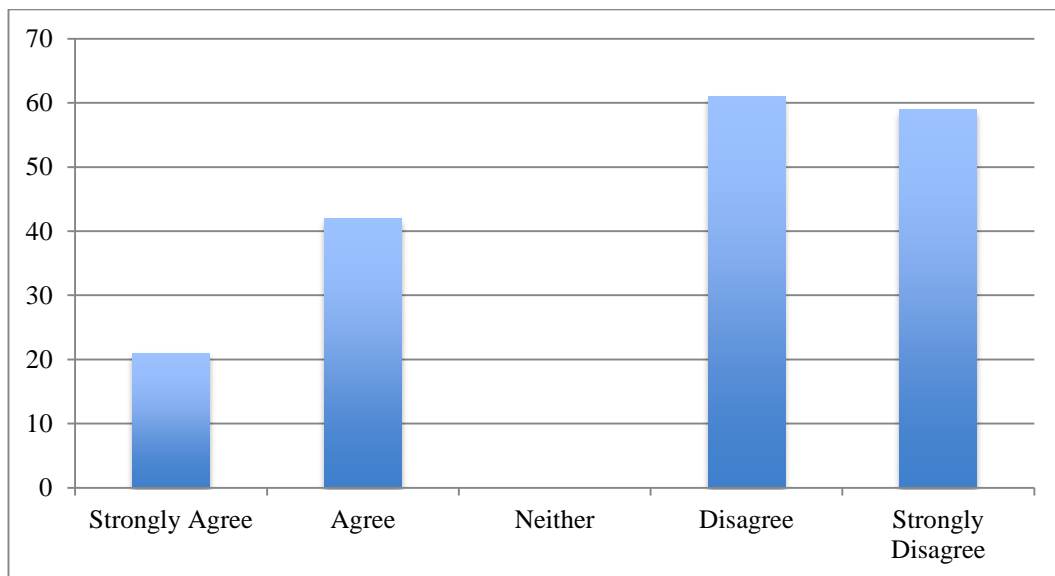


Figure 8-3 Assessment of Supportiveness of the Government Culture

The presented Figure shows that the overwhelming 65.57% of the sample disagreed or strongly disagreed with the fact that the Abu Dhabi Infrastructure Sector's organisational culture is supportive for its employees in a variety of aspects, which supports the suggestion that the organisational culture is a key element contributing to the formation of a strategic drift. Nevertheless, it is necessary to keep in mind that the rest, more than one-third of the sample –

34.43% - claimed that the culture of their workplace is supportive for its employees, which is also a considerable number of people worth paying attention to. It seems that alongside with one third of the sample enjoying their workplace culture, a much more considerable number of people do not find it supportive, which causes the deterioration of their motivation and commitment, finally resulting in the organisational inertia and a strategic drift. Hence, addressing the unmet needs of one-third of the staff is obviously a number one priority for the public sector organisations struggling for achievement of a strategic fit.

Speaking about the estimate given to the degree to which governmental organisations embrace change, the distribution of answers was completely different, with the major portion of the sample preferring not to present any evaluation. Here, 38.8% of the sample selected the answer “neither”, which strongly implies that the respondents are simply not acquainted with the concept of change and have never witnessed it in their workplace. Only 35.52% of the sample disagreed or strongly disagreed with the fact that their organisational entity supports and embraces change, while 25.68% agreed or strongly agreed with that statement – see Figure 8-4. Therefore, a conclusion can be made that there is little agreement on the concept of change and policies within the Abu Dhabi Infrastructure Sector developed for embracing it.

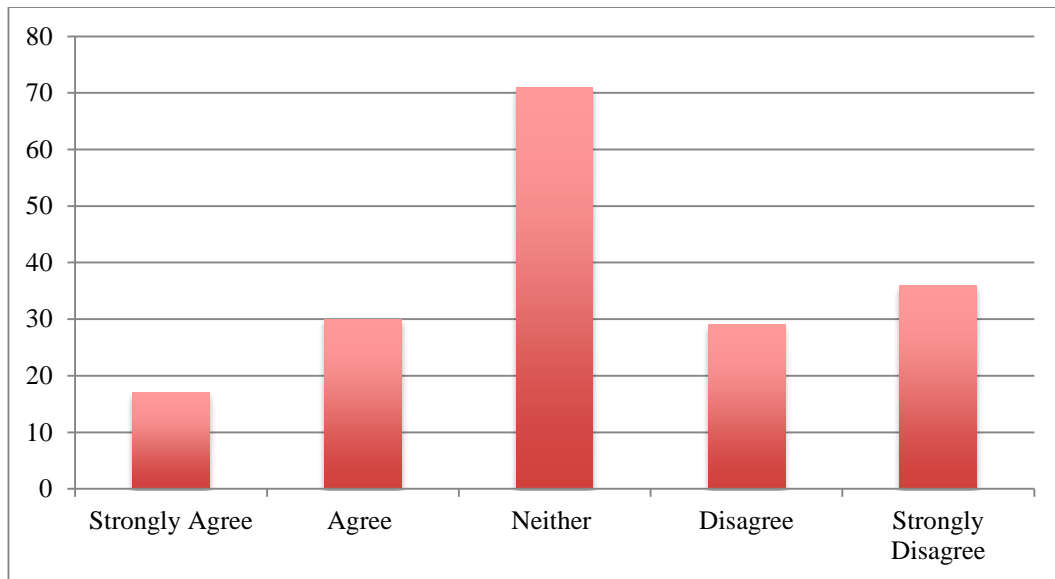


Figure 8-4 Estimate for Embracing Change at the Organisational Level

Comparative statistics on these two questions may be seen in Table 8-4, which shows how the frequencies of answers distributed among the sample. Obviously, it seems that there is much more criticism of organisational culture than that of change, allowing to conclude that there is insufficient attention paid within the Abu Dhabi Infrastructure Sector to the development and promotion of a well-designed and effective organisational culture, and it does not encompass the concept of change endemic for the present-day effective organisational performance. Here, one should look for the roots of the problem of strategic drift in the Abu Dhabi Infrastructure Sector, since a sound organisational culture should necessarily include change as its integral component, while the absence of focus on change makes an organisation stagnate.

Questions	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	Mean	Median	SD
The overall government culture is supportive for its employees	21 11.48%	42 22.95%	0 0%	61 33.33%	59 32.24%	2.47	2	1.44
Change is embraced	17 9.29%	30 16.39%	71 38.8%	29 15.85%	36 19.67%	2.8	3	1.2

effectively by the government agencies								
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Table 8-4 Frequency Analysis for Embracing Change at the Organisational Level

The final point in this analysis was identified within the organisational structure and processes in the Abu Dhabi Infrastructure Sector; it was interesting to find out whether the present-day organisational structure in the Abu Dhabi infrastructure sector is supportive for effective performance, and also to see if work processes are properly executed throughout the organisation – see Table 8-5.

Questions	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	Mean	Median	SD
The organisational structure is supportive for enabling effective operations	23 12.57%	25 13.66%	11 6.01%	53 28.96%	71 38.8%	2.32	2	1.43
The work processes are properly implemented across the infrastructure sector	24 13.11%	30 16.39%	43 23.5%	49 26.78%	37 20.22%	2.75	3	1.31

Table 8-5 Frequency Analysis for Organisational Structure/Process Evaluation

As it comes from the presented statistics, there is little support for the effectiveness of the organisational structure in the Abu Dhabi infrastructure sector. The total of 67.76% of the sample disagreed or strongly disagreed with the fact that their organisational structure is highly conducive to effective operations, while only 6% of the sample found it difficult to evaluate their organisational structure, and 26.23% evaluated it positively. Much less unanimity was seen in answering the second question, about the proper implementation of work processes in their organisation. Here, only 47% of the sample disagreed or strongly disagreed with the fact that the processes are implemented properly, while 23.5%, nearly one-fourth of the sample, found it hard to evaluate the propriety and efficiency of implemented processes.

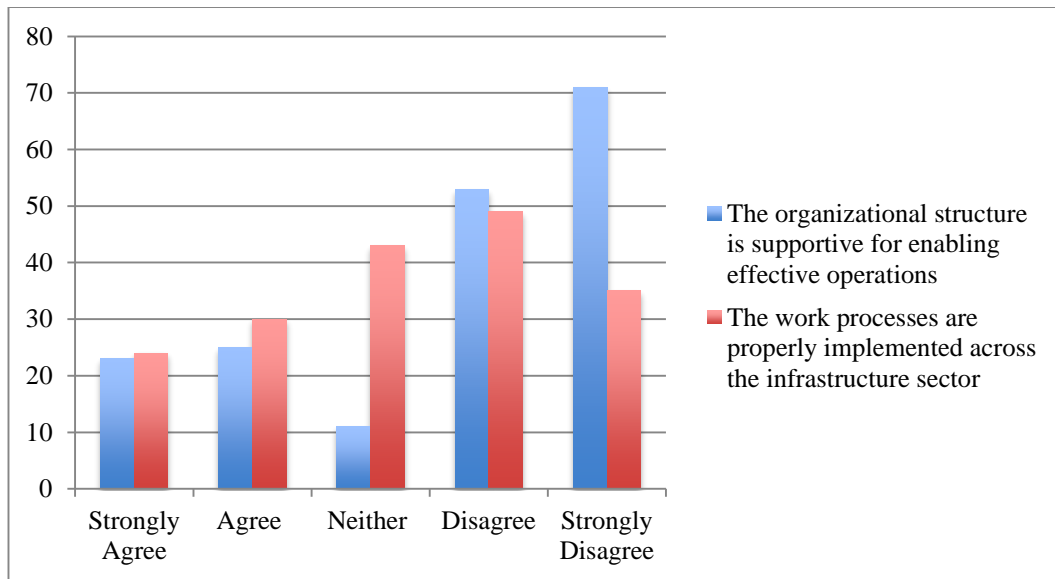


Figure 8-5 Estimate of Organisational Structure/Processes

Thus, the present analysis shows that organisational structure is overall assessed quite negatively, and there is little clarity about effectiveness of the implementation stage, which should also be perceived with caution, as it may be the in-depth problem leading to a strategic drift. An illustration to the differences between answers to these two questions may be seen in Figure 8-5 displaying a comparative chart with answers.

Since the analysis of responses relating to organisational cultural issues showed heterogeneous results, it was necessary to perform a correlation analysis to determine how strongly the estimates of leadership and management, organisational change and conduciveness to change, and organisational structure and processes relate to each other among respondents. The correlation analysis findings shown in Table 8-6 reveal how strongly respondents associate all these various aspects of organisational functioning, which in its turn reveals the connectedness of their perceptions about the root causes and processes leading to a strategic drift. Unfortunately, the correlation analysis did not provide any significant relationships among questions that were answered by respondents

within this section, with the only exception – the statement *"The organisational structure of the Infrastructure Sector is supportive for enabling effective operations"* appeared correlated with the statement *"Leadership and management are practiced effectively throughout the government structure"*. This way, the effectiveness of organisational structure in provision of efficient operations within the Abu Dhabi infrastructure sector was found positively correlated with the estimate of the leadership and management practices in the entire organisation.

Questions	Correlations	There is management commitment to the government plans and objectives at varies levels	The overall government culture is supportive for its employees	Change is embraced effectively by the government agencies	The organisational structure of the Infrastructure Sector is supportive for enabling effective operations	The work process are properly implemented across the Infrastructure Sector
Leadership and management are practiced effectively throughout the government structure	Pearson Correlation	-.035	-.076	.082	.205**	-.039
	Sig. (2-tailed)	.637	.304	.268	.005	.604
There is management commitment to the government plans and objectives at varies levels	Pearson Correlation	-	.042	.029	-.067	.058
	Sig. (2-tailed)	-	.569	.699	.367	.434
The overall government culture is supportive for its employees	Pearson Correlation	-	-	.052	.003	-.046
	Sig. (2-tailed)	-	-	.485	.963	.535
Change is embraced effectively by the government agencies	Pearson Correlation	-	-	-	-.023	.048
	Sig. (2-tailed)	-	-	-	.761	.515

The organisational structure of the Infrastructure Sector is supportive for enabling effective operations	Pearson Correlation	-	-	-	-	.025
	Sig. (2-tailed)	-	-	-	-	.736

Table 8-6 Correlation Analysis for Organisational Cultural Issues Leading to Organisational Drift

Such a finding allows suggesting that there are strong associations between organisational structure and arrangements thereof provided by managers and leaders within the organisation. Such an assumption requires further investigation, since it may uncover some vital organisational links through which organisational performance may be shaped in a systemic way, and by which strategic fit may be efficiently achieved.

8.2.3 Organisational Inertia in the Abu Dhabi Infrastructure Sector

The final section in the conducted survey related to the inquiry of perceived connectedness between such issues as unsupportive organisational culture, organisational inertia, weak focus on the organisational change, and the lack thereof finally leading to a strategic drift. Background research showed that there is a strong connection between all these negative organisational phenomena and processes, which finally results into a lack of strategic focus and various deviations from the strategic vision, mission, and objectives highly undesirable for organisational functioning. Comparative statistics of answers to questions related to the issue of inertia may be seen in Figure 8-6.

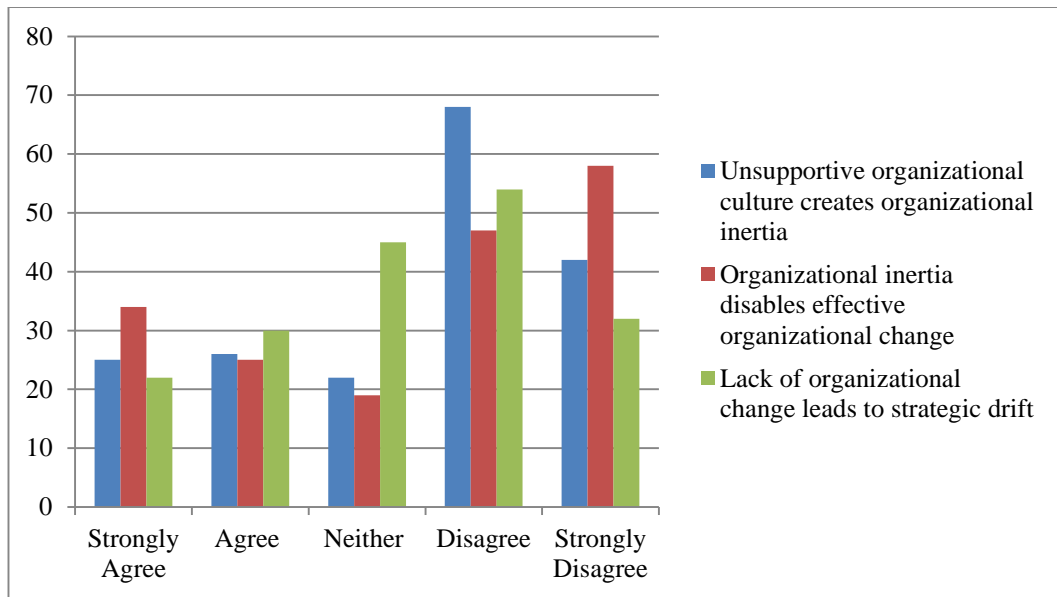


Figure 8-6 Assessment of Organisational Processes Leading to Inertia

As one can see from the findings presented in Figure 8-6, there is much more disagreement with the statements regarding the systemic nature of strategic drift rooted in the inefficient organisational culture and absence of a proper focus on organisational change. Only 27.87% of respondents agreed or strongly agreed with the first statement, 32.24% agreed with the second one, and 28.41% agreed with the third one. Counter to the number of those who agreed, 60.11% of the sample disagreed with the statement about the contribution of unsupportive organisational culture to the development of organisational inertia. Similarly, 57.37% disagreed with the statement connecting inertia with effective organisational change, and 47% of the sample disagreed that a lack of change causes a strategic drift. Therefore, the findings from this section of analysis are quite contradictory, showing the dominant disagreement of Abu Dhabi infrastructure sector's managers with the common opinion of researchers connecting all these organisational phenomena into a series of mutual and systemic impacts. To verify the findings obtained from descriptive statistics

analysis, correlation analysis was performed to find the correlation between answers to these three questions seen among respondents – see Table 8-7.

Questions	Correlations	Organisational inertia disables effective organisational change	Lack of organisational change leads to strategic drift
Unsupportive organisational culture creates organisational inertia	Pearson Correlation	.090	-.077
	Sig. (2-tailed)	.227	.300
	N	183	183
Organisational inertia disables effective organisational change	Pearson Correlation	-	.054
	Sig. (2-tailed)	-	.468
	N	-	183

Table 8-7 Correlation Analysis for Organisational Inertia Questions

Unfortunately, correlation analysis for these three questions showed no statistically significant correlation for any of them, which shows that respondents do not associate these aspects of organisational functioning with each other, and do not relate them to the concept of strategic drift. Therefore, further research is required to identify the reasons for the drift that employees of the Abu Dhabi infrastructure sector have identified for themselves, to build a stronger basis for recommendations to improve performance of this public sector entity.

8.3 Qualitative Data Analysis

This section of the chapter provides a concise and detailed narrative analysis of the qualitative part of this study, which may reveal additional insights into the reasons for, and estimates of, the strategic drift and deteriorating performance that managers of the Abu Dhabi Infrastructure Sector identify in their workplace. The present part contains qualitative analysis of data obtained through interviews with 12 senior management employees in the Abu Dhabi Infrastructure Sector. The topics raised in the interviews related mostly to the same key themes raised in the

questionnaire stage of the study: the nature of strategic fit, the status of the present-day Abu Dhabi infrastructure sector in regard to its strategic challenges, the causes of the currently observed strategic drift in this sector, organisational and cultural causes of the drift, and the concept of organisational inertia as well as ways of targeting it through a well-planned organisational change. The interviews however also include an additional section not covered in the questionnaires: recommendations for increasing the sector's performance and development of the sector's capabilities, competencies, and resources for successful achievement of the state of strategic fit. All findings and analytical inferences are supported with excerpts from interviews with participants. The names of participants were coded for the purpose of confidentiality, so the names of interviewees were replaced by numbers – from participant 1 to participant 12.

8.3.1 Strategic Drift and Its Causes

The first aspect of interest raised in the interview was the question about current competitive challenges that the Abu Dhabi Infrastructure Sector is experiencing nowadays, in the respondents' opinion. A variety of opinions was presented, ranging from the problem of monopoly in the field of phone operators to the salty nature of land making construction in Abu Dhabi costly and problematic, lack of space in the city, higher demands for social services such as education and healthcare caused by increasing population, etc. (interviewees 1 and 2). Interviewee 8 spoke about mapping, labour profiling, and imbalanced skill training as major problems of Abu Dhabi, while interviewee 11 pointed out the “*sluggish nature of the government performances*” as the core strategic challenge so far. This opinion was also supported by interviewee 3 who claimed that the

infrastructure of Abu Dhabi is modern and efficient, though experiencing the challenge because *“some of the plans lack the timely execution”*.

Problems within the transportation sector were also cited by many interviewees as a serious infrastructural challenge of the Abu Dhabi public sector. This way, interviewee 1 claimed, *“day after day, the demand is getting higher than the supply... we have great utilities services and of course telecommunication is the best, yet surface public transportation means is very slow developing; so much is promised but very little is accomplished”*, while interviewee 2 called for thinking about *“how to diversify the transportation methods in Abu Dhabi as we have noticed an incredible increase of cars in the street”*. Interviewee 9 commented, *“roads and transports were designed during the 1980s and the capacity now is much more than back then”*. The innovation and technology sectors have also been cited as the fields of competitive challenge; according to interviewee 4, lack of innovation in infrastructure hinders the sector’s performance, while interviewee 5 acknowledged, *“our infrastructure is not so bad but we need improvement also we have very high operating cost to the infrastructure projects”*. Other frequently cited challenges included regional industrial competition, lack of focus on research and development, inadequate attention to motivating young people to stay in Abu Dhabi and contribute their ideas into its development, inefficient skill development, and more broadly – globalization (*“our city has gone to greater heights and will but there is need to hit the required target”* – interviewee 11).

Hence, as it can be seen, there is a range of problems that representatives of the Abu Dhabi Infrastructure Sector acknowledge as meaningful nowadays, precluding the sector from being compliant with its strategic needs, and from

fulfilling the public needs associated with the functioning of infrastructure. The problem is both in people and technology, while inadequate skill development and low level of young people's contribution and innovation create the overall stagnation in the progress of this sector. Scarce resources such as appropriate land for construction and limited transportation capacity also create specific challenges within the field of infrastructure, which become more and more pronounced as the time goes on and new population requires similar levels of luxury and comfort as older residents of Abu Dhabi possess.

The next question pertained more directly to the concept of strategic drift; the interviewees were asked to assess the absence or presence thereof in the Abu Dhabi Infrastructure Sector. Interestingly, three interviewees claimed that there is none; for instance, interviewee 1 stated, *"the infrastructure of Abu Dhabi is definitely quickly improving with time...this development is definitely articulated at the level of the emirate and cascaded down to the government agencies to be put in practice"*. To support that idea, interviewee 7 claimed, *"drift is not an option for the time being because this is simply a problem that has existed and if the government does not look into it, we are going to face more competitive challenges in the future."* A similar opinion was also expressed by interviewee 9 who thinks that the Abu Dhabi infrastructure sector requires proper planning only, which may protect it from any contingencies; *"the Abu Dhabi 2030 Agenda must be reviewed and updated"*

Two respondents voiced contradictory statements about the presence of strategic drift in the Abu Dhabi Infrastructure Sector, acknowledging the presence of certain problems but at the same time stating that they are not too serious to call

them a drift. This way, interviewee 3 characterized the present-day situation as follows, *“the government at times engages in rush protocols to counter unplanned situations, for example, technology is so much important and input in technology especially the industrial sector may improve infrastructure”*, nevertheless concluding that *“there is strategic drift, on my side but is not inducing so much positivity on infrastructure”*. Interviewee 10, in his turn, explained the presence of a strategic drift in the Abu Dhabi infrastructure sector in terms of continuous improvement; in his opinion, *“business planning units in governmental bodies are ever endured to strategic drift indefinitely,”* which suggests that he considers a drift in this public sector a normal manifestation of change, adaptability, and improvement.

However, not all respondents were so optimistic about the presence of strategic drift in the Abu Dhabi infrastructure sector. The rest of respondents were quite clear about its presence and named a series of reasons for it, and its manifestations. Interviewee 8 attributed the drift to failed plans, for instance, that of responding to globalization trends through adjustment of tourism industry. Interviewee 11 criticised the drift in terms of transportation, claiming that *“the transport sector is in constant improvement because of the demand of infrastructure in regard to transportation of goods, services, and people.”* Interviewee 6, in his turn, associated the strategic drift with young people’s high unemployment rates, while interviewee 2 saw the prime reason for it in *“rearranging the priorities based on the society’s needs after the global crises”*.

Some other interesting points were covered by interviewees 3 and 5. Interviewee 5 blamed the Abu Dhabi Infrastructure Sector in the absence of benchmarks for

infrastructure practices and policies, which causes a constant need for change and improvement for technological efficiency and safety. Respondent 3, in his turn, saw the reason for the strategic drift in the policy of decentralisation pursued by the Abu Dhabi government within the past decade. In his opinion, counter to management of all infrastructure-related activities by municipality done years before, now *“there are many authorities managing the planning, execution of the infrastructure projects in Abu Dhabi including UPC, DOT, municipality, etc.”*, which creates delays and inconsistencies in the functioning of the overall sector.

Hence, as analysis of this aspect shows, the respondents’ opinions were divided regarding the nature of strategic drift in the Abu Dhabi infrastructure sector; though all of them agreed that it is present in this government agency, many interviewees stated that it was not a negative phenomenon, and it was an unavoidable by-product of change and continuous improvement in the field. To clarify the position of respondents regarding the contribution that such a strategic drift makes to organisational and strategic gaps in the sector, interviewees were asked to assess the nature of that impact. Two respondents did not see any of such impact, with interviewee 12 even assessing the strategic fit of the Abu Dhabi infrastructure sector very positively,

“the infrastructural sector has a common understanding of its operations in the region. They are strategically aligned towards ensuring that in every aspect that the government aims at or is indulging in there is an orderly inspirational sanction that involves the protocol of planning, decision making, organizing, staffing everyone involved in the process, directing, coordinating, reporting, budgeting”

Obviously, this positive opinion was not in the majority, and most respondents were much more critical about the extent to which the Abu Dhabi infrastructure sector has achieved the strategic fit in its operations. Interviewee 2 criticised the ambiguity of Abu Dhabi Vision 2030 plan that does not set any official communication guidelines, which causes mistrust regarding these plans' realism. Interviewee 5 stated that the Abu Dhabi public sector does not prioritise the nation's needs, which creates certain gaps and reduces standards of public sector's strategic fit considerably. In the opinion of interviewee 7, *"this is because there is little optimization of fresh ideas"*, which results in serious organisational and strategic gaps in the UAE.

Strategic planning inconsistencies were also among the most widely cited causes for gaps in the achievement of strategic fit; interviewee 10 claimed that strategic planning in the government is weak and creates gaps, while interviewee 1 blamed the unsuccessful strategy of decentralization pursued by the Abu Dhabi government in the creation of such gaps. As clarified by him, *"the government has taken actions last year to centralize all the infrastructure and mega projects to be studied through GSEC. All of these actions resulted in creating gaps strategically in the infrastructure sector"*. Thus, it is evident that the majority of interviewees acknowledged the existence of problems within this sector, and even delineated the key areas in which they are present to pinpoint the solutions for improvement of operations and optimization of strategic fit and performance.

8.3.2 Organisational Cultural Issues Leading to Strategic Drift and Inertia

After discussing the concept of organisational inertia as such, and clarifying the nature of its impact on the strategic drift, a closer look was taken at the cultural

causes leading to such negative phenomena as strategic drift and organisational inertia. The fact that cultural issues are present in the Abu Dhabi Infrastructure Sector was confirmed by interviewee 1 saying, *“in most governmental agencies I’ve worked in, there’s a very high level of politics going on and this definitely has a big impact on the culture... it definitely creates obstacles to achieving goals”*. One of the most frequently cited reasons for that was reshuffling of workforce; it was mentioned by interviewees 5, 6, and 12. As clarified by interviewee 5, *“it intrudes the inner processes unnoticed because of the aim of increasing trustworthiness without knowing the side effects in the process”*. Indeed, job rotation is a very positive organisational policy that has a number of advantages; however, as soon as some employees know that they will soon leave a certain position, they lose their motivation for improving the working conditions at that current position, and feel little engagement with the current workplace. Therefore, job rotation should be approached with caution to reduce its negative impact and maximize its positive contribution to organisational performance. Interviewee 9 believes there are four main factors that create organisational culture: human resources policies, communication, leadership, and management practices.

Another major cultural aspect cited by several respondents related to the lack of focus on innovation; as claimed by interviewee 7, innovation is scarcely financed, as a result *“recurrent old methods will be seeded if the new ideas are not adopted”*. Interviewee 8 saw the problem in the lack of young people’s influx in the public sector employment, with youth preferring to reside in other countries associated with better lives. Interviewee 4 supported this opinion by claiming, *“innovativeness is very crucial in this case”*, while interviewee 10 added that having a common goal is also a strong cultural contributor to avoidance of a

strategic drift and achievement of a fair level of innovation. Interviewee 1 further explained by saying, *“we are still lacking a unified and common culture that is based on the government objectives”*

Some interviewees saw the cultural issues contributing to inertia and strategic drift in the very culture of Abu Dhabi, and cultures of some specific governmental organisations. For instance, interviewee 3 confided, *“some of the organisations have changed the government culture dramatically such as the UPC, other organisations don’t have a clear character/culture such as ADEC, which is important element in Abu Dhabi”*. The present quote suggests that it is frequently the matter of individual reactions of Abu Dhabi’s governmental agencies to change and needs that determines their culture and affects their ability to utilize their resources effectively and achieve a fair level of strategic fit. Some other culture-specific issues were delineated by interviewee 2 as the NOC (No-Objection-Certificate) and the Inspection Certificate. These two documents create unnecessary bureaucracy regarding infrastructure projects in Abu Dhabi, while authorities responsible for them are unwilling to optimize the system because they do not want to give up their power; hence the structural inefficiencies resulting from the cultural issues of longing to old methods and non-acceptance of improvement and structural innovation.

8.3.3 Change as a Way of Combating Organisational Inertia

Assessment of the strategic drift and inertia in the organisational settings of the Abu Dhabi Infrastructure Sector was also accompanied by the proposal to evaluate the need for change in this field, and the likely ways of embracing that change that may be witnessed in this area. It is notable that the overwhelming majority of respondents indicated that the change was needed for better

performance. For instance, interviewee 4 acknowledged that *“to keep the level of competitive advantage that is required, there is need for change to better performance at all times.”* A similar opinion was voiced interviewee 1 stating, *“change is behind the development and improvement of countries, if there’s no change nations will suffer from stagnation.”* As well as interviewee 9 saying, *“change is part of life, and if we don’t change we become obsolete”*. The reason for such positive acceptance of the change initiatives was explained by interviewee 8, *“drift in business operations is not a good indulgence. Embracing positive change may reduce deduced drift.”* Indeed, it is evident from the responses of interviewees that the change is a present-day imperative in the infrastructure sector, for many reasons, and because of many internal and external demands of key stakeholders – the public and the government of the UAE. Several respondents specifically focused on the role of the government in the introduction of such change; interviewee 4 pointed out that *“the government should ensure that they support any new innovations and ideas in order to improve performance.”* Interviewee 5 was of a similar opinion, claiming that *“especially in the government, there should be collective support of better performance”*. Thus, as one may see, there is a strong recognition of the fact that the government is the key player in the process of promoting strategic fit and organisational performance improvements.

Interviewee 11 made a general statement as a rationale for positive change: *“better performance is always the obligation of any infrastructure globally”*, while interviewees 6 and 7 mentioned the technological era’s demands as the key justification for the need for change at present. Interviewee 6 claimed, *“change is very necessary especially in the current technological world. Infrastructure needs*

a lot of technological input”, and interviewee 7 supported that by saying, *“change is therefore very important especially in the technologically apprehended era like where we are in.”* Moreover, interviewee 3 clarified the core requirements that should be met for change initiatives to work out. In his opinion, *“the vision should be crystal clear and updated given the delays in the plan. Second, the organisations/authorities/departments should work in synergy or under the same umbrella to achieve the same plan smoothly and more effectively”*. This evidence shows that effective communication and preparation for the change are seen as vital preconditions for success, and collaboration is also a positive contribution to the achievement of better performance, stronger strategic fit, and dynamic adjustment of the Abu Dhabi infrastructure sector to the set objectives and goals.

Some action in that direction has already been taken, as it was reported by interviewee 2, and it is notable that these initiatives are productive in terms of moving towards innovation and organisational improvements. In this respondent’s opinion,

“the government has taken a good action by forming an infrastructure committee which meets every week to revise the entire mega and infrastructure project in the city as a whole...Another action is studying all the infrastructure projects through the infrastructure sector in GSEC. These two actions have streamlined all the projects again and lead to prioritize them in the government agenda.”

As per interviewee 2’s information, the Abu Dhabi Government is fully aware of the need for change and optimization of operations in its infrastructure sector. Hence, a good start has already been initiated, and the task of Abu Dhabi

authorities now is to make research-based, wise, and well-informed steps towards making feasible improvements in the field of strategic fit achievement and advancement of organisational performance.

The level of optimism about the outcomes of change was different among interviewees, some of them being sceptical about the change, while others voiced much more promising claims. Interviewee 7 expressed doubts about success of such initiatives, *“change will be embraced, but if the current trend is upheld then the change will not be effective. We need to cater for every aspect towards development so that the change can have enough impact on our infrastructure.”*

Interviewee 8, on the contrary, was much more optimistic about that issue by saying, *“there is quite a lot of coordination and communication in the government agencies. This will easily facilitate a group embracing the purported change in the infrastructural sector, transport, and especially technology.”* As one can judge from these differing opinions, officials in the infrastructure sector have different degrees of readiness for change and optimism about its possibility, so the change agents should take this into account to mobilize people and help them recognise the possibilities and tools for change.

Aside from this aspect of the issue, it was interesting to find out whether the respondents believed such change initiatives would be received and accepted well in the Abu Dhabi Infrastructure Sector. Overall, the opinion of respondents was quite positive about reception of change, and many interviewees stated that the change has an overall positive nature, thus it has to be embraced very naturally. For instance, interviewee 10 claimed, *“in regard to the current flow of market base, it is very important that most of the agencies adopt change as part of their*

operations.” In line with that opinion, interviewee 12 stated, “*every governmental agency may need positive change*” and added, “*the government will embrace change with a lot of aptitude and need for better UAE.*” Therefore, it is evident that the majority of respondents from the top management of Abu Dhabi’s Infrastructure Sector regard change as an inevitable but positive phenomenon vital for the survival of organisational agencies and needed for adjusting their operations to the constant need of optimization and improvement.

However, even in line with unanimous agreement that change is necessary and it will be accepted well, some interviewees clarified the conditions under which change may become possible. In this regard, interviewee 1 pointed out, “*if communicated well by the leadership, it will be embraced by the government agencies.*” Interviewee 11 stated that “*there must be a few individuals with strict motive towards change because of their personal benefits*”. It is also notable that the respondents told about their own support for the change initiatives, and their readiness to participate in their promotion. This way, interviewee 3 said, “*I will definitely embrace change in our workplace and business endeavours. Because of the competitiveness in the governmental agencies, I will probate for change*”. Similarly to him, interviewee 4 agreed to support change, “*I am among the officials who will purely advocate for change as long as it is on the positive side. This is because technologically, there is continuous change, and we should ensure we fit in this changing technological ground.*” As these opinions suggest, employees among top management level are ready for the change, and they may become a strong acting force advocating its implementation, so the government should take them into account seriously as people who may spearhead the change so needed in the public sector organisations.

8.3.4 Recommendations for Achievement of Strategic Fit

The final section of interview analysis was dedicated to recommendations that respondents could provide regarding steps and actions to be taken for a quicker and more efficient achievement of strategic fit and organisational alignment of its resources, capabilities, and strategies with the external and internal needs and environment. The first question in this regard was asked about capabilities and competencies needed for attainment of those goals. A wide variety of aspects was named by participants, including *“balanced skill training and proper workforce profiling”* (interviewee 8), *“competitiveness”* (interviewee 12), *“concentration on globalization”* (interviewee 10), *“planning”* (interviewee 7) and major improvements in all kinds of transportation – road, water, and air transport (interviewee 10). Interviewee 3 also mentioned *“Emirati nationals’ empowerment, international partnerships, strategic vision, one leadership for all the initiatives, clear and timely plans”* as the core capabilities required for the attainment of strategic fit. Interviewee 9 suggested that the main driver for change must be efficiency stating *“the government should impose efficiency ... system is fat we need to slim it out”*

Notably, much attention was given to technological capabilities by several interviewees. For instance, interviewee 9 claimed, *“balanced expertise in technological areas that are widespread in the infrastructural sector is quite necessary”*, while interviewee 4 acknowledged the strategic role of young people in technological promotion, change, and advancement, *“the young individuals with innovative ideas towards technology are supposed to come forward in order to present a categorical stand for the government to find the ideas.”* Interviewees 1 and 2 also spoke extensively about the value of technological knowledge and

capabilities in the present-day change and improvement initiatives. The former stated, *“technical knowledge is key to success of infrastructure projects, and it is very important for knowledge to be transferred from the foreign workforce to the local one progressively and smoothly”*. The latter also supported such claims by agreeing, *“the main capabilities to be developed is the local technical capabilities because now the government depends on the consultants and expatriates to develop the design and the implementation of projects”*. As it comes from such analysis, there are a huge number of capabilities and resources that the Abu Dhabi infrastructure sector lacks nowadays, and that it has to accumulate to achieve better performance and higher degrees of strategic fit. The major aspects of focus should be the development of technological capacities, closer attention to the needs and potential of young people who may contribute to progress and change, and obviously wise planning and efficient communication and collaboration.

The next raised question was about concrete actions that the Abu Dhabi Government might take to ensure that the discussed capabilities are attained, and that the change towards improvement is indeed implemented. Here, opinions also varied widely, but the core topics were retaining young employees’ talent within the public sector of Abu Dhabi, developing technical capacities, looking for new ideas, enhancing communication, and investing into planning and execution. The most interesting and meaningful quotes of interviewees with recommendations for governmental actions are listed below:

- ✓ *“workshops, subject matter expert conferences, campaigns, on the job training”* (interviewee 1)

- ✓ *“lure expertise in any invention in the infrastructural sector”* (interviewee 11)
- ✓ *“the government should be very keen on auditing and analysis of the current situation”* ((interviewee 8)
- ✓ *“planning and execution must happen within the organisations and by national capabilities, and better communication among the authorities/agencies in Abu Dhabi”* (interviewee 3)
- ✓ *“research and development and input into the industrial sector”* (interviewee 6)

Overall, almost all interviewees acknowledged the need for improvement and change, and agreed that the government agencies are the key players in making that change happen. This way, interviewee 8 supported that idea by stating, *“there is always need for strategic planning. The government is supposed to oversee any impending risks that may affect the infrastructure of the country and sanction for solutions.”* In line with these suggestions, interviewee 5 assigned the government with the task to have *“regular check-ups of the set visions and targets in business performance in relation to infrastructure. The overall strategy must be the focus of the agencies where there must be clear appraisal system to monitor the performance ”*, interviewee 10 called the government to *“set infrastructure as the key gateway towards globalization which will in turn subject the nation into improving the systems, resources, processes, and overall practices.”* Finally, interviewee 11 voiced a very wise idea about the key role of the government to *“provide understandable values in the motives of the nationals”* via *“open forums and deuce training and development minds and similar sanctions”*, thus involving

the public into the change process and thus guaranteeing the overall acceptance thereof.

Notably, some of the interviewees paid attention to the sector-specific challenges that need to be addressed by actors within the Abu Dhabi infrastructure sector through targeted action. First, interviewee 1 acknowledged that *“governmental agencies should take the first step into ensuring that their fresh graduates in the nation have secured expert training centres for preparations into the corporate world”*. This way, interviewee 1 pointed out the need to take care about the human capital of Abu Dhabi instead of seeking expatriate knowledge and expertise. Interviewee 2, in his turn, suggested targeting problematic areas without optimization of which the change was impossible: *“shorten the number of NOCs and make it electronically”, “delegate or integrate some tasks such as inspection and NOC processes”, and “make a better use of Abu Dhabi Electronic and Smart Government”*. All these suggestions are of vital value and should be considered when developing a comprehensive change programme for optimizing the operations of the Abu Dhabi infrastructure sector for its performance to be aligned with the strategic fit requirements for this entity.

8.4 Discussion of Findings

The present section is dedicated to unification of findings obtained via literature review of prior research in the field and outcomes of qualitative and quantitative stages of the present study to show answer the formulated research questions and hypotheses. Overall, there were four research questions and seven hypotheses, each of which is discussed in a separate section by synthesizing all relevant sources of data.

Research Question 1: Are Strategies Developed by the Abu Dhabi Government Appropriate and Realistic in Line with Environmental Conditions?

To answer this question, the first research hypothesis was formulated as follows:

“strategic drift can occur when strategic objectives are not clear”. Analysis of findings indicates that this hypothesis was verified, since both survey and interview respondents supported the opinions voiced by researchers about the vital necessity of a proper strategy in the achievement and maintenance of a strategic fit. Quantitative data analysis showed that the overall estimate of the strategies developed by the Abu Dhabi infrastructure sector so far is quite negative. When speaking about realistic and appropriate nature of strategies, 60.65% of the sample disagreed with the statement, while 59% of the sample stated that strategies within this public sector entity are not formulated clearly for all stakeholders. Therefore, it is possible to conclude that the overall state of strategy development, its communication to stakeholders, and its practical implementation is rather weak for this organisation to meet the requirements for achieving a strategic fit.

Absence of an efficient strategy that would enable the Abu Dhabi infrastructure sector to advance and develop in accordance with the needs of all stakeholders, fitting the innovative environmental requirements and using its resources wisely was also acknowledged as a serious problem by the interviewed top managers of this public sector entity. Many of them noted that “*if the government does not look into it, we are going to face more competitive challenges in future*” and “*the government engages in rush protocols to counter unplanned situations*”. These remarks indicate that top management of the Abu Dhabi infrastructure sector is concerned about their organisation’s inability to address issues occurring around it, which exacerbates the situation with its competitiveness and strategic fit. These

findings are also highly compliant with the estimate of Wilson (2012) who noted that an organisation's inability to address uncertainty in the external environment gradually leads to a strategic failure and discloses its strategic drift. Moreover, Simons (2011) admitted that organisations with a weak strategy experience a strategic drift because of their inability to identify and respond to challenges in a timely manner, which is definitely the case of the Abu Dhabi Infrastructure Sector so far. Hence, the representatives of the Abu Dhabi Infrastructure Sector have to take a close look at these manifestations of strategic drift and take appropriate action to make it more adaptive, more strategically focused, and more flexible in the present-day turbulent and quickly changing conditions in the market and economy.

One of notable themes raised in the process of discussing strategic preparedness and management of the Abu Dhabi Infrastructure Sector was the absence of benchmarks in assessment of policies and practices, absence of clear priorities, and an overall disorganisation in planning and execution of infrastructure projects. Many interviewees blamed the present-day managers responsible for strategic management in these inconsistencies, and these gaps are obviously contributing to the deterioration of strategic agility of this organisation. In line with the findings of Miles (2003) who stated that strategy is the main tool for achievement of the present-day and future organisational vision, and those of Liebowitz (1999) and Rothwell (1994) associating organisational strategy with development and envisioning of long-term direction for the organisation, it was concluded that the present-day state of insufficient strategy development and improper attention to strategy as such causes the major portion of Abu Dhabi Infrastructure Sector's organisational problems. Rothwell (1994) and Armstrong (2011) claimed that

strategy should be a collective approach producing an organisation in which all stakeholders are perfectly aware of where they are, where they are heading, and how they will get to their destination. Therefore, such causes as poor implementation of strategies and time ineffectiveness of strategy implementation play their detrimental role in the attainment and maintenance of strategic fit (Armstrong, 2011).

It is notable, however, that not all interviewees characterized their organisation as a strategically weak entity; there were some positive remarks about it as well. For instance, one of the interviewees claimed that all employees of the Abu Dhabi Infrastructure Sector have a strong vision and common understanding of their operations, and they are strategically aligned. Such estimates are highly promising in terms of showing the positive, strong sides of the sector's current functioning for advancing its operations further towards better performance and achievement of the state of strategic fit. As clarified by Gilzer (2009), if organisations do not take timely corrective action, they are likely to turn themselves into wrong positioning; this opinion was supported by Thompson (2010) calling for proactive decision-making and acceptance of risk as the critical preconditions for success and achievement of strategic fit. Thus, managers and leaders of the Abu Dhabi Infrastructure Sector should seriously consider these actions as a way of returning their organisation to a strategic fit condition in which they will grow and advance competitively, and will develop a set of core strategic capabilities and resources to adapt to the changing environmental conditions and making their operations beneficial for their key stakeholders.

The strategic drift in Abu Dhabi's strategic plan can be illustrated by the major delay in Abu Dhabi Airport construction, which was scheduled to be completed by 2012. The multi-billion project that is expected to provide the capital city with an ultra-modern gateway to the world. The project represents a major part of the long-term strategy for Abu Dhabi to become one of the leading aviation, tourism and business centres of the region as the aviation industry now contributes around 8% to Abu Dhabi's non-oil GDP. Because of this unjustified and continues delay Abu Dhabi lost market share in both the aviation and tourism markets where Etihad airlines delayed its contracts in new airplanes purchase which were supposed to be accommodated by its hub.

Research Question 2: Are Communications in the Government Structure Open and Free Flowing?

Answering this question involved testing the following hypothesis: "ineffective top-down communications can cause a strategic drift". This hypothesis may also be considered verified, since the opinions of survey and interview respondents were unanimous about the disastrous impact of improperly organized communication on the organisational strategic fit. Analysis of survey responses showed that 50.82%, more than a half of the total sample, assessed organisational communication in the Abu Dhabi infrastructure sector as not open and free flowing, while even a larger number, 72.13%, claimed that top-down communication of this organisation is ineffective. This evidence is highly alarming in terms of assessing the ability of the Abu Dhabi infrastructure sector to provide vital communication regarding strategic issues, procedures, policies, and processes that determine the overall outcomes of organisational functioning. These findings are additionally alarming taking into account the opinion of Quinn et al. (2003) and Das (2011) who associated strategy with a plan integrating

organisation's major goals and helping to marshal organisational resources to achieve a distinctive and visible organisational position in the external environment. Without such implementation of strategy (achieved mainly through communication channels), an organisation consisting of people and resources cannot organize itself efficiently, and discrepancies and gaps may emerge in its operations. Therefore, looking into the problem of organisational communication gains priority in the analysis of organisational sources of strategic drift.

The problem of poor communication was also acknowledged in the ranking for root causes of strategic drift provided by survey respondents. Here, 57.93% of respondents agreed with the fact that communication is a prime cause of organisational drift, while higher scores were given only to organisational structure (blamed for the strategic drift by 62.71% of respondents) and organisational culture (organized as a problem leading to strategic drift by the overwhelming 75.95% of respondents). This negative estimate of communication quality echoes earlier statements of Jeffs (2008) who characterized strategic management as the scope of decisions generating strategy development, implementation, and control. Logically, if communication is arranged improperly and is not open and free-flowing, such a weakness necessarily affects the ways in which strategy is developed and implemented.

The need to include people into strategic decision-making and management has been a constantly present idea permeating strategic management research for many decades. For instance, Mansour (1998) and Whiddlett (2003) claimed that building blocks for any type of strategic organisational competence are located at the bottom of organisational hierarchy; therefore, involvement and activation of

those building blocks is possible only by means of proper arrangement of communication, so that all employees at all organisational levels are informed about strategic decisions, policies, and changes in a timely and efficient manner, and participate adequately in the organisational processes. This problematic also found a reflection in the interviews with top management who recognised the “sluggish nature of the government performances” and “plans lacking timely execution” as the core strategic management problems of the Abu Dhabi Infrastructure Sector nowadays. Consequently, it is possible to associate these organisational delays and gaps with weak communication that affects every level of organisational functioning and diminishes the quality of strategic management and planning in many aspects.

In line with the argument of Enders (2008), strategic management represents decisions generating strategy development and control. However, absence of efficient communication channels impairs these processes, making strategy fragmented and irrelevant for the current situation in the market. What is even more alarming, its nature is very disguised and mainly unnoticeable for managers and leaders involved in the coordination and control of the Abu Dhabi infrastructure sector. As pointed out by one of the interviewees, *“it intrudes the inner processes unnoticed because of the aim of increasing trustworthiness without knowing the side effects of the process”*. This way, all respondents and researchers point out to the need to pay more attention to optimization of communication as the basic precondition for effective strategic management.

The final point of importance regarding communication in the Abu Dhabi Infrastructure Sector is that it is the only fundamental tool for sharing and

accumulation of organisational knowledge, which makes it even more important in strategic terms. According to the opinions of Prahalad and Hamel (1990), Hamel (1996), Hamel and Prahalad (1994), and Jeffs (2008), the core organisational competence of an organisation is collective learning, which requires coordination of diverse processes and communication channels to achieve strategic organisational capabilities. Such competence may be achieved by means of having a clear and well-communicated vision and mission of an organisation, which the Abu Dhabi infrastructure sector currently lacks because of lack of “crystal clear and updated vision”. Interviewees representing top management of this entity cited some positive initiatives in the field of strategic communication, such as setting up the infrastructure committee and review of infrastructure projects by GSEC, but there is definitely much more to be done to ensure that the communication quality in this organisation is sufficient for ensuring its strategic alignment and achievement of strategic fit.

Another strategic drift in Abu Dhabi is revealed through the delayed projects in the Saadyat Island the future tourism centre. While the development of tourism industry in Abu Dhabi is a key economic driver to the emirate’s future economy, the opening of Abu Dhabi’s \$650 million branch of Louvre museum has been postponed until next year due to pending construction work. The museum was originally scheduled to open in 2012 but that target was pushed back until the end of 2016. There have been claims that the construction firms are struggling to find labour, supplies, and financing to complete their huge backlogs of work. Also, The Guggenheim museum has been scheduled to open in 2017 and the Zayed Museum in 2016 but it is not communicated clearly whether these targets are still in force.

Research Question 3: Are Leadership and Management Practiced Effectively throughout the Governmental Structure?

The present research question included two research hypotheses, the first one being “lack of management commitment can cause a strategic drift.” This hypothesis was fully supported by findings from this study, since 67.72% of survey respondents assessed practices of leadership and management as ineffective, while 71.04% of respondents considered management not committed to government plans. As one can judge from these results, the extent to which leadership and management consider themselves involved in, and concerned with, the strategic management of the Abu Dhabi Infrastructure Sector leaves much to be desired, and the level of commitment among leaders and managers of this sector is very low. Such observations are alarming because there is an extant body of research literature indicating the vital role that managers play in strategic management of organisations. For instance, Mumford (2012) even claimed that managers are those who mainly create organisational culture and develop strategies, so their low level of commitment and involvement may lead to catastrophic consequences for an organisation.

Such a key role of managers and leaders was also voiced by interviewees representing the top management level of the Abu Dhabi Infrastructure Sector. According to them, *“if communicated well by the leadership, [change] will be embraced by the government agencies”* and *“we need to cater for every aspect towards development so that the change can have enough impact on our infrastructure.”* These remarks clearly point out at the fact that managers and leaders are to spearhead any initiative and any strategic planning policy in the Abu Dhabi infrastructure sector, and their lead in that endeavour will eagerly be supported by other staff, but only in case managers come out as its initiators.

These aspirations were further supported by one of the interviewees saying, “there must be a few individuals with strict motive towards change”, thus echoing the opinion of Nirgudka (2002) about the essential role of managers in ensuring the strategic fit and influencing the competitive advantage of the organisation. Stevenson (2010) cautioned that effort should be continuously made to ensure that strategic actions are in compliance with the organisational mission and objectives. Therefore, managers should take on such a responsibility, as they are directly responsible for securing the organisational fit and for distributing organisational resources in such a way so that to benefit all key stakeholders and enable the organisation to perform all its functions and fulfil its mission.

At present, the key problem of managers of the Abu Dhabi Infrastructure Sector is that they do not associate their operations with the overall mission and strategy of their employing organisation, which is wrong. Amason (2010) and Thompson (2010) made an explicit focus on interconnectedness of all levels of strategy and management, and urged managers to see that connection to apply their work wisely for it to contribute to accomplishment of the organisational mission. Moreover, Lindow (2013) and Henry (2009) repeatedly cautioned that a strategic fit may be achieved only by means of adjusting internal strategy with strategic elements of the organisation, thus making it managers’ imperative to participate in strategy development, implementation, and communication. Such a role is also well-understood by managers working in the Abu Dhabi Infrastructure Sector one of whom claimed, *“I am among the officials who will purely advocate for change as long as it is on the positive side”*. Thus, as one may see, managers are ready for change and can take on much more responsibility for strategic management, but

only if they are inspired, motivated, and given a direction by some inspirational leaders in the field.

The second hypothesis within this research question was “unsupportive organisational culture can contribute towards strategic drift”. This hypothesis may be fully regarded as verified, since there has been much support for the role of organisational culture in the achievement of strategic fit, as well as much criticism for the present-day state of organisational culture in the Abu Dhabi Infrastructure Sector. For instance, 65.57% of the survey sample disagreed with the statement that their organisational culture is supportive towards employees, while 75.95% named organisational culture as the primary source of organisational drift. All this statistical evidence speaks in favour of the initially voiced opinion about scarce attention towards organisational culture in the Abu Dhabi infrastructure sector, which causes the overall deterioration of morale in this organisation, causes negative organisational processes, and finally results in the strategic drift.

Interview analysis revealed some of the major opinions explaining such a dramatic state of organisational culture in the Abu Dhabi infrastructure sector. Some interviewees claimed “*this is because there is little optimization of fresh ideas*”, while others clarified, “*in most governmental agencies...there is a very high level of politics going on and this definitely has a big impact on the culture...it definitely creates obstacles to achieving goals*”. The present opinions are highly illustrative in terms of the reasons for which organisational culture fails to perform its direct function – aligning employees around the common vision, mission, and strategic objectives of an organisation. In the Abu Dhabi Infrastructure Sector, old-fashioned organisational culture and non-conduciveness

to innovation and change are instilled as key values, while employees are much more concerned about their personal gains and careers rather than trying to advance the overall organisation's performance and contribute to its success. This is in line with the arguments of Birchall (2005) who pointed out that every organisation should possess strategic flexibility explained by its proactive and reactive potential; hence, achievement of certain progress in terms of making the organisational culture compliant with the strategic organisational mission is to “provide understandable values in the motives of the nationals” to inform the organisation's responsible managers about what the public needs are, and what their role as a public sector entity is.

Research Question 4: Is Change Embraced Effectively by the Various Government Agencies or Are They Subject to Organisational Inertia?

This research question was divided into three hypotheses relating to every step of the formation of organisational drift. Overall, the sample of survey respondents appeared quite undecided about the extent to which change is embraced in their organisation; 35.52% of the sample disagreed with the statement, 25.68% agreed, and 38.8% refrained from answering that question. Hence, it is evident that the concept of change is generally new and unexplored in this organisation, suggesting the need to focus on integration of change as a vital aspect of organisational culture.

The first hypothesis was as follows, “unsupportive organisational culture creates organisational inertia”. Judging from the survey response, managers of the Abu Dhabi Infrastructure Sector are largely negative about the impact that the organisational culture produces on organisational inertia; surprisingly, 60.11% of the sample disagreed with the statement, and only 27.87% agreed that

organisational culture produces a certain kind of effect on the incidence of organisational inertia. Such findings contradict the statements of prior academic research that found a strong association between organisational culture and inertia. For instance, Drummond (2013) claimed that such practices as bad leadership and poor management represent a corrupted organisational culture, making the organisation unable to cope with market challenges and resulting in the development of inertia. This opinion was further substantiated by Brian (2001) and Li (2009) stating that a lack of strategic flexibility deprives an organisation of an ability to leverage its resources and develop its key competencies and capabilities, which inevitably leads to inertia.

Negative impact of a corrupt organisational culture on inertia was nevertheless revealed in interviews, showing that top managers grasp the link between these phenomena. One of the respondents claimed, *“recurrent old methods will be seeded if the new ideas are not adopted”*, thus showing that in case innovation is not on agenda in the present-day organisational culture of the Abu Dhabi Infrastructure Sector, there is little hope for improvement, and organisational inertia inevitably emerges. Thus, the present evidence suggests that managers of this organisation are scarcely acquainted with the very concept of organisational inertia and do not associate it with the negative impact of an inefficient organisational culture.

The second hypothesis within this research question stated, “organisational inertia disables effective organisational change” This question also found mixed responses among survey respondents, with 57.37% disagreeing with the statement and only 32.24% agreeing about the role that inertia plays in hindering the

proactive organisational change. However, interviewees again paid more attention to this phenomenon and evaluated the potential negative impact of organisational inertia seriously. One of the interviewees claimed, *“drift in business operations is not a good indulgence. Embracing positive change may reduce the deduced drift”*, which shows that inertia and drift are negative phenomena in organisational terms, and only proactive change can combat them. In addition, an opinion was voiced that *“especially in the government, there should be collective support of better performance”*, also indicating that combating inertia should be prioritized for effective strategic management and organisational performance. These claims have also found their support in prior research findings; for instance, the claim of Jenster (2001) about an ability of an organisation to increase its strategic capability by means of identifying the vision and developing strategically to match its internal resource capabilities with external environmental needs is highly relevant here. Once inertia is observed in an organisation, it becomes unable to make sober and objective assessments and matches for achievement of strategic fit, which causes a gradual deterioration into a strategic drift. Thus, management of the Abu Dhabi Infrastructure Sector, as well as any other organisation, should take the lead in this situation to change the direction of its organisation towards strategic capabilities, and not inertia.

The final hypothesis within this research question stated, *“lack of organisational change leads to strategic drift”*. Unfortunately, this statement also found little support among the survey sample, with 47% of respondents disagreeing with this statement, and only 28.41% agreeing that these two notions are interconnected. However, interviewees were much more positive about the role of organisational change in the overall strategic health of an organisation. Interviewees in this study

claimed, “to keep the level of competitive advantage that is required, there is a need for change to better performance at all times”, and “behind the development and improvement of countries, if there is no change nations will suffer from stagnation.” These opinions show that the top management of Abu Dhabi Infrastructure Sector is perfectly aware of the fundamental role played by organisational change in the overall organisational performance. Moreover, such a standpoint is supported by research findings of Treen (2012) claiming that change is critical for every organisation that wishes to achieve a strategic fit, and of Dziri (2011) who stated that organisations reactive to change are inevitably moving towards the state of an organisational drift.

It is also notable that the discussion of organisational change should be related to that of strategic orientation; as clarified by Bettis (2009), strategic orientation is what creates proper organisational behaviour targeted towards superior performance. Morgan (2003) at the same time reported that strategic orientation should be continuously reviewed for the sake of avoiding an organisational drift. Consequently, it is clear that revision of orientation is at the heart of organisational change. Interviewees recognised that fact and proposed a number of solutions for embedding a continuous proactive organisational change in the Abu Dhabi Infrastructure Sector’s everyday workplace practices, including sound policies of workplace training and profiling, boosting competitiveness, concentration of effort on adjusting to globalization, and planning as vital preconditions of infrastructure improvements. However, it is still necessary to keep in mind that one of the negative phenomena detected in this study is the lack of awareness about some vital concepts associated with strategic drift and fit – that is, about organisational inertia, change, proactive and reactive organisational

culture, etc. Surveys and interviews showed that middle and top managers sometimes lack vital strategic management knowledge to link those phenomena into a systemic whole, which may prevent them from detecting organisational inconsistencies and addressing them in a wise and timely manner.

8.5 Data Validation

Validation of this study's findings was performed in the form of a focus group discussion with ten employees of the Abu Dhabi Infrastructure Sector. A 45-minutes focus group discussion was organized by presenting these ten participants (none of whom participated in the previous two stages of research) with the qualitative and quantitative findings of the study, and listening to their feedback and reflections on the research outcomes. The focus group discussion guide was compiled based on the findings of qualitative and quantitative data analysis – see Table 8-8. For convenience of reporting, respondents of focus group were coded by alphabet, so ten participants of this discussion are referred to as participant A – participant J.

The brief discussion was organized in a quiet and comfortable place within at a hotel venue conference hall in Abu Dhabi to allow all participants to find time for a relaxed and productive talk about the study's outcomes. After a brief delineation of the topic and purpose of the focus group discussion, a brief summary of research findings and outcomes was provided for the participants. The first introductory question about the nature of strategic drift faced several opinions and again did not give any clear estimate of whether it is good or bad. Participant D again reiterated an opinion that Abu Dhabi is a dynamically developing region and its public sector structure have to adjust to changing and increasing needs of the society every day, which definitely creates certain constraints and prevents the

Abu Dhabi infrastructure sector, alongside with other agencies, from developing a stable and fixed strategic fit. Participant J countered that opinion, finding the support of several other participants, by stating, *“Ok, should we explain all our failures by dynamic change and globalization? We have to take on responsibility for our weaknesses”*. Participant C supported that claim by mentioning, *“as you see, research increasingly suggests that a strategic drift is not an absence of a fixed idea and mission – it is our inability to adjust quickly, which is what we see, and which is what should be improved.”* Therefore, the ultimate point upon which the discussion of this question stopped was that strategic drift is an indeed dangerous phenomenon, especially because many managers and leaders prefer to neglect it, explaining it by the overall changing nature of the external environment.

The second question related to the impact of strategic drift on everyday work practices; here, not many participants claimed to see it, and the majority answered *“no”* or refrained from answering. However, participants D and H said that they witnessed the impact on delays in policy development and alignment with top management, since nobody seems wishing to assume responsibility for making the ultimate decision about introducing this or that initiative. Participant B also agreed with that by noticing, *“I am trying to get my plan launched, but they [top management] delay that, they want somebody else to be punished for mistakes, but in case of success, they want it all for themselves.”* Hence, the respondents of focus group agreed that top managers are too often preoccupied with their personal gains and political career, so they prefer not to involve in risky decision-making to secure their positions and reputation. Unfortunately, such an approach

does not work effectively when it comes to ensuring the strategic management and movement to better performance.

The final introductory question related to ideas on improving and changing the situation with a strategic drift in the Abu Dhabi infrastructure sector. Here, a variety of opinions was voiced, each of the participants voicing some personal observations and concerns about the state of strategic management in their organisation. Participant C claimed, *“they have to look forward and assume responsibility – this way we will move forward”*, while participant E called for the need to learn from best practices of other countries. This opinion found strong support among respondents, one of whom clarified, *“we have little theory – only practice of expatriates. We have to develop our own strategic management wisdom”*. Many participants supported that claim and even said that once Abu Dhabi officials are empowered and feel that they have an ability to change something, they will act and will move their organisations forward, while at present, motivation is very low because of the low confidence and self-esteem coming from unprofessionalism in strategic management.

Coming to the point of causes of strategic drift, a confirmation on the major cited causes was found. For instance, focus group participants eagerly supported the negative impact of organisational culture on their organisation’s strategy. Participant F even claimed, *“we are not allowed to innovate; only managers can, but they don’t do that. So we stagnate and young people do not come to such an organisation, because they know they will not be heard and their new ideas will not be respected here”*. Overall, all focus group participants agreed with such a claim, each of them noting that initiative is not favoured in their workplace,

change is feared, and newcomers wishing to change something are neglected. Conservatism typical for the UAE is evident in the Abu Dhabi Infrastructure Sector as well, which contradicts the very vision of this Emirate – keeping pace with globalization, innovating, empowering local workforce, etc. Unfortunately, the majority of participants reported that such practices are more popular in the private sector only, while public sector is still quite bureaucratic, and has a culture non-conducive to change.

Strategy and organisational structure were also considered prime contributors to a strategic drift in the Abu Dhabi infrastructure sector. While participant G clarified it as follows, *“structure is very fragmented, I would say. We do not know what a neighbouring department does, and sometimes do the same”*, participant I added, *“right, and we are then punished for doing double work while provision of good communication would prevent that.”* Here, many respondents voiced concerns about isolated and unstructured work on addressing each separate problem, while problems keep on coming every day, and the work of so many people appears simply wasted in the face of the complex and changeable nature of Abu Dhabi residents’ needs. In connection with that, participant A voiced a very wise observation, *“All in all, we act as blind people, with strategies developed by consulting firms but not reaching our ears. Objectives are unclear, strategy is unclear, but we are urged to work every day – so we do meaningless work while strategy remains unaccomplished.”* This way, it has become obvious that all participants associate the absence of communication, ambiguity of strategies, and improper organisational structures with the resulting strategic drift.

The third cause of strategic drift discussed in this focus group was that of governmental policies of centralization and decentralization; some participants characterized them positively, with participant C saying, *“I believe it is a good start. We are trying to do something, look how it works, and then redo something”*, while several respondents were still highly critical about such thoughtless actions performed without strategic planning. For example, participant B was very negative, *“you say it is a good start – billions of dollars spent on that unsuccessful endeavour instead of spending one hundred thousand for expert evaluation, thorough thinking of consequences, and not doing that! I believe it is a stark example of no commitment to planning”*. Other participants took either of the sides, bringing forth some arguments such as transitional development, learning on one’s own mistakes, but the only thing became clear – all of them agreed that such practices are unsuccessful so far, and much more advanced strategic planning is required to make them work.

The next two questions related the issues of management and leadership, as well as their contribution to a strategic drift. Respondents actively supported the opinions of survey and interview respondents about the insufficient level of involvement of present-day leadership of the Abu Dhabi infrastructure sector in strategic management and planning issues, again connecting that with reluctance to assume responsibility and a fragmented nature of communication preventing management from receiving the entire picture of organisational needs and functioning. Participant D was very observant in terms of managers’ reluctance by saying, *“would you like to present your ideas about something without seeing the whole picture? It is highly distressing to see that you can make a difference, but to be not sure whether anyone is interested in your help”*.

Participant J also confessed to being rejected as an initiative-proposer, *“I tried to share my observations, but I was told that we have a highly paid international consultant firm’s experts and it is their job. However, that experts spent 3 months to get familiar with our system, while I work in this organisation for 15 years and know exactly what my people need. Where is the logic?”*. Such remarks obviously showed that managers are limited in their vision and in their roles, being assigned with some fragmented tasks, while some larger processes and objectives remain non-covered, causing delays in strategic implementation. Such evidence naturally guided participants to answering the second question in this section, about what should be done for their increased participation in organisational procedures. All participants claimed that they would gladly propose their ideas if strategic management officials were ready to listen, and were interested in their proposals. Participant H even offered creating a special committee for consideration of managerial propositions and development of initiative projects as a test opportunity for employees to express their willingness to contribute to their organisation’s growth.

The final section of the focus group discussion concerned the concepts of organisational inertia and change. First, the respondents were asked about organisational inertia and why so few respondents associated the improper organisational culture with it. Participant B claimed, *“they simply do not regard it as inertia, they got used to it.”* Participant D went on to clarify, *“what you regard as bad organisational culture is a norm here, so unmotivated and disinterested people are also a norm – it is not inertia”*. Counter to that opinion, participant J claimed that more and more employees and managers recognise that it is a negative phenomenon, and new strategic and culture initiatives slowly begin to

work and improve motivation of employees. Thus, inertia is a weakly recognised phenomenon in the Abu Dhabi organisations so far, but it is gradually coming forth and there is a hope that something will be done to it soon.

Next, respondents were asked about how to embrace change better. There was a unanimous opinion here – not to be afraid of change, and to consider it positively. Respondent F clarified that as follows, *“our managers consider change as instability, and fear it. But change is coming, it is inevitable, and changing your attitude to it is the key to embracing it”*. Furthermore, participant E pointed out the need to hire more proactive managers who teach others not to be afraid of change, but even to create them on their own: *“I know that in private companies, there are change agents who boost change, educate staff about it, and make the results very positive. We do not practice that yet, so change is a frightening mystery”*. Hence, as it comes from analysis of this response, respondents call for greater acceptance of change as something normal and even good; instead of fearing it, managers should work to make it controlled, strategically desired, and efficient.

The concluding question asked respondents about whether they consider change as a remedy for their organisation, and whether it can save the Abu Dhabi Infrastructure Sector from a strategic drift and failure. Many respondents answered affirmatively, stating that change is a key phenomenon nowadays that determines the competitive advantage and spirit of the organisation. If an organisation adapts to change and addressed changes effectively, it will survive, while ineffective or delayed response to change leads any organisation to a failure. Nevertheless, other opinions were also voiced, with respondent A, for

instance, claiming that only change is not everything; effective leadership and optimal communication channels should be established to instil the positive change in the organisational culture. Participant C also turned attention to organisational culture and the need to adapt it to current challenges, while participant H reminded about the need of public sector organisations to keep in mind the needs of the public, and to make them their priority to survive and perform their fundamental strategic mission.

Reflecting on the focus group discussion and the overall study, several respondents pointed out that they are happy to see such research taking place in Abu Dhabi because of a lack of practical action directed towards progress. Alongside with strategies and agendas accepted by the government, little in-house training is provided to make those changes a reality in the workplace. One of respondents also reflected by saying that empowerment of local workforce and involvement of young people are the most efficient ways towards reforming the entire organisational structure and achieving a strategic fit, since this is the future of any country. Finally, all respondents agreed that management empowerment and major initiatives boosting participation of all levels of management in strategic planning may make a real difference for the Abu Dhabi Infrastructure Sector, as well as for many other governmental agencies struggling to embrace modern changes.

8.6 Proposed Framework Model

The findings from the previous stages of this research study were taken into consideration in the development of the framework. The developed framework provides guidance for successful implementation of strategic plans across governmental agencies.

In this study, during face-to-face interviews, interviewees expressed the need for a holistic, comprehensive framework for addressing the issues relating the strategic management issues within Abu Dhabi Government. Such a framework should be clear and easily understood by a variety of stakeholders with diverse backgrounds, who are involved in the different phases of the implementation of the strategic plan.

In light of the research and its outcomes, the below described framework model was developed to highlight the relationship between leading the execution of successful strategy and various components: stakeholders, change, culture, innovation, resources, and communication. The framework is designed for governmental public sectors as it can be utilized in any similar cases.

The philosophy of the **Government Strategy Model (GSM)** is based on the importance of understating both; the external and internal environment. It is also necessary to engage throughout any strategy process related to public services all concerned stakeholders: the public sector, the community, ad the privates sector. Forming and executing a strategy is a product of collective and collaborative efforts and process among all stakeholders.

Deep analysis of the external and internal environment must be conducted where the analysis includes the following:

- Identifying Stakeholders and the appropriate communication strategy
- Defining organisational capabilities and matching its resources with the strategy
- Designing the most suitable operational plan to execute the strategy and evaluating the potential risks of the strategy; and how it can be mitigated when occur.

Effective leadership is vital toward any successful strategy through playing major role in building partnerships and working in four parallel lines. First, qualifying the individuals across the layers of stakeholders by choosing the adequate ways. Second, promoting innovation through stimulation the people's minds and making their unique ideas come to reality. Third, leading the change to safeguard the proper execution to the strategy. Fourth, managing the culture to accommodate the rapid growing the surrounding life aspects not only within the government entities but also across individuals, private organisations, governments, and other institutions.

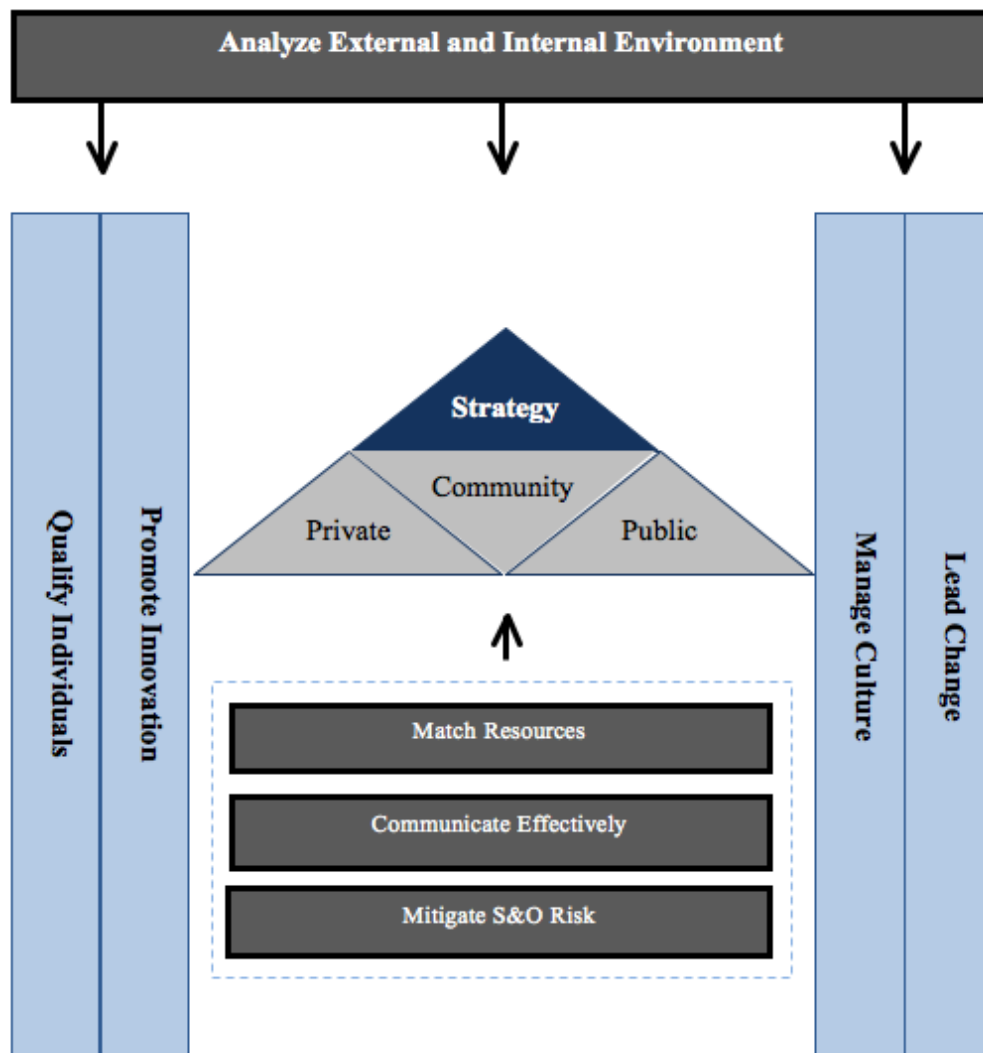


Figure 8-7 The Government Strategy Model (GSM)

Figure 8-7 demonstrates the Government Strategy Model, which suggests that successful strategy is based on sustainable long-term partnership between public sector, private sector, and community.

8.7 Framework Validation

The proposed framework was ‘validated’ using qualitative focus group during the final stage of the research. Herein, the term ‘validation’ is not used in the positivist sense; i.e. to refer to ‘nothing less than the truth’ known through ‘language referring to a stable social reality’ (Seale, 1999). Rather the term is used to encapsulate some of the criteria put forward by Corbin and Strauss (2008) to evaluate the ‘quality’ of research findings derived using the principles of grounded theory. These criteria are:

- ‘Fit’ (i.e. ensuring that the findings ‘resonate’ with the experience of the professionals for whom they are intended).
- ‘Applicability’ (i.e. establishing the usefulness of findings).
- ‘Logic’ (i.e. ensuring that there is a logical flow of ideas, making sure that there are no significant gaps in logic).
- ‘Depth’ (i.e. ensuring that there is sufficient substance within the findings)

The developed framework was validated with 9 senior professionals in middle and top management positions, who had over 15 years of work experience in Abu Dhabi Government Infrastructure Sector.

In this validation process, during the focus group session, which took about 45 minutes, the participants were asked about the comprehensiveness of the developed framework. Most of the participants agreed that there is a very high level of coverage in terms of the constituent sections of the developed framework. There was further agreement amongst participants that there was a high level of

coverage in terms of the contents provided within each section. However, one participant mentioned that the framework could be further improved through the incorporation budget control, which would in turn improve its applicability in practice. The participant also felt that the flow and the logic of the framework were easy to understand and clear, indicating a high level of logic. Overall, the participants felt the framework presented a useful tool for forming and managing government strategies in Abu Dhabi Infrastructure Sector.

Moreover, the participants were asked if they recommend the framework for use by other public sector organisation, response from all participants was very positive. They considered a framework will help the government entities in Abu Dhabi to understand the external and internal environment and improve the internal capabilities in order to accomplish the strategic fit. Overall, most of the participants recommended that the developed framework can be used in all four sectors of Abu Dhabi. The framework can be further tested and revised in both academic and business context.

8.8 Summary

The present chapter involved analysis in both qualitative and quantitative perspectives, so it is essential to give credit to any errors that could emerge during data presentation and interpretation. Quantitative data analysis was performed with the help of descriptive statistical methods that do not involve any errors, while correlation tests were performed with the help of SPSS software, which also minimises the incidence of errors. Both descriptive statistics and qualitative data were analysed with proper regard to prior literature review and personal academic and practical experiences in the field, so there is still a threat of researcher bias in terms of inferences' presentation. To minimise that bias, a number of sources

were consulted to verify inferences, and conducted a validation session in the form of focus group, thus increasing the objectivity and validity of obtained findings.

Assessment of the provided data allows making an overall generalization of inferences to wider population. Obviously, analysis of only the Abu Dhabi Infrastructure Sector is quite limited for making general conclusions about the ways of, and approaches to, strategic management in the entire UAE. However, some cultural issues mentioned by respondents and numerous references to governmental decisions that are quite similar for all Emirates allow concluding that at least for the rapidly developing Abu Dhabi, these findings seems to hold validity. Strategic drift is recognised in the researched sector because of fragmented policies, inability of senior officials to assume responsibility for ground-breaking changes, and a lack of empowerment of the local young population of employees. Communication channels and processes are also quite old-fashioned across the UAE, and they undergo the lengthy and large-scale process of change and transition that complicates organisational communication at present.

Absence of a proactive, modern, value-based organisational culture may also be regarded as a nationwide problem, especially taking into account extreme reliance on expatriate managerial knowledge instead of fostering local talent and development of local knowledge. All these issues make the UAE governmental agencies (as well as governmental agencies in developing countries worldwide) vulnerable in the context of quick globalization and modernization, and disable them in responding to external pressures and challenges. Based on the findings

obtained through analysis presented in this chapter, a strategic framework model regarding the present-day state of strategic fit/drift is presented for improvement of the current situation. The framework was validated through a focus group from 9 participants was conducted. The participants comments were considered and included in the analysis.

Chapter 9: Conclusions and Recommendations

9.1 Introduction

9.2 Conclusions

9.3 Recommendations

9.3.1 Technical Recommendations

9.3.2 Recommendations for Policy Improvement

9.3.3 Recommendations for Further Research

Conclusions and Recommendations

9.1 Introduction

In this research study, the narratives on strategic fit from the numerous genuinely diverse perspectives in the field were examined in detail and arguments relating to the need for conducting research in the Abu Dhabi Infrastructure Sector in the context of the stated research aim and research objectives of this study were made.

The present chapter is dedicated to summary of the conducted research and discussion of its major implications for the overall field of strategic management research. Generalizations are made regarding the ways in which this study's findings and conclusions are applicable to the larger field of the UAE public sector agencies and evaluation of their functioning. It proposes technical recommendations for Abu Dhabi Infrastructure Sector as it also contains recommendations for the policy improvement in terms of practical strategic management changes. Significant contribution to the knowledge of strategic management is proposed as well. The final portion of the chapter is dedicated to provision of recommendations for further researches that account for the limitations of this study and propose further research for mitigating the limiting impact of those barriers.

9.2 Conclusions

In the times of dynamically changing and modernising business environment touching all aspects of organisational functioning, both private and public sector entities, the ability of any organisation to find a wise balance between its resources, capabilities, and opportunities offered to it by external environment has gained prominence and exceptional relevance. Such ability is referred to as 'strategic fit', and it mostly predetermines the ability of an organisation to remain

flexible, responsive, and adaptable to the environment in which it functions. However, contemporary entities are functioning in the increasingly complex and uncertain environments, so the concept of fit has also evolved into a dynamic notion of continuous striving towards equilibrium. Notwithstanding the fact that environmental conditions are quickly changing and organisations are urged to seek ways of quick adjustment, strategic fit still remains one of the central concepts within the field of strategic management, and it lies at the heart of organisational change.

The challenge faced by public sector organisations at the present-day global market is even more serious as compared to private entities. The reason for this may be partly found within the fundamental principles of public sector functioning mainly based on the slow bureaucratic structures and a long hierarchical chain of command and control mitigating progress and change. Furthermore, public sector entities are usually financed from governmental sources, often experiencing budgetary cuts and shortages, which necessarily affects the agility of any public sector entity in terms of addressing environmental changes and challenges. Hence, the issue of strategic management of public sector organisations is totally distinct from those of private companies, and it has to be approached differently.

Abu Dhabi is a rich, economically developing, and progressive Emirate, one of the most prosperous emirates within the UAE. The state is also a quickly developing economy focusing on modernization and progress as some of its number one priorities. Hence, it is not surprising that Abu Dhabi authorities increasingly invest into improvement of its public sector structures. Infrastructure

is one of the most strategically important aspects of Abu Dhabi renovation, since it contributes to the Emirate's infrastructural accessibility, convenience of its infrastructure for tourists and business, and accessibility of the Emirate and state overall in terms of trade and transportation. Background analysis of data showed that the Abu Dhabi government indeed invests tremendous funds into improvement of infrastructure, but this study was concerned mainly with the efficiency of strategic management and coordination of those efforts, which is also a vital element of successful implementation of projects and wise, effective, and productive allocation of funds.

The present study was thus concerned with the identification of practical sides of strategic management and the extent of change acceptance in the Abu Dhabi infrastructure sector. Alongside with that, the research was interested in the identification of presence of organisational inertia in this public sector agency, and in the analysis of its root causes. Another aspect of interest was examination of the extent of knowledge and understanding of theoretical issues and processes standing behind the development of organisational inertia, lack of change acceptance, and as a result strategic drift. Though the findings are generally encouraging because of the mainly positive estimates of strategic management quality in Abu Dhabi, there is still much space for improvement in terms of organisation-wide and individual managerial practices.

Assessment of propriety of Abu Dhabi government's strategies for modernization, management, and achievement of strategic fit showed that the sector is generally functioning quite well in terms of strategic management, but it repeatedly reveals some flaws in quickly addressing changes and challenges in the external

environment, which may have potentially dangerous consequences for organisational health and its ability to achieve a strategic fit. Furthermore, respondents noted the absence of clear benchmarks for assessment of productivity, which is also an obvious flaw that needs to be addressed through targeted action for the Abu Dhabi infrastructure sector. The major problem revealed in this aspect of interest was the presence of a long-term strategic vision but at the same time – absence of proper implementation plans for its achievement. Solutions suggested in this respect involve acknowledging risks, implementing participatory and dynamic decision-making processes, and assuming responsibility and ownership of projects for design of clear, comprehensive, and practically implementable strategies and following them concisely.

Communication has always been closely linked to the process of strategic management, so one of the aspects of this research inquired respondents about efficiency of communication in terms of achieving strategic objectives and strategic fit. Unfortunately, this aspect was identified by the majority of research participants as one of the weakest parts of the present-day Abu Dhabi infrastructure sector functioning. Thus, such findings strongly suggest the need for implementation of new strategies, educational interventions, and organisational policy changes for the staff of this agency at all levels to embrace more effective and productive communication for the sake of optimal strategic management. The role of communication is vital in marshalling processes and projects, so without efficient top-down and bottom-up communication optimized in terms of redundancy at all levels, there is no possibility for the Abu Dhabi infrastructure sector to achieve its strategic fit objective. At present,

communication procedures and protocols are considered weak or non-existent, and participants of this study almost unanimously recognized the problem of inefficient communication as making a direct contribution to slowing down the accomplishment of organisational objectives.

The third aspect of interest, the role of leadership and management in the formation of strategic drift, has revealed the challenging level of managers' involvement into the processes of strategic management. Such an observation suggests that managers in Abu Dhabi do not perceive strategic management and achievement of organisational objectives as their primary responsibilities, and act mainly in an isolated manner, performing only their fragmented functions. The state of organisational culture in the Abu Dhabi infrastructure sector is also quite inefficient, with it not being focused on change, improvement, and commitment to the organisation-wide strategic objectives. Therefore, there is a need to make organisational culture more proactive and dynamic, and to instil a sense of its linkage with the strategic management and functioning the entire organisation. In case all employees at all levels have the value of strategic performance increases and improvements in mind, the organisational performance is certain to improve quickly.

The final aspect of interest in this study involved an exploration of connections between organisational change, inertia, and strategic drift. This study's findings suggest that change is at the heart of all proactive organisational processes, especially in the modern dynamic environment, so embracing change is a necessary precondition of organisational performance increases that the Abu Dhabi infrastructure sector currently lacks. Change is closely related to innovation

and readiness to embrace everything new, which is quite a challenge for public sector agencies in general, and turned out to be a specific challenge for this researched entity. The complicating aspect of the problem is that Abu Dhabi infrastructure sector's employees turned out quite unaware about the cyclic impact of a lack of conduciveness to change, its being a cause for a large-scale organisational inertia, which in its turn evolves into a considerable strategic drift.

These processes form a chain of deterioration of organisational performance, and taking isolated action in a certain team or department is often ineffective in solving the organisation-wide problem of dwindling performance and disinterest in the organisation's destiny. Organisational inertia is unfortunately one of the problems that are not easily detected due to its latent, often unnoticeable form. However, despite being so unnoticeable, it often produces a pervasive disastrous effect on staff performance, motivation, workplace morale, etc. Hence, this issue should be specifically addressed through education, practical workshops, seminars, and other interventions that may help the staff of the Abu Dhabi infrastructure sector to embrace the true role of organisational change in both negative and positive strategic dynamics within an their organisation, and to take corresponding action to contribute to organisation's attainment of strategic fit.

9.3 Recommendations

Traditional governments have always been concerned with the futures of their own cities, focusing on services and actively modeling and managing urban areas. However the more modern governments have also shown an increasing tendency to consider, strategies and plan for the future of cities to achieve positive productivity, livability, and sustainability outcomes.

This section of the chapter will provide recommendations considering the future of Abu Dhabi and provides suggestions to overcome the spatial, governance, and infrastructure challenges of a global economy and society, which is becoming more decisively urban. In addition, the recommendations shall assist the Government of Abu Dhabi in embracing the upcoming changes to build a more modern and sustainable Abu Dhabi city.

9.3.1 Recommendations for Technical Development

Abu Dhabi is expanding rapidly in terms of population and geography. The Infrastructure Sector development should be in line with this expanding by introducing innovative and modern ideas at affordable costs and classes to different public categories. Also, the Infrastructure Sector entities need to work in harmony where an integrated unified system is necessary in terms of governance, planning, and services. Accomplishing the proposed concepts shall contribute in developing Abu Dhabi vision with regard to economic, and social objectives. The recommendations may involve organisational structures, policy, and infrastructure development.

Urban development

- **Introduce Participatory Strategy:** Introduce a participatory to urban planning with communities and other subsector custodian (economic, social development, etc..) and incorporate adequate adaptive capacity in plans in order to be responsive to economic and social changes.
- **Implementation of Integrated Sustainable Urban Development:** It is increasingly clear that the various challenges facing urban areas – economic, environmental, climate, social and demographic are interwoven and success in urban development can only be achieved through an

integrated approach. Hence, measures concerning physical urban renewal should be combined with measures promoting education, economic development, social inclusion and environmental protection. The development of strong partnerships involving local citizens, civil society, the local economy and the various levels of government is an indispensable element. Combining capacities and local knowledge is essential to identify shared solutions and to achieve well-accepted and sustainable results.

- **Build Sustainable, and Green Cities:** With a rising population and finite resources in UAE likewise global concern, action is necessary to find the balance between sharing project ideas. Not only policies and concepts, but also knowledge and techniques for urban development are in hand. Innovation, application of new methods needs comprehensive co-operation among different sectors. In addition, the government of Abu Dhabi is recommended to Develop regulations and incentives to enable institutional and individual behavior change towards more sustainable production and consumption patterns.
- **Plan Modern Urban Agglomeration:** Abu Dhabi is witnessing a continuous urban spread constituting surrounding towns and adjoining urban outgrowths, which must be forecasted and planned ahead in order to assure availability of services, even distribution of resources, and investment direction. Examples of potential outgrowth in Abu Dhabi are university campuses, port area, military camps etc.
- **Plan and execute Mega Projects:** Despite the strength of Abu Dhabi investments and economy and the enormous sums of money being spent

on the Infrastructure Sector of Abu Dhabi, surprisingly almost not a single mega project rather than in the ones the energy sectors. Abu Dhabi needs to consider initiating mega projects to accommodate the growing population over the wide geographical expansion of the emirate. The mega projects must include the entire infrastructure sector.

- **Build Smart City:** Major technological, economic and environmental changes have generated interest in smart cities, including climate change, economic restructuring, the move to online retail and entertainment, ageing populations, and pressures on public finances. Abu Dhabi is suggested to use information and communication technologies to enhance quality and performance of urban services, to reduce costs and resource consumption, and to engage more effectively and actively with its citizens. Smart city technology need to include government services, transport and traffic management, energy, health care, water and waste. Smart city applications shall be developed to improve the management of urban flows and allowing for real time responses to challenges.

Transportation

Surface Transportation

With UAE Government recent decision to deregulate fuel prices and adopting new pricing policy to support the national economy, lower fuel consumption, protect the environment, and preserve national resources; the surface transport development is becoming fundamentally important. This section is related to recommendations considering the future needs for public transport that shall arise as results of the fuel deregulation decision and other factors such as the population growth and prompt urbanization.

- **Introduce Smart Bus System:** Although there is a bus network system in Abu Dhabi now, smart bus is required to improve the transportation service. A smart bus system where buses are equipped with a combination of modern electronics that allows the bus to send, receive and broadcast digital information to allow the bus operator to link with transit control as well as receive the work assignment for the day and check if the bus is early or late along the route. In addition to in-motion equipment, camera system, smart passenger counters and smart card for entry, and next stop announcement equipment. The communication is exchanged over a cellular network. Real-time status reports is to be communicated between the bus and the transit control as well the bus stop stations to provide information of the journeys and times of the bus trips.
- **Establish Electrified Metro System:** Abu Dhabi needs to build a metro system that links the whole city together. With Abu Dhabi ambitious and ability to invest in the city's transportation, technologies and equipment are available for the metro ways to be constructed under the ground where the metro system shall work in integration with other transportation means.

Figure 9-1 shows the suggested two metro lines' stations location which is based on population density and the need of the public transit. The first line is the 'blue line' that links middle of the city through nine stations from Abu Dhabi Airport to Marina Mall. The second line is the red circle line that goes around the city and intersects with the blue line in AD Airport and Almeshrif. It also goes around the city and links it to the newly developed islands.

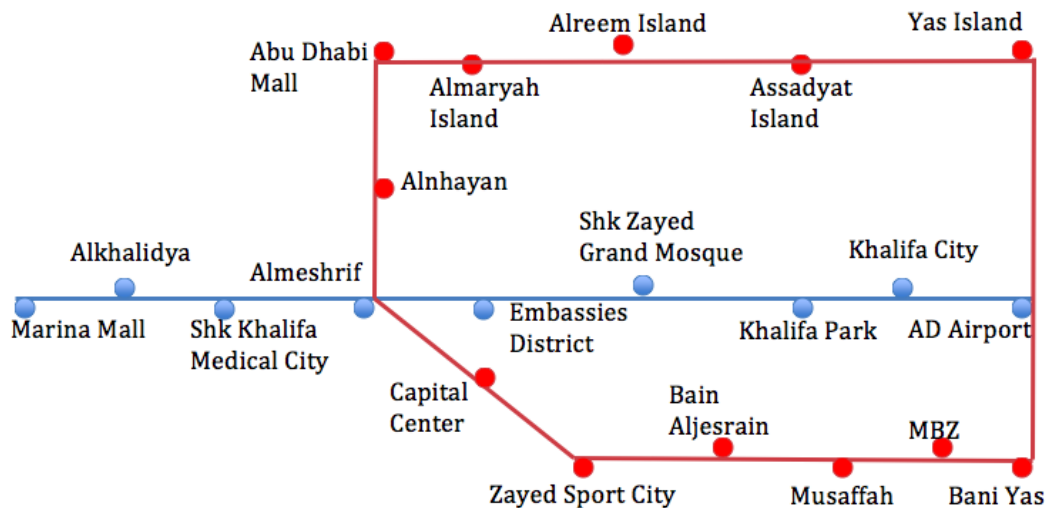


Figure 9-1 The suggested Electrified Metro Rout System for Abu Dhabi

- **Construct City Tram Link:** for the transportation system to be integrated, Abu Dhabi needs to design and build a tram link inside the main island to cover the highly populated and crowded parts of the city. The suggested main rout way (Red) shown in figure 9-2 starts from Almaqtaa Bridge following Airport Road down until the Cornich area. In the metropolitan crowded part of the city there are two tram routs (Blue) that intersect with the main rout.

In the future, the tram maybe extended to nearby urban areas around Abu Dhabi.

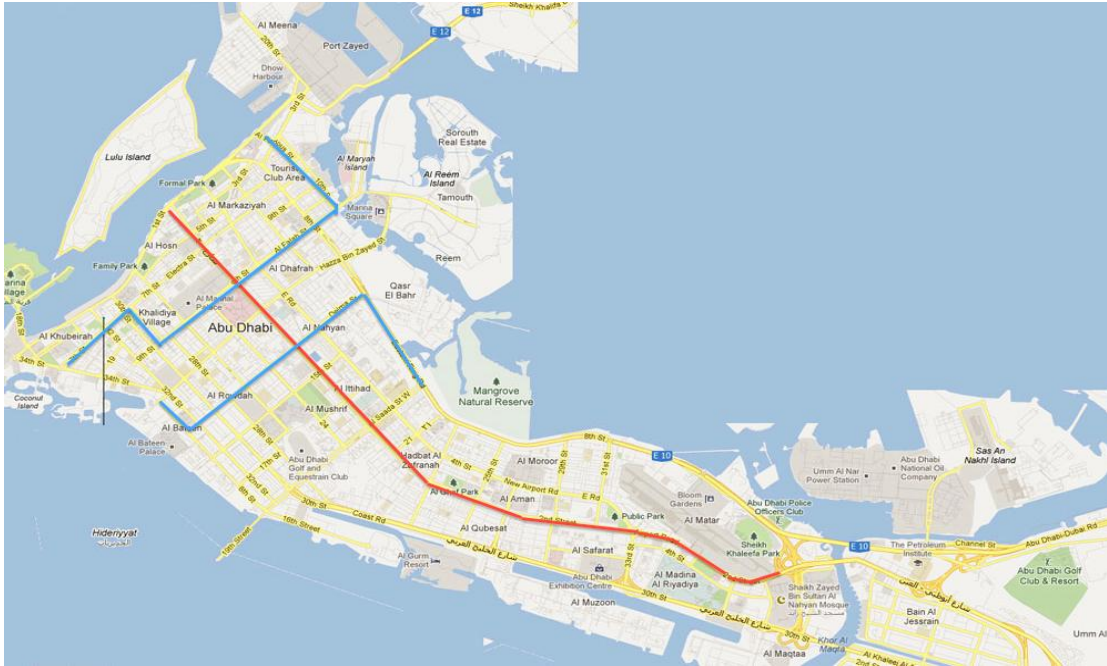


Figure 9-2 The suggested Tram Route for Abu Dhabi

- **Introduce Combined Interactive Transport:** co-ordination between transport services carries with regard to geography and time. Also, passengers should be able to access through a smart application to all transportation means in the city where they can track, make reservation, view journeys' schedules, and traffic.
- **Configure Sustainable Transportation:** There is a major impact of transport systems on the environment. Abu Dhabi government need to clearly define sustainability targets by shifting away from petroleum-based modes of transportation to more environments friendly ones. Considering the hot weather during summer, the weather throughout winter can be considered as advantage where residents can be urged to use bicycles and other fuel-less transpiration methods.
- **Call for more Integration between entities:** The transport sector is in need for an organisational body to clarify the role between the Department of Transport, Urban development Council, Municipalities, National

Transport Authority, and Environment Agency of Abu Dhabi in addition to create a better integration between the land-use and public transport planning, creating residential and commercial developments.

Aviation

- **Expedite Abu Dhabi Airport Development:** While the development of Abu Dhabi Airport is still late, the government needs to discuss with contractors various ways to expedite the construction of the new run ways and passengers' terminals.
- **Lead Structural Adjustment:** The aviation sector requires structural adjustment to allocate responsibilities between federal and local authorities in accordance with world best practice such as splitting regulator and service provider responsibilities. In addition to strategically harmonize government owned stakeholders and create integrated sector financial model.
- **Originate Open Communication:** Ensure open communication between Etihad Airlines and Abu Dhabi Airport operator to guarantee the airport capacity development and investment programs are aligned.

Maritime

- **Launch Waterways Law:** There is a need to breath new life into the sector through passing waterways law that covers maritime transport navigation to encourage growth in maritime transport through a number of actions such as the modernization of infrastructures or the harmonization of equipment and procedures. Improving maritime safety and protecting the marine environment are also priorities.

- **Initiate Waterways Operating Model:** Develop a waterway management-operating model and clarify regulatory oversight roles between federal and local stakeholders to clarify the role of each authority involvement in the management of waterways.

Utilities

- **Present the Energy Policy Act:** Abu Dhabi has gone in its way in building its first nuclear power and this program needs to continue over the upcoming years. The development of nuclear power began as a government program from the Baraka Project to develop nuclear power plant. While the UAE is expecting to have more private sector participation in the production of civilian nuclear power, the government is recommended to have a strategy to be heavily involved through safety and environmental regulations, research and development funding, and setting national energy goals. Government policy should be central to any discussion of nuclear power.
- **Emphasis on Renewable Energy:** Develop and transfer towards a renewable and low-carbon energy and utilities sector by establishing regulations and incentives to encourage diversification into renewable energy alternatives
- **Institute an Organisational Body:** Establish an organisational body that is responsible for legislating, managing, and monitoring the collection, production, distribution and reclamation of water in the Emirate.
- **Inaugurate Water Treatment:** Use water treatment processes and build modern water treatment plants where wastewater is collected and treated

to produce water that's good enough to drink. Also, apply the necessary techniques creating an environmentally safe effluent.

- **Accelerate the Strategic Tunnel:** Complete the construction of the Strategic Tunnel Enhancement Program as many other construction projects are depending on the tunnel and its ability to dispose the extra sewerages that are produced by the future projects.

Telecommunication

- **Open up the telecom sector for competition:** The U.A.E.'s telecom sector is currently controlled by the two only service providers; Etisalat and du. With Etisalat being the major player in the sector, little to no competition in pricing and services can be seen as du has only been allowed to openly compete in the fixed land-line business (which accounts for more than 85% of revenue in the sector) just recently (end of 2014). Over the past years, the telecom sector has been heavily guarded by the government and calls to liberalize this huge profitable sector have faced delays or total refusals over the past years. The World Trade Organisation (WTO) has been pressuring the U.A.E. to open up the sector with the US and Australia refusing to allow Emirati companies to enter their telecom markets pending these changes.

Opening up the market for more competition from local and international companies will further allow for better and cheaper services for customers. With cheaper service new customers (previously hindered by the high prices) will benefit from cheap, mobile and fast Internet, which in turn provide a huge push to the adoption of smart mobile services in government and private sectors.

- **Push towards Mobile services across all service categories:** The U.A.E. has the highest smartphone usage all over the world with 75% of the population and ranking 19th world wide for internet usage. With the wide adoption of smart phones, tablets and other form of mobile computing the need for mobile services is at its prime. U.A.E. Government is recommended to continue to convert more of its services to mobile and continue enforcement of a conversion to mobile on all service sectors.

The banking sector have been benefiting from this as Recent statistics have shown that digital bank transactions have been growing five times faster than those at branches. The government is suggested help in the push towards more mobile services in all other service categories.

- **Major adoption of I.T. Solutions in the Education system:** The education sector U.A.E. has seen many changes over the years. With hundreds of public and private schools universities and other form of educational institutions the U.A.E. need to focus on the adoption of I.T. based solutions to strengthen this sector and help advance and grow the I.T. and telecom sector in the country. Adoption of electronic means of learning and communication in the classrooms and at home is key. Access to educational materials and a variety of resources with the help of multimedia will help provide more effective education.

Technological literacy can go hand in hand with the adoption of emails, forums and video chats serving as educational communication channels and educational platforms. Technology can ease access to education for children and those with disabilities.

Students will have immediate access to authentic up to date information. Distant and collaborative learning are made more viable with the aid of technology.

9.3.2 Recommendations for Policy Improvement

Worldwide the public sector is charged with the responsibility of offering effective and efficient service to the public of any given economy or country. Abu Dhabi Infrastructure Sector has been engaging in plans and activities to improve services to the public and to contribute to Abu Dhabi economy. The sector has outlined its development strategy in line with Abu Dhabi Government ultimate goals of improving community services, achieving excellence, and enhancing performance. This strategy was faced by some challenges that resulted to the delay of major projects and the interruption of the Emirate economy.

The study's findings obtained in the process of research have a number of important managerial implications that should be taken into account to improve performance and reconsider the role of strategic management and strategic fit in the Abu Dhabi infrastructure sector

This part of the research will focus on providing recommendations regarding the fundamental areas where the research proved the Government of Abu Dhabi need to maximize its efforts in order to demonstrate better strategy formulating and execution; and improving capabilities and strategic fit.

Benchmarking

What came to the forefront in the process of data analysis is that the lack of strategic management in the sector is mainly due to the lack of responsibility and initiative to assume it. Furthermore, there are no clear assessment guidelines such as benchmarks and milestone for review of performance and identification of the

extent to which a strategic objective was attained. Therefore, it is recommended that managers of the Abu Dhabi infrastructure sector introduce benchmarks and milestone for performance of strategically essential tasks, and conduct regular reviews of performance to check compatibility of organisational progress with the initially estimated targets. This is accomplishable in case responsibilities are explicitly assigned to certain managers who obtain a sense of ownership in the project, thus increasing their motivation to contribute and achieve success in strategically vital projects.

Organisational Structure

The research proved that the organisational structure is the main reason for the strategic drift occurring in the Infrastructure Sector of Abu Dhabi Government. Apparently, the organisational structure of the sector needs to be studied and re-engineered in the basis of clear vision and priorities, organisational cohesion across the sector, and clear roles and accountabilities. In the case of Abu Dhabi Government Infrastructure Sector, the organisational structure must assure open communication and continues coordination in terms of the understanding of the government strategic objectives, and the mechanism of executing the related initiatives and projects. The change may include creating new organisational body, merging more than one entity in one, or re-distributing some of the roles and responsibilities. The structure shall be formed in a manner that supports the following roles:

- **Strategy Communication** to insure consistencies between authorities and stakeholders in understanding and implanting the Government's objectives.

- **Innovation** and knowledge management to sustain competitive advantage of the Emirate services and economy.
- **Teamwork** to assure learning and coordination among sector entities; and partnership between public sector, community, and private sector.
- **Project management** based structure to carry the Government strategic initiatives forward and to overcome the risk associated with the projects.
- **Resources Alignment** to enables higher performance by optimizing the contributions of people, processes, and inputs to the realization of the Government's measurable objectives.
- **Improved governance** arrangements either through improved self-governance within the authorities or by centralized governance.
- **Effective evaluation** of the effect of the provided services to allow continues improvement.

Cultural Management

It is essential to keep in mind that multiple problems of communication and inefficient organisational culture in the Abu Dhabi infrastructure sector may have a cultural component at their heart. The UAE is a quickly developing and modernizing country as it is a conservative Islamic state in where many values and believes are driven from religion. Therefore, it is recommended for managers to embrace change in a culturally specific and sensitive manner so that it would not be immediately rejected. Furthermore, it is advised to hire Emiratis as change agents to raise initial respect and trust towards them as change leaders. Expatriate knowledge is highly valuable in the UAE so far, but making expatriates only consultants, not leaders, may become an additional cultural impetus for Emirati managers to embrace change more smoothly and willingly.

With observations made in this study, the change process in public sector should be planned with consideration of all specifics of public sector entities' organisation. Though in the 1990s, management of change in the public sector resembled the top-down radical shock strategies, its introduction in the modern public sector depends much more on the preliminary assessment of how conservative and bureaucratic the entity is. Now organisations working within the public sector are not susceptible to such methods of change, and require the implementation of change accompanied with employee participation and shared decision-making. This is what has been referred to as sense of ownership in previous sections; for managers to become actively involved in the strategic management process in public sector organisations, they have to know clearly what their responsibility is, and they should be given authority to conduct those changes and receive rewards for effective completion of strategically important tasks. Only this way, management may become productively involved in change and even adopt the functions of change agents to transform public sector organisations.

Culture management is important in shaping practice and performance in the Infrastructure Sector of Abu Dhabi Government organisations. In addition, culture management should be stretched to reach the stakeholders who are the beneficiaries of the services provided by the sector.

Abu Dhabi Strategy is aimed to building a long-term competitive advantage. The government could achieve its strategic objectives through development of strategically appropriate culture, which enables and supports the implementation of the strategy. Therefore it is also, recommended that Abu Dhabi build a culture that response to the demographic, economic, and technological changes that are

associated with the growth of the sector. In order to contribute to creating a more developmental and performance oriented culture, the government need to build set of principles, values, and norms, which are shared among the stakeholders and which substantially affect the behavior of its members by addressing the following key enablers:

- Establishing leadership role
- Creating environment for change
- Empowering stakeholders
- Fostering innovation and teamwork
- Launching rewards and recognition program

Effective Communication

Abu Dhabi Government needs to launch an efficient communication program to its internal and external stakeholders with regard to its future vision and the correlated strategic plans. Building effective partnerships with stakeholders shall play an increasingly important role in fostering the collaboration of community and government and private sectors toward achieving the strategic objectives. The public expectation and way of communication means has change a lot in recent years with the technology breakout and with the social, political and economical changes that accompanied this change. By working with community groups, and public and private sector organisations; Abu Dhabi Government can draw on the voices of trusted intermediaries who are a far more accessible and trusted source of information and offer a more direct understanding of specific communities or local circumstances. During the upcoming years ahead UAE and Abu Dhabi in specific will experience a number of events and milestones where communication will play a significant role. The Government is recommended to develop clear

understanding of its communication environment and define its communication policy and then establish the objectives and priorities of its communication programs. The communication programs must be designed to communicate with each stakeholder category carrying the vision, the mission and the priorities of the government strategy.

Considering the culture of UAE citizens when talking about communication, the local tradition is deeply rooted with the people. They have their own protocol as their tendency to be very polite and their high sensitivity to what is being said and who says it. The focus on interpersonal relations means there is often more of an emphasis on what someone wants to hear rather than on directness.

Away from the traditional way for reaching out to the public through giving an informal speech to limited groups of citizens and officials in “Majlis”, the leadership in Abu Dhabi needs to adopt more modern forms of communication by building a constructive communication strategy to shape-up the image of the government leaders, establish leadership communication style, and build on the confidence among citizens, employees, and investors.

Human Resources

More than in any country in the world, Abu Dhabi Infrastructure Sector is faced with shortage of experienced Emirati skilled employees due to the fast growing demand as the infrastructure industry is rapidly developing. It is necessary for the Government of Abu Dhabi to build a comprehensive development policy for all employees in order to make continual and positive changes in performance. The aim of the policy is to retain the existing Emirati employees in the government

and provide the government of Abu Dhabi with its future needs of technical and managerial roles.

The main objectives of the policy are to assess the individuals' performance gap accordance to the strategy requirements, to meet future government requirements, and to achieve high return on investment of learning and development activities.

The development policy must establish a rich link between the government strategic planning and the individuals' role. Also, the policy should create a clear connection between the performance management and learning and development. In addition, it is necessary for the policy to identify the learning requirements for future capability needs and provide learning and development opportunities across the government entities. The policy shall be designed to measure the impact of the learning and development on individual and government performance.

Promoting Innovation

An additional concern in terms of managerial implications of this study is that of innovation dilemmas; many respondents noted the negligent attitude towards innovation and management of young talent in the Abu Dhabi Infrastructure Sector, which may be generalized as a typical problem for the UAE's public sector representing culturally conservative and bureaucratic organisations. However, innovation is much more a priority in private sector, so public sector entities should make an explicit focus on innovation as a part of their strategic management agenda for the sake of achieving better performance and strategic fit in the long run. Alongside with offering innovative services and innovative channels for their delivery, public sector may also become the places where

innovation is nurtured and introduced into processes and procedures for simplification, optimization of work, and overall public sector modernization

Demographic, economic, and technological shifts are creating an innovation imperative for Abu Dhabi infrastructure to be built and modernly improved over the next decade. UAE resource shortage in the engineering profession places it at a disadvantage, with limited people and experience to design and build the required infrastructure. Innovation can help Abu Dhabi achieve more with less resources. It is taken as axiomatic that innovative activity has been the single, most important component of advanced services and a major force in economic growth, Abu Dhabi is a very fertile environment for innovation as it is the richest Emirate among the other ones and the strongest in terms of economy and the ability to invest in its Infrastructure Sector. As the UAE launched its National innovation Strategy in 2014, the Infrastructure Sector of Abu Dhabi is need to outline its innovation strategy and bring into the line with the National Innovation Strategy. The Infrastructure Sector innovation strategy should be part of the Emirate's innovation strategy including the four main sub-sectors: urban development, transportation, utilities, and telecommunication. Also, the strategy may cover three aspects: technical, process, and commercial.

While efficiency, safety and reliability are important consequences from the Infrastructure Sector innovation strategy, it can have a positive impact on variety outcomes including cost reduction, service quality improvement, environmental impacts reduction, service resilience provision, capacity increment, efficiency improvement, and international competitiveness improvement of the national economy.

No matter how good a job government does to involve the ideas of its citizens, it is difficult to solve all of the complex problems using the perspective of just one expert or the skills of just one sector. Because there is great need for a place where individuals, organisations, governments, and other institutions could collaborate around big ideas, Abu Dhabi is recommended to build innovation policy providing incentives for knowledge management, and research and development to improve the services of the Infrastructure Sector and other sectors as well. Knowledge management is a critical core asset to sustain competitive advantage and a vehicle for continuous improvement and innovation.

The emirate's innovation strategy shall include Community Innovation Scheme Model (CISM). The suggested Community Innovation Scheme is dedicated to promote creation and support of communities' innovatory ideas by opening doors for the public to participate in the sector development. CIS can be formed of community think tanks and individuals from government officials, private sector representatives, and community champions. The CIS groups shall work to generate innovative ideas in assisting the needs of the local communities and preserving the cultural identity in terms of developing the Infrastructure Sector and other sectors in Abu Dhabi. The CIS groups also can work with local and international research and development centers.

The CIS activities can include cross-sector creative thinking to open toward foreign sector innovation. Although the CIS shall be managed by the government, which acts as the sponsor and defines the ground rules for participation, Intellectual property rights will be owned by the entire community.

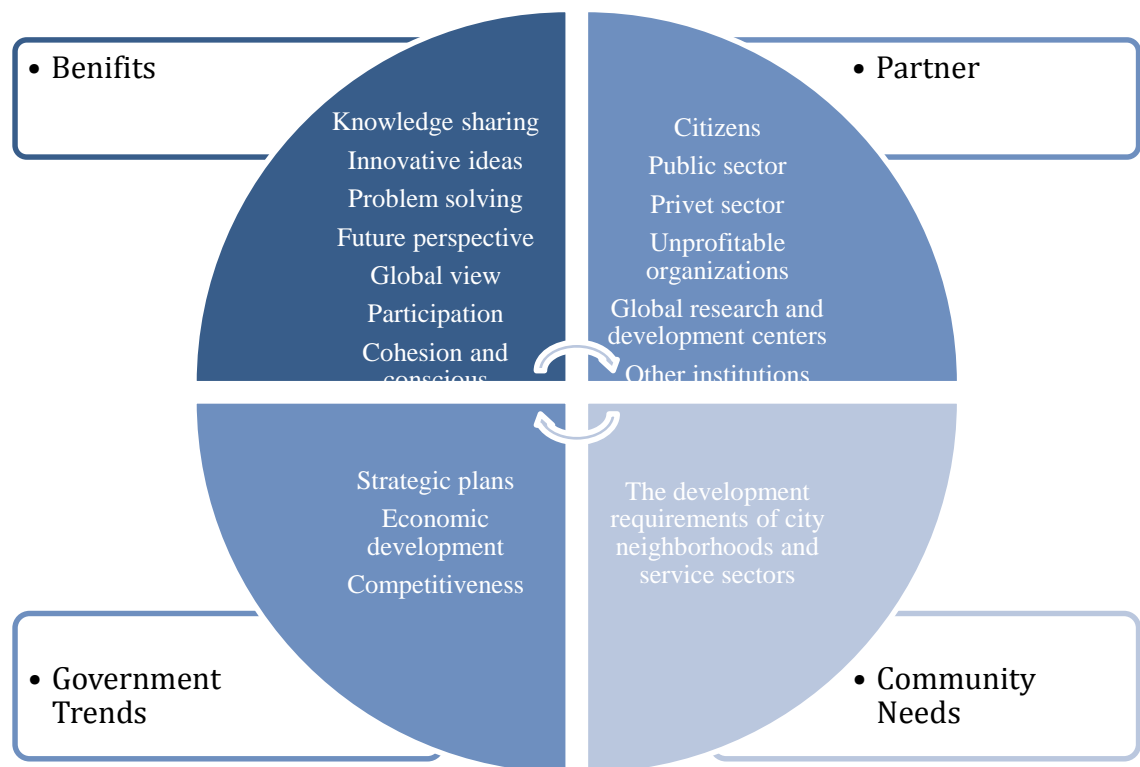


Figure 9-3 The Community Innovation Scheme Model (CISM)

Figure 9-3 is the Community Innovation Scheme Model, which summarize the flow of the innovation efforts by the partners to conform the community needs to the government trends. The benefits of the whole cycle are uncountable, yet a more cohesive and conscious individuals and institutions are believed to the result of it.

Leading Change

The leadership of the Government of Abu Dhabi needs to focus on the **3-Spectrums of Change (3SoC)** that are involved as the main element in the change process: public sector, private sector, and community. The developed 3-Spectrums focus can help Abu Dhabi Government creating mutual and solid ground between the public sector, private sector, and community to set priorities, emphasis efforts and resources, strengthen operations, ensure that all

stakeholders are engaged toward common goals, and to establish understanding around intended outcomes.

Managing change means dealing with people mindset that is basically formed of feelings, beliefs, and interests that drive these people who could be government official, community members, or entrepreneurs. Change management aspects

Leaving one or more spectrum behind could mean jeopardizing the whole change process and the cause for it. The 3-Spectrums must be dealt with by building awareness, creating desire, developing knowledge, fostering ability and reinforcing changes among the three spectrums. That can be done throughout change management aspects including readiness assessments, sponsorship, communications, and training and resistance management.

There are four principal pillars that shape the behavior of the 3-Spectrums, internally and externally. The first two internal pillars that come form the inner configuration of the human are the Morals and Motives. And, the second two external pillars that come from the surrounding environment are the Management and Measures. The better results and performance of each pillar, the more positive change consequences are more likely to occur.

Whereas, the four pillars are the basics of the **4Ms Change Model (4MCM)** as the following pillars:

- **M**anagement: the leadership role to navigate change
- **M**orals: the individuals' believes, and values that shape the overall culture toward change

- **Motives:** the impulse that makes people (the 3-spectrums) welcome the change and act accordingly
- **Measures:** the performance of the change process and its effect

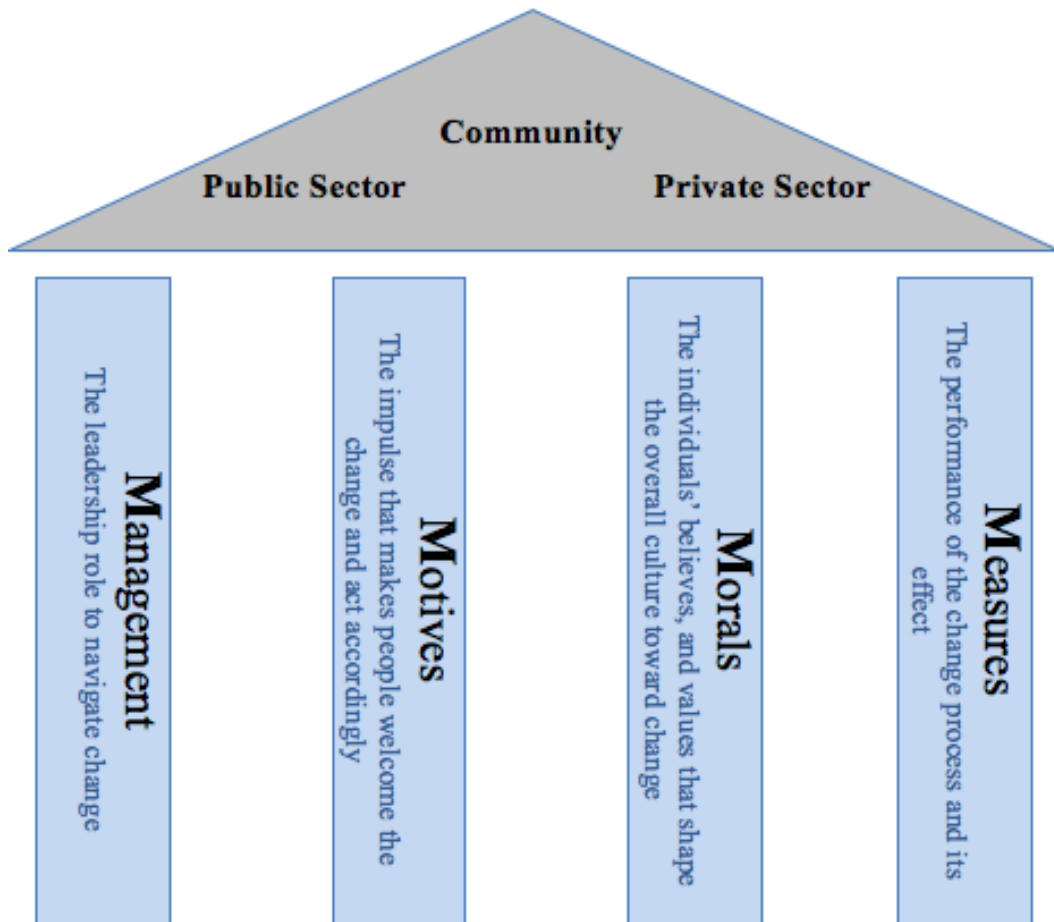


Figure 9-4 The 4Ms Change Model (3SCM)

The implementation of the 4Ms Change Model is a disciplined effort that produces fundamental activities and actions to guide the stakeholders towards the government main objectives and shape their attitude. Effective change management articulate not only what the government wants to do in the future but also how it will do it, and the role of each stakeholder in making the strategy successful.

Figure 9-4 demonstrates the 4Ms Change Model (4MCM) that implies the 3-spectrums of change; public sector, community, and private sector, are supported by four pillars of change; management, morals, motives, and Measures.

Performance

It is essential to keep in mind that strategic fit and performance are regularly related to the abundance of research literature. Thus, blaming only strategic fit for problems in organisational performance is a very counter-productive strategy that has to be realized by managers striving towards performance improvement and strategic management innovation. Managers should remain critical about other aspects contributing to poor performance and incompatibility of organisation's activities with strategies, and make regular performance reviews for assessment of the extent of fit to adjust performance and sustain a dynamic strategic fit most relevant for the present-day market reality.

9.3.3 Recommendations for Further Researches

Taking into account the fact that this study was performed in one public sector only, and in one Emirate only, the researcher may find it hard to generalize findings to other public sector agencies and other emirates. However, this exploratory study may serve as a vital starting point of a much larger-scale research endeavour with the aim of disclosing negative processes and change challenges in the UAE public sector. Unfortunately, as it has been noted, public sector agencies face many more challenges regarding embracing and responding to change, since their senior leadership is the government, in contrast to private companies with directors and leadership committed to their number one goal – achievement of competitive advantage in the market. In connection with this, private sector appears much more efficient in embracing change, developing

dynamic strategic management policies and procedures, and continuously sustaining the state of strategic fit in the turbulent external environment.

Thus, further research should focus on the ways in which UAE's public sector agencies may learn from the best practices and success stories of private companies to implement similar methods for achievement and maintenance of strategic fit. Such a study appears highly possible, especially taking into account that private companies in the UAE eagerly cooperate with the government in the achievement of the common goal – state modernization, innovation, and progress. Consequently, it is expected that such a study may give additional insights into how strategic management is conducted in private companies, how these practices may be transformed and adjusted to the public sector structures, and in which way they are able to contribute to the establishment of proper performance benchmarks, targets, and milestones.

Another aspect of research that may be conducted in future is that of comparing various public sectors' strategic management practices. Infrastructure sector in the UAE is one of the high-priority fields of innovation and investment. Therefore, its practices and structures may be quite different from less forefront public entities, or simply public sector agencies working in other aspects of economic, social, or environmental development of the country. Such comparison may reveal the public sector fields requiring urgent action for strategic management and policy improvement, which may help to improve the functioning of public sector and assist it in addressing the needs of the nation more promptly and constructively.

Finally, it is needed to make a nationwide study of strategic management practices in the UAE infrastructure sector to see whether problems identified by

respondents in this study are common for all Emirates. In case some trends are observed in this account, the research will be able to provide generalized recommendations for improvement based on theory and policy research. To date, there is a rich body of research and evidence-based material regarding strategic management implementation, fixing internal organisational dysfunctions, and integration of organisational change into the heart of organisational culture in public sector agencies. Such research will definitely delineate systemic, pervasive problems experienced by the UAE infrastructure sector, and will pinpoint solutions for a narrower, more practical focus.

Further research is also recommended on the very nature of strategic management; as it has been noted by many respondents in this study, the UAE workforce is unfortunately not qualified enough to implement the most recent developments and changes in the theory and practice of strategic management. Many Emiratis obtain higher education abroad, in prestigious Western educational establishments, but they are still too few for leading the public agencies of the UAE ahead towards modernisation. Moreover, such people usually return to the UAE to head large private companies, since private sector is prestigious and well-paid job as well as governmental employment. Hence, studies in terms of strategic management practices and innovations, ways of their implementation and solution to strategic problems are recommended to equip employees of the Abu Dhabi infrastructure sector (as well as other UAE public sector entities) with first-hand knowledge on strategic management.

Another benefit of such research is in its ability to reduce reliance on foreign, expat knowledge on management and strategic performance, which is a negative

aspect of the UAE business functioning so far. Expatriates come to improve performance and they often do so, but they rarely share knowledge about their professional area with employees who work with them, while the latter lose motivation because of low sense of ownership within their employing organisation. Consequently, research on strategic management in theory and practice, best strategic management practices worldwide, and essentials of managing strategic change will definitely become empowering for Emirati managers and will help them contribute to their organisations' growth.

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Appendices

Appendix A: The Innovation Index Segment

Appendix B: Protocol for Surveys

Appendix C: Protocol for Interviews

Appendix D: Protocol for Data Validation

Appendix E: Protocol for Framework Validation

Appendix A: The Innovation Index Segment

Table 1. List of 31 Segments in Innovation Index Report

Architecture, History & Planning	Fashion	Military & Defence
Arts & Culture	Food & Hospitality	Mobility, Autos, Cycling & Transport
Basic Services (Utilities, Food Supply, Water)	Geography	Music & Performance
Business	Government & Politics	People & Population
Commerce & Finance	Health & Medicine	Public Safety
Cultural Exchange: Travel & Tourism	Industry & Manufacturing	Resources, Mining, Oil and Gas
Diplomacy & Trade	Information, Media & Publishing	Retail & Shopping
Economics (General)	Labour, Employment & Workforce	Spirituality, Religion & Charities
Education, Science & Universities	Law & Governance	Sports & Fitness
Environment & Nature	Logistics, Freight & Ports	Start-ups & Entrepreneurs
Technology & Communications		

Table 2. Mapping of the 162 Segment Indicators

City indicator	Segment	City indicator	Segment
Architectural Layering	Architecture	Publishing Industry	Industry
Decorative Features	Architecture	Textile Industry	Industry
Green Architecture	Architecture	Trade Diversity	Industry
Neighbourhoods	Architecture	Wine, Spirits & Brewing	Industry
History	Architecture	Bookstores	Information
Cinema & Film	Arts	Magazine Availability	Information
Cultural Festivals	Arts	Media Censorship	Information
Dance & Ballet	Arts	News Journalism	Information
Fine Artists	Arts	Public Libraries	Information
Handcrafts	Arts	TV & Radio Networks	Information
Private Art Galleries	Arts	Underground Publications	Information
Public Art Galleries	Arts	Web Censorship	Information
Public Artworks	Arts	Clerical Wages	Labor
Public Museums	Arts	Labor Force	Labor
Satire & Comedy	Arts	Working Visa	Labor
Theatre & Plays	Arts	Citizen Rights	Law
Youth Activities	Arts	Policing	Law
Electricity & Gas	Basic Services	Separation of Powers	Law
Food Supply	Basic Services	Container Freight	Logistics
Public Water Supply	Basic Services	Freight	Logistics
Waste Management	Basic Services	Postal System	Logistics
Advertising in Media	Business	Railway Track	Logistics

Embassies & Trade Ambassadors	Diplomacy	Relative Military	Military
Relationships with Neighbors	Diplomacy	Strategic Power	Military
Domestic Market Health	Economics	Airport Transfers	Mobility
Domestic Market Size	Economics	Automobiles	Mobility
Exports	Economics	Bicycle Friendly	Mobility
GDP Per Capita	Economics	Inter-City Connections	Mobility
Imports	Economics	International Airport	Mobility
National Account	Economics	Public City Transport	Mobility
Neighbors Market Size	Economics	Service Delivery	Mobility
Property Prices	Economics	Service Frequency	Mobility
Reserves	Economics	Street Signage	Mobility
Trading Partners Economics	Economics	Streets	Mobility
Unemployment Rate	Economics	Taxi Service	Mobility
Wealth Distribution [Gini]	Economics	Transport Coverage	Mobility
Arts Education	Education	Walking City	Mobility
Business Education	Education	Classical Music	Music
Science & Engineering	Education	Music Venues	Music
Student Population	Education	Nightlife	Music
University Breadth	Education	Opera House	Music
University Commercialization	Education	Popular Music	Music
Air Cleanliness	Environment & Nature	Alternative Population	People
Climate & Weather	Environment & Nature	Education Level	People
Emissions	Environment & Nature	Equality of Women	People
Natural Disasters	Environment & Nature	Littering	People
Nature	Environment & Nature	Population	People
Noise Limiting	Environment & Nature	Protest & Activism	People
Public Green Areas	Environment & Nature	Crime	Public Safety
Water features	Environment & Nature	Violent Crime	Public Safety
Fashion Designers	Fashion	Resources	Resources
Cafes/ Tea Rooms	Food	Department Stores	Retail
Fine Restaurants	Food	Local Markets	Retail
Food Diversity	Food	Local Shopping	Retail
Meal Affordability	Food	Retail Establishment	Retail
Freight Dependencies	Geography	Small Retail Clusters	Retail
Physical location	Geography	Places of Worship	Spirituality

Trade Routes	Geography	Fitness Facilities	Sports
Government Responsiveness	Government	Sports Fanaticism	Sports
Government Stability	Government	Sports Stadiums	Sports
Political Transparency	Government	Company Setup	Start-Ups
Public Servant Professionalism	Government	Growth Business Funding	Start-Ups
General Medicine	Health	Start-Up Office Spaces	Start-Ups
Hospitals	Health	Broadband Internet	Technology & Communications
Infant Mortality Rate	Health	Fixed Phone Network	Technology & Communications
Life Expectancy	Health	Government IT Policy	Technology & Communications
Waiting Lists	Health	Internet Users	Technology & Communications
Industry Clusters	Industry	Mobile Phone Network	Technology & Communications
Manufacturing Breadth	Industry	Social Web 2.0 Media	Technology & Communications
Manufacturing Quality	Industry	Wireless Internet	Technology & Communications

Appendix B: Protocol for Surveys

Introduction

Dear Recipient,

This questionnaire aims at identifying the factors that cause strategic drift in the governmental agencies of Abu Dhabi Infrastructure Sector in order to minimize identified gaps and achieve the desired strategic fit. The researcher is currently a PhD student, and he has identified number of issues in relation to strategy development and management within the Government.

If at all possible, please answer the following questions as clearly as you can.

It is hereby stated that anonymity and confidentiality of respondent answers will be safeguarded at all times.

Your answers will be greatly appreciated and will contribute towards developing better approaches to improving performance in the infrastructure sector in Abu Dhabi.

Questionnaire

- 1) Strategic fit expresses the degree to which an organisation is matching its resources and capabilities with the opportunities in the external environment. An organisation's strategic fit is explained most often in relation to the organisation's structure, resources, systems and processes, culture, capabilities and strategy. To you, this has an effect on:

No.	Statement	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
A	External environmental performance					
B	Internal environmental performance					

- 2) Abu Dhabi Government Infrastructure Sector, has done a good job in matching its resources and capabilities to the external environmental conditions.

Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

- 3) In Abu Dhabi Government Infrastructure Sector, what do you believe are the reasons for strategic drift are problems with?

No.	Statement	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
A	Organisational structure					
B	Process					
C	Systems					
D	Culture					
E	Communications					
F	Overall practices					

- 4) Abu Dhabi Government has developed policies to better serve its people, it continuously faces issues of policies not being implemented, or being implemented too late and targets not been met according to the original brief.

No.	Statement	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

A	Strategies developed by the government for the infrastructure sector are appropriate and realistic in line with environmental conditions					
B	Strategic objectives in the Infrastructure sector are set out clearly for all stakeholders by the government and/or the relevant agencies in the sector					

- 5) The lack of strategic fit suggests of a developing mismatch between the government and its policies and the agencies that implement them. The mismatch could be related to the government not fully understanding the resource and capability requirements to implement their policies or it could be that the agencies are not properly utilizing the current resources. Communication between relevant parties is a factor involved.

No.	Statement	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
A	Communications in Abu Dhabi government structure open and free flowing					
B	There is an effective top-down communication in Abu Dhabi Infrastructure sector					

- 6) Leadership has been described as a process of social influence in which leaders can enlist the aid and support of others in the accomplishment of certain objectives.

No.	Statement	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
A	Leadership and management are practiced effectively throughout the government structure					
B	There is management commitment to the government plans and objectives at varies levels					

- 7) Organisational culture is the behavior of humans who are part of an organisation and the meanings that the people attach to their actions. Culture includes the organisation values, visions, norms, working language, systems, symbols, beliefs and habits. It is also the pattern of such collective behaviors and assumptions that are taught to new organisational members as a way of perceiving, and even thinking and feeling. Organisational culture affects the way people and groups interact with each other, with clients, and with stakeholders.

No.	Statement	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
A	The overall government culture is supportive for its employees					
B	Change is embraced effectively by the government agencies					

- 8) An organisational structure defines how activities such as task allocation, coordination and supervision are directed towards the achievement of organisational strategies and objectives. Organisational structure allows the expressed allocation of responsibilities for different functions and processes to different entities

No.	Statement	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
A	The organisational structure of the Infrastructure Sector is supportive for enabling effective operations					
B	The work process are properly implemented across the Infrastructure Sector					

9) In Abu Dhabi Infrastructure Sector, If the relative agencies are experiencing inertia, how do you rate the statements below:

No.	Statement	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
A	Unsupportive organisational culture creates organisational inertia					
B	Organisational inertia disables effective organisational change					
C	Lack of organisational change leads to strategic drift					

Appendix C: Protocol for Interviews

SEMI-STRUCTURED INTERVIEW QUESTIONS

<i>Improvement of capabilities and strategic fit in governmental agencies: case study of the Abu Dhabi Infrastructure Sector</i>			
Date		Time	
Name of the interviewee			
Position of the Interviewee			
1. What do you believe are the current competitive challenges in the Infrastructure sector of Abu-Dhabi? (Please explain)			
2. Overall do you believe that there is a strategic drift in the performance of the infrastructure sector? Why/why not?			
3. Do you believe that there are any particular aspects that contribute towards organisational and strategic gaps in the sector? Why/why not?			
4. Do you think that change is necessary to facilitate better performance and to avoid strategic drift in the infrastructure sector? What change do you believe is necessary and why?			
5. Do you think that change will be embraced effectively by the government agencies? Why/why not?			
6. Are there any organisational cultural issues in the government or in the infrastructure sector and/or in any other area(s) that you believe that create organisational inertia? If so, can you provide any example of such organisational inertia that you have experienced in your area of work?			
7. What are the necessary capabilities and competences that need to be developed in the infrastructure sector to increase performance and achieve the desired level of strategic fit			
8. Can you suggest any actions that the government can take in order to develop further capabilities and competences of the infrastructure sector?			
9. Can you provide any suggestions for agency-wide strategies in order to improve resources, systems, processes, and overall practices?			

Thank you for your views on the above questions. I would also like to thank you for the time you have dedicated to this research. If you are interested to know the outcome of this research, it would be my pleasure to share it with you.

Appendix D: Protocol for Data Validation

<p><i>Topic: Improvement of capabilities and strategic fit in governmental agencies: case study of the Abu Dhabi Infrastructure Sector</i></p>
<p><u>Purpose:</u></p> <p>To present outcomes of qualitative and quantitative findings of the present study for obtaining feedback and reflections of a focus group employed in a variety of Abu Dhabi Infrastructure Sector agencies</p>
<p><u>Introductory questions:</u></p> <ol style="list-style-type: none"> 1. The majority of respondents assessed the Abu Dhabi infrastructure sector as being in the state of a strategic drift, while some of them claimed it is not a dangerous phenomenon, being rather a normal by-product of progress. Do you consider it a dangerous feature? 2. Do you feel the impact of organisational drift on your everyday work practices? 3. Do you think the Abu Dhabi government and leadership of the Abu Dhabi Infrastructure Sector should do something to change and improve this situation?
<p><u>Causes of Strategic Drift questions:</u></p> <ol style="list-style-type: none"> 1. 75.95% of survey respondents claimed that the improper organisational culture is to be blamed for a strategic drift. Do you see that negative impact of culture on strategy in your organisation? 2. Other meaningful causes of the strategic drift mentioned by respondents included organisational structure and strategy's inefficiency. Do you agree about their key role in a strategic drift? Can you name other reasons? 3. A common topic within the interview process was that governmental policies of decentralization and change of control procedures cause unnecessary bureaucracy and ambiguity among employees. Do you consider these to be strategically influential?
<p><u>Management and Leadership questions:</u></p> <ol style="list-style-type: none"> 1. Survey respondents and interviewees mainly criticised the ways modern management of the Abu Dhabi Infrastructure Sector involves in strategic management, and blamed them for the strategic drift. Do you as a manager consider yourself personally responsible for the strategy development and implementation of your organisation? 2. Under which conditions would you take a more active participatory position towards embracing change and improving the strategic fit of your employing entity?
<p><u>Organisational Inertia and Change questions:</u></p> <ol style="list-style-type: none"> 1. Only 25.68% of survey respondents saw a connection between organisational culture and inertia, and 32.24% more agreed that inertia causes deterioration of organisational change. What is your opinion on this issue? What is, in your opinion, the impact of inertia in an organisation? 2. The overwhelming majority of respondents claimed that change is of vital necessity in the Abu Dhabi Infrastructure Sector, especially taking into account the globalization and rapid change processes. What would you recommend for better embracing the change? 3. Do you believe that effectively embracing change can save an organisation from a state of strategic drift? If not, what does an organisation need to do to avoid that state?

Thank you for your views on the above questions. I would also like to thank you for the time you have dedicated to this research. If you are interested to know the outcome of this research, it would be my pleasure to share it with you.

Appendix E: Protocol for Framework Validation

<p><i>Topic: Improvement of capabilities and strategic fit in governmental agencies: case study of the Abu Dhabi Infrastructure Sector</i></p>
<p><u>Purpose:</u> To present and validate the developed framework for Forming and executing a strategy in Abu Dhabi Infrastructure Sector</p>
<p><u>Questions:</u></p> <ol style="list-style-type: none"> 1. What is your opinion on the level of completeness in terms of the overall contents of the proposed framework? 2. What is your opinion on the level of completeness in terms of the logic (i.e. flow/sequence within the framework and how it mirrors what should be done) used within the proposed framework? 3. What is your opinion on the issues covered within the developed framework? 4. What is your opinion on the level of understanding of the proposed framework? 5. Do you have further comments/suggestions regarding any areas that need to be improved/included/deleted within the proposed framework? 6. Would you recommend the framework for use by public sector organisations in Abu Dhabi?

Thank you for your views on the above questions. I would also like to thank you for the time you have dedicated to this research. If you are interested to know the outcome of this research, it would be my pleasure to share it with you.