Knowledge Management Strategic Alignment in the Banking Sector at the Gulf Cooperation Council (GCC) Countries

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Abstract

An alignment or “fit” between an organization’s objectives and knowledge management (KM) practices should be established in order for the organization to fully utilize its knowledge assets and to derive competitive advantages. The organization should deploy a holistic approach for KM that spans business strategy, information system (IS) strategy, organization culture, and human factors. This research has investigated the strategic alignment between knowledge strategy and business strategy - KMBS-SA and the strategic alignment between knowledge strategy and IS strategy - KMIS-SA in the banking sector among the Gulf Cooperation Council (GCC) countries. Using the proposed model, the study explored the impacts of KMBS-SA and KMIS-SA on the organizational performance. The main hypothesis of this research is that knowledge is the main resource in an organization, and by aligning this resource with the business strategy and IS strategy, the alignment will contribute positively on the performance of the organization.

The research model was illustrated in two different conceptualizations hypothesizing the different relationships between knowledge strategies, business strategy and IS strategy. The first conceptualization illustrates the KMBS-SA and KMIS-SA, and an investigation on the contribution of theses alignments on the organizational performance. The second conceptualization of the research model aims at investigating the impact of different types or profiles of KMBS-SA and KMIS-SA on the organizational performance. This study examined different alignments between two profiles of knowledge strategy -

Aggressive Knowledge Strategy (AKS) and Conservative Knowledge Strategy (CKS), with various types of business strategy according to Miles and Snow's (1978) strategic typology, and, the alignment of the two profiles of knowledge strategy with various IS strategy based on the STROIS approach by Chan et al. (1997). Using both conceptualizations, the role of knowledge strategy as a *moderator* or a *mediator* in the contribution of the business strategy and IS strategy towards the organizational performance was examined. The primary data for this study was collected through a survey of 106 banks from the six Gulf countries: Kingdom of Bahrain, Kingdom of Saudi Arabia, Kuwait, Qatar, United Arab Emirates (UAE), and Oman.

The first overall conclusion demonstrated that there is a strong association between knowledge strategy and business strategy and that KMBS-SA clearly influenced the organizational performance. The second overall result of this research shows that in the context of GCC countries, knowledge strategy received stronger support as moderator of the IS congruence association with performance and that KMIS-SA is the primary determinant of the effectiveness of IS in the GCC banks.

From the finding, it is recommended that the GCC banks should take KMBS-SA and KMIS-SA challenge seriously and should consider the alignment implication before moving ahead to implement a strategic plan. Furthermore, the research finding revealed that GCC bank should not ignore the different dimensions of knowledge strategic choices. The banks need to determine different profiles for their knowledge strategy in order to support all aspects of business strategy and IS strategic dimensions that are most

important for the organization. They should then direct the organizational knowledge resources to support these profiles. Finally, it is recommended that the banks should define and establish a position in KM in order to oversee the knowledge strategy and KM issues.

Declaration

I certify that this work contains no material which has been accepted for the award to the candidate of any other degree or diploma, in any university or other institution. To the best of my knowledge the thesis contains no material previously published or written by another person, except where due reference has been made in the text.

Signed:_____ Dated:_____

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List of Publications

The following papers have reported the progress and results of work related to this thesis. This includes a book chapter and ten papers in the proceedings of local or international conferences. Out of the following list, one paper received the Best Paper Award in the Sixth International Conference on e-Business 2007 (INCEB 2007) at Bangkok, Thailand.

Book Chapter

[1] Jaflah Hassan Al-Ammary and Chun Che Fung (2007), "Knowledge Management in the Gulf Cooperation Council (GCC) Countries: a Study on the Alignment between KM and Business Strategy", Knowledge Management Integrated – Concepts and Practice, - Edited by Yoosuf Cader, ISBN 978-1-920889-12-8, Heidelberg Press, Australia, pp. 187-211.

Best Paper Award

[2] Jaflah Al-Ammary and Chun Che Fung (2007) "Management Perspectives on Knowledge Management and Business Strategies Alignment in the Gulf Cooperation Council Banks", Proceedings of the 6th International Conference on e-Business 2007 (INCEB 2007), Nov 2007, Bangkok Thailand, pp 118-125.

Conferences Proceedings

[3] Jaflah Al-Ammary and Chun Che Fung (2007)**, "**Knowledge Management Strategic Alignment in the Gulf Cooperation Council countries", Proceedings of the International Conference on Intellectual Capital, Knowledge Management and Organizational Learning (ICICKM 2007), Cape Town, South Africa, 15-16 October, 2007.

[4] Jaflah Al-Ammary and Chun Che Fung (2007), "An Investigation on Knowledge Management and Business Strategies Alignment in the Gulf Cooperation Council Banks", Proceedings of the eighth Postgraduate Electrical Engineering and Computing Symposium (PEECS 2007), Perth, Western Australia, Nov 2007, ISBN 1-74067-5673, pp. 198-204.

[5] Jaflah Al-Ammary, Chun Che Fung and Paula Goulding (2005), "Alignment of Knowledge and IT Strategies: a case for the Banking Sector in the Gulf Cooperation Countries (GCC)", Proceedings of the **"**International Conference on

Knowledge Management**"**, (ICKM 2005)**,** 7-9 July 2005, Kuala Lumpur, Malaysia. (16 pages – CD ROM).

[6] Jaflah Al-Ammary and Chun Che Fung (2005), "The alignment of knowledge strategy and business strategy - a case of the Gulf Cooperation Countries (GCC)", Proceedings of the 6th European Conference on Knowledge Management", (ECKM 2005), (ISBN 1-905305-07-9), 8-9 September 2005, University of Limerick, Ireland, pp 7-14.

[7] Jaflah Al-Ammary and Chun Che Fung (2005), **"**Knowledge Management Strategic Alignment in the Gulf Cooperation Council countries", The International Conference on Intellectual Capital, Knowledge Management and Organizational Learning (ICICKM 2005), Dubai, 21-22 November, 2005.

[8] Jaflah Al-Ammary and Chun Che Fung (2004), "A Study on Efficient use of Knowledge Management for the Kingdom of Bahrain Financial Institutions (KBFI)", Proceedings of the International Conference on Computational Intelligence for Modelling, Control and Automation – (CIMCA 2004), 12-14 July 2004, Gold Coast, Australia, p.p.520-528.

[9] Jaflah Al-Ammary, Chun Che Fung and Paula Goulding (2004), "A Study on the Alignment of Knowledge and Business strategies and the effect on the performance of Kingdom of Bahrain's Banking and Financial Institutions", Proceedings of the International Conference on Knowledge Management, (ICKM '04) 13-15 December , 2004, Singapore, pp. 380.

[10] Jaflah Al-Ammary, Paula Goulding and Chun Che Fung (2004), "The need for aligning Knowledge Management, Business and Information Technology strategies: a proposed study of the Financial Industry in the Kingdom of Bahrain", Australian Conference for Knowledge Management & Intelligent Decision Support (ACKMIDS 2004), Melbourne, 29-30 Nov., 2004.

[11] Jaflah Al-Ammary, Chun Che Fung and Paula Goulding (2004), "The effect of the Knowledge strategy and Business strategy alignment on the organization performance in the Kingdom of Bahrain's Banking and Financial institutions (KBBFI)", Proceedings of the Fifth Postgraduate Electrical Engineering and Computing Symposium (PEECS 2004), 28th September 2004, Perth, Western Australia, pp 31-36.

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Chapter One

Introduction

1.1. Background of the research

In recent years, knowledge has been increasingly recognized as the most important and valuable asset in organizations and as a key differentiating factor in business (Stewart et al., 2000; Murray, 2000). Many researchers have claimed that knowledge asset has an enabling role to play in the formulation of successful strategies and achieving the organizational overall objectives (Snyman and Kruger, 2004; Zack, 2002a, b; Jones, 2000; Maier and Remus, 2002). Teece (2001) suggested that the competitive advantage of organizations depends on their ability to build, utilize, and protect difficult to imitate knowledge assets. For this reason, many organizations are paying more attention to their organizational knowledge (Murray, 2000; Kankanhalli et al., 2003). However, the strategic role of knowledge has been overlooked in many Knowledge Management (KM) initiatives, and KM has been considered by many organizations as a "stand-alone" project that is planned, initiated and operated in an isolated environment. Thus, although there are already a large number of KM activities implemented in organizations, many of them lack the ability to link KM to the organization in term of strategies, human and technological resources (Zack, 2002a, b; Maier and Remus, 2002, Bo Bernhard, 2005; Smith, 2007). Hence, many organizations have failed to achieve the expected benefits from the KM initiatives or projects (Maier and Remus, 2002).

KM is not just technology. It is a discipline which aims to create conditions under which competitive advantage for the organization can be maintained or utilized (Beckett, Wainwrigt and Bance, 2000). Zack (1999b) moreover, revealed that knowledge architectures exist within four primary contexts that influence how KM affects an organization's performance. These include *strategic context*, *knowledge context*, *organization context*, and *technology context*. Therefore, the effective use of knowledge to drive competitive advantage could be achieved by using a holistic approach that covers Business Strategy (BS), Information System (IS) strategy, and Organizational and Human factors (Cedar, 2003). Thus, KM should be aligned with business process, organizational objectives, and IT infrastructure in order to continuously capture, maintain, and reuse the key information. KM should also arbitrate the strategic knowledge assets that improve business performance (Cedar, 2003). When such an alignment is established, the KM system will be directed towards the goals and objectives of the organization which will build and enhance its long term competitive advantage. For instance, if the business strategy is based upon differentiation through customer services, then the KM efforts should target customer care functions such as call centers, help desks, and other customer support activities. The planning and implementation process of KM in the organization should be shaped around the organizational goals and objectives (Sunassee and Sewry, 2002). Moreover, the role of Information Technology (IT) in KM is a vital consideration for any company wishing to exploit emerging technologies to manage their knowledge assets (Egbu and Botterill, 2002). IT not only needs to support access to and update of information, but it must also supply the necessary collaboration, communication, and

networking capabilities required for broad-based knowledge capture, structure, and distribution.

It is based on this background that this research has been proposed and conducted. Further, a picture seems to emerge that the research in KM perspective of alignment arena is full of conflicting and complex claims and arguments. In addition, there has not been much research done within the Middle East, and in particular from the Gulf region's perspective. The banking sector in the Gulf Cooperation Council GCC countries was then selected as the most appropriate context for the current study. The GCC countries which comprise of Kingdom of Bahrain, Kuwait, Qatar, Oman, United Arab Emirates and Kingdom of Saudi Arabia, have a mature, efficient, stable and profitable banking system. Moreover, the distinct characteristics of such countries in term of the national and organizational culture, Arabic language, technology maturity and managerial and strategic perception, could have an effect use and implementation of KM. The present research therefore aims to study and examine:

- the strategic alignments between knowledge strategy and business strategy: KM-business-strategic alignment or KMBS-SA,
- the alignment between knowledge strategy and IS strategy: KM-IS-strategic alignment or KMIS-SA, and,
- the perceive contribution of these alignments on the organizational performance within the banking sector of the Gulf Cooperation Council (GCC) countries.

A conceptual model for KM-strategic-alignment has been built in this study based on the available literature on IT and business strategic alignments, KM and strategic perspective of KM, business strategy, and IS strategy.

1.2. Research problem and questions

The alignment of the strategies used in managing knowledge is expected to bring benefits to enhance organizational performance and to sustain organizational competitive advantages. Business strategy is supposed to provide direction and cohesion for the activities of the organization. Knowledge strategy focuses on knowledge, which is the innovation resource for organizational activities (Drucker, 2002). Hence, the coordination between knowledge strategy and business strategy should provide a synergy between the strategic and knowledge resources and thus both could be directed toward the activities of the organization. In contrast, IS strategy should provide a strategic plan for the technological architecture and infrastructure. IS strategy should also assess the technical skills and capabilities required to support the organizational goals. The synergy between IS strategy and knowledge strategy may enable the organizational knowledge to support the organizational technical skills and capabilities. Therefore, it can be argued that the alignment between knowledge strategy, IS strategy and business strategy could bring benefits to enhance organizational performance and to sustain organizational competitive advantages.

The espoused positive relationship between KM, business strategy and IT, and its impact on performance outcomes has been a core belief of IT and management research, even

though there has been little empirical evidence to confirm or refute this belief. Although considerable research studies have been devoted to investigate the importance of the alignment between KM and business strategy (Jones, 2000; Smith and McKeen, 2003; Zack, 1999b; 2002a, b; Aidemark and Sterner, 2003; Davenport, 1999; Sabherwal and Sabherwal, 2003; Sunassee and Sewry, 2002), comparatively less attention has been paid to the alignment between KM and IT (Willcocks, et al., 2003; Okunoye, 2003). Moreover, there is a lack of empirical studies in the KM strategic alignment area. The majority of the research on KM strategic alignment has provided complex models that are in most cases difficult to measure and analyze (Franken and Braganza, 2006).

Thus, compared with the enormous work that has been done in researching IT-business strategic alignment, there is a need to initiate discussions on the concept of KM strategic alignment. When it comes to measuring the importance of KM-business-IT strategic alignment, there are still many questions unanswered. Such questions are related to:

- the different types of KM alignment - KM strategic and KM functional alignment,
- the different levels of KM strategic perspectives,
- which type(s) of business strategy and IS strategic orientations should be aligned with different profiles of knowledge strategy; and,
- which of the available alignment approaches will provide the best measurement of the alignment between KM and business strategy or IS strategy. The two candidates distinguished for the purpose of this thesis are *mediation* and *moderation.*

Hence, there is a need to find answers to the above questions in order to provide a better understanding of KM strategic alignment. It is also believed that answers for these questions will help in developing a KM strategic alignment model for this research.

This research study aims to find the answers for the following questions:

1- What are the relationships between the business strategies, the IS strategies and the knowledge strategies pursued by the GCC banking sector?
2- What are the impacts of the relationship or alignment between business strategies, IS strategies and knowledge strategies on the organizational performances in the GCC banking sector?
3- What roles does knowledge strategy play in order to enhance organizational performance? Should knowledge strategy function as a *mediator* or a *moderator*?
4- Which business strategy types and IS strategic orientations, or, a specific profile of knowledge strategy should be aligned in order to provide the best support for the organizational performance?

1.3. Research objectives

A number of objectives were set up in order to answer the research questions and to achieve the aims of the study.

The first objective of the research was to develop a KM strategic alignment model based on the three candidates for performance contribution. The three candidates are: *business strategy*, *IS strategy* and *knowledge strategy*.

The second objective was to explore the alignment between *knowledge strategy* and *business strategy* (KMBS-SA), and that between *knowledge strategy* and *IS strategy* (KMBS-SA). The objective also includes the measurement of the contribution of these alignments to organizational performance.

The third objective was to explore the perceived contribution of the alignment between *types of business strategic* and *profiles of knowledge strategy*, and the alignment between *IS strategic orientations* and *profiles of knowledge strategy*, on the organizational performance.

1.4. Conceptual framework of the study

The conceptual model underlying the current research is depicted in Figure (1.1). The model focuses on the relationship between the alignment and organizational performance, based upon the argument that strategic fit has performance implications.

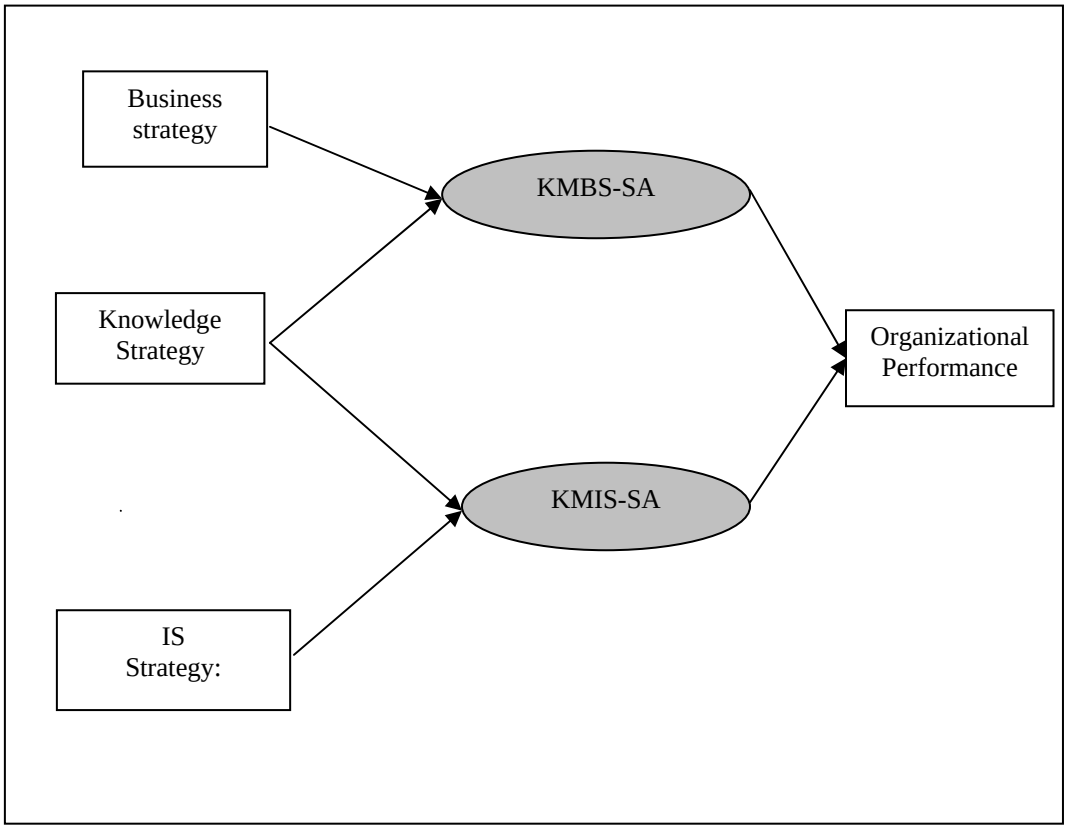


Figure 1.1: Conceptual framework of the study

The conceptual model is proposed to investigate the strategic alignment between knowledge strategy and business strategy (KMBS-SA) and of the strategic alignment between knowledge strategy and IS strategy (KMIS-SA) in GCC banking sectors. The model moreover, is aimed to measure the contribution of KMBS-SA and KMIS-SA to organizational performance. Business strategy is measured by six strategic orientations: *aggressiveness, proactiveness, analysis, defensiveness, futurity,* and *risk aversion*. Knowledge strategy however, is measured by choices which are believed to be the attributes that identify the profile of the organization's knowledge strategy. The six knowledge strategic choices selected for the current study are: *knowledge exploration, external source of knowledge, human focus (personalization), knowledge exploitation,*

internal source of knowledge, and *system focus (codification)*. IS strategy in the model is identified by six IS strategic orientations for supporting the business strategic orientations (Chan, et al. 1997). These are: *IS support company aggressiveness, IS support company proactiveness, IS support company analysis, IS support company defensiveness, IS support company futurity*, and *IS support company risk aversion*. Finally performance is identified by *growth* and *profit*.

1.5. Research design and methodology

An exploratory approach was initially undertaken to answer the research questions, followed by a confirmatory analysis. Table (1.1) outlines the process followed in building the conceptual model for the current study. The outline described in Table (1.1) encapsulates the key elements and guidelines of the present study. In essence, the prerequisites column entails the body of knowledge that is needed. This knowledge facilitated the understanding of the existing models for KM-business strategic alignment and KM-IS strategic alignment –wherever available – before embarking on building the new model. The study was carried out in five phases:

(1) literature review and development of a research framework and the alignment model,
(2) research design and survey data collection,
(3) instrument development,
(4) pilot testing, and,

(5) data analysis, instrument validation, and testing of the alignment model.

The first phase of the research involved literature review of the general principles and practices of business strategy management, KM and strategic perspective of knowledge, and IS strategy.

The second phase of the research explored, investigated and examined various IT-business strategic alignment models from the practical and theoretical perspectives in order to build a KM strategic alignment model appropriate for the current research.

In the third phase, the conceptual research model for KM strategic alignment was built. The new KM strategic alignment conceptual model was called **KM Strategic Alignment (KMSA) Model**. Moreover, a detailed study on the variables or constructs embedded in the KMSA model was carried out. Finally, the measurements of the model's constructs were identified and modified. Based on the developed proposed KM strategic alignment model, a measurement methodology was created with the aims to:

a) Find out whether there are any direct impacts of the KMBS-SA on organizational performance.
b) Find out whether there are any direct impacts of the KMIS-SA on organizational performance.
c) Determine the role played by knowledge strategy (as *moderating* or *mediating*) in their contribution to organizational performance.

d) To identify which of the various types of business strategy and IS strategic orientations should align with certain profiles of knowledge strategy in order to improve organizational performance

In gathering information pertaining to the above study, a questionnaire was used as the main instrument for data collection. Questionnaires were developed to collect data about the research model's constructs: *business strategy, knowledge strategy, IS strategy* and *performance*. However, some questions were developed to obtain descriptive information. Descriptive information concerning the perceptions of the Chief Executive Officers (CEO), Chief Knowledge Officers (CKO) and Chief Information Officers (CIO) on alignment and its implication for performance were collected. They are used to support the statistical and analytical results. Two questionnaires were developed to collect data for the empirical study. The first questionnaire (Questionnaire A) was developed to investigate the KM-business strategic alignment. The second questionnaire (Questionnaire B), was built to examine the KM-IS strategic alignment.

A pilot study was conducted to gauge the user-friendliness of the survey instrument and to identify other possible unforeseen trouble spots using a random sample of 30 academic staff from the University of Bahrain and officers from the Department of Banking and Finance, and from the Department of Management Information System (MIS).

A total of 212 questionnaires (106 of Questionnaire A and 106 of Questionnaire B) were distributed to 106 banks. These banks include all the commercial, Islamic, investment, and specialized banks in the GCC countries. Questionnaire A was addressed to the CIO or similar executive managers, CKO, IT managers or the Head of the IT Department. Questionnaire B was directed to the CEO or similar level of executive managers. All measures including knowledge strategy, business strategy, IS strategy and performance were obtained directly from the survey. The analysis of these data was used to measure KMBS-SA and KMIS-SA as described in the early sections.

Table 1.1: Research outline of the study

Prerequisites	General principles of - Strategic perspectives of KM - Business strategy and management strategic levels - IS strategy Extant knowledge of: - IT-business strategic alignment models - Theories of Alignment in the field of KM - Existing KM alignment models, their utility and practical usage
KM-strategic alignment constructs	KM strategic alignment model-key constructs and intersections 
Relationships to be hypothesized	(1) Alignment between knowledge strategy and business strategy (2) Alignment between knowledge strategy and IS strategy
Outcomes	(1) The contribution of KM-BS alignment to performance (2) The contribution of KM-IS alignment to performance

1.6. Outline of the thesis

This thesis is divided into seven chapters. Chapter one is the introduction and it provides a discussion of the research problem and the gap that exists in KM theory and its relationship with organization and management. The chapter also discusses the need for an integrated model and the context within which this study took place.

Chapter Two provides the literature review related to the concepts and constructs incorporated in the research model. Chapter two is dedicated to the discussion of the concept of strategic alignment and the KM perspective of alignment. In addition, it presents a discussion on knowledge, business and IS strategies.

Chapter Three presents the model utilised in this study. This chapter provides a brief overview of each segment of the model.

Chapter Four explains the quantitative methodology adopted in this study in order to empirically test the research hypotheses. Moreover, this chapter explains the methodology in which the constructs in the research model (Figure 1.1) are executed. It is imperative for the researcher to describe how the items of each construct are chosen in order to build a homogenous scale with relatively high reliability and validity. This chapter also discusses the two different approaches for measuring the alignment. Finally, it reports on the process of data collection used to test the research hypotheses.

Chapter Five comprises of a review of data collection, followed by a detailed review of the factor analysis. In addition, a brief review on the reliability and validity of the scales

is presented. Then, the descriptive statistics and demographics of the study sample are presented. Also, the statistical analysis of the results is discussed.

Chapter Six presents the results of testing the research hypotheses presented in Chapter Three. Testing research hypotheses has been conducted through a series of analyses. This is followed by a discussion of the quantitative analysis results.

Chapter Seven presents a discussion and a summary of the contributions of this study. In addition, contributions towards the academic and managerial perspectives are discussed. Finally, the limitations of this study and proposals for future research are considered.

Chapter Two

Literature Review

2.1. Introduction

The purpose of this chapter is to present the literature review related to the concepts and constructs incorporated in the research model. This chapter consists of thirteen sections. Sections 2.2 and 2.3 present the theoretical background on the IT strategic alignment and the strategic perspective of knowledge. Section 2.4 presents the alignment perspective of KM. The focus of both sections 2.5 and 2.6 is on the different types of KMSA and their definitions from the literature. Discussions of the KMBS-SA and KMIS-SA are presented on section 2.7 and section 2.8, respectively. The focus of section 2.9 is on the previous studies on the KMSA. Section 2.10 presents a discussion on the effects of business strategy on the strategic alignment. Section 2.11 is focused on the IS strategy in the strategic alignment. Section 2.12 presents a detailed discussion on knowledge strategy. This includes the difference between knowledge strategy and KM strategy, the strategic level of KM, and the dimensions of the knowledge strategy and the knowledge strategic choices. Finally, section 2.13 presents a summary of the chapter.

2.2. The concept of alignment and strategic alignment

The concept of alignment or “fit” has been viewed as internal consistency among key strategic decisions or the homogeny between *strategic choices* and *critical contingencies* with the *environment (external)*, *organization (internal)*, or *both (external and internal)* (Bergeron, Raymond, and Rivard, 2004; Mitchell, et al., 2007). Based on this concept, the organization can be considered as a holistic system in which it's external and the internal should be integrated and working together. The concept of alignment between business strategy and information technology (IT), Information System (IS) strategy, organizational structure and infrastructure has served as an important building block for theory construction in several areas of research. The alignment between IT or IS strategy and business strategy is ranked as one of the most important issues faced by business executives (Luftman et al.,1999; Croteau, et al., 2001; Kefi and Kalika, 2005; Avison, et al., 2004; Tallon, et al., 1998).

There are numerous definitions that have been proposed for the concept of strategic alignment in the IS and strategic management literature as given in Table (2.1). However, there is no consensus between the researchers (Beeson and AlMahamid, 2003). Maes and et al. (2000) have defined alignment as "*the continuous process, involving management and design sub-processes, of consciously and coherently interrelate all components of the business-IT relationship in order to contribute to the organization's performance over time*.” This definition has considered most of the contradictions revealed by the proposed definitions for the alignment.

Table 2.1: Summary of definitions from previous research on the concept of "Alignment"

	Author	Definition	concept
1	Smaczny, (2001)	A process or act of joining, uniting or integrating. The fusion creates an integrated strategy that changes depending on the changes in internal and internal environment conditions.	Fusion
2	Broadbent and Weill (1993,1998)	The extent to which business strategies were enabled, supported, and stimulated by information strategies	Alignment
3	Luftman et al. (1999)	It's the strategic fit between strategy and infrastructure, and fundamental integration between business and IT.	Fit
4	Luftman et al., (1993)	The extent to which the IS strategy supports, and is supported by, the business strategy	Alignment
5	Tallon and Kraemer, 1998	The alignment of information systems strategy with business strategy	Alignment
6	Reich and Benbasat, (1998, 1996)	The degree to which the information technology mission, objectives and plans support and are supported by those of the business.	Linkage
7	Woolfe (1993)	The strategic alignment occurs when a company has harmonized its overall strategy and its IT systems.	Harmony
8	Lederer and Mendelow (1989)	Its the "co-ordination" which "can be achieved when the information system strategy is derived from the organization strategy"	Co-ordination
9	Teo and King (1997)	The strengths of the relationship between business and IS/IT strategy.	Integration
10	Kefi, et al.(2005)	The co-variation at a specific point of time between the attribute of business (partnerships and/or alliances strategic choice, and those of IT/IS strategies (IS/IT strategic role, IS/IT systemic competencies, IS/IT architecture choices and IS/IT processes choices).	Co-variation
11	Zviran (1990)	The specific IS objectives need customization according to the organization objectives	Relationship
12	Henderson, (1990)	A working relationship that reflect a long-term commitment, a sense of mutual co-operation, shared risk and benefits, and other qualities consistent with concept and theories of participatory decision making".	Partnership
13	Chan and Huff, (1997)	The degree to which the resources being directed to each of the seven dimensions of IS strategy are consistent with the strength of the organization's emphasis on each of the corresponding seven dimension of business strategy".	Alignment
14	Henderson and Venkatraman, (1993)	It's the internal fit and functional integration between business strategy and IS/IT strategy and how this integration is important to gain a competitive advantage".	Fit
15	Maes et al., (2000)	Is a concept aiming at the exploitation of IT in an organization, at the effective enabling of the organization by IT"	Alignment
16	(Premkumar, King, 1998	The linkage of the firm's IS and business plans	Linkage
17	Strassmann (1998	The capacity to demonstrate a positive relationship between information technologies and the accepted financial measures of performance	Alignment

Moreover, the proposed definitions revealed that different terms have been used to describe the concept of alignment between business strategy and IT or IS strategy. Terms that have been used including: *fit, harmony, linkage, integration, bridge* and *fusion* as showed in Appendix A, Table A-1. Among these various alternative terms, "**strategic alignment**" and "**fit**" are the most common synonyms used to refer to the alignment in IS research (Knoll and Jarvenpaa, 1994). Although these terms may be considered as aliases for "alignment", in some cases they may give a different meaning. For example, Johnson (2000) and Smaczny (2001) argued that IT strategy and business strategy should not be aligned as they considered that theses strategies have to be planned as one strategy. Instead, other terms such as *harmony* and *fusion* need to be adopted to describe different relationships between IT or IS strategy, and business strategy. Having IT strategy and business strategy in *harmony* means that IT has to lose its distinctiveness but it will gain prominence and exert greater influence within the organization (Johnson, 2000). *Fusion*, according to Smaczny (2001), is the unity between organizations related strategies and IT strategy as they have to be developed at the same time. Thus, the organization will have one integrated strategy that is changing according to its internal and external environmental changes.

Moreover, according to the components that are being aligned, there are different types and classifications for the alignment. As was discussed earlier in this section that the alignment can be observed as the homogeny between strategic choices and critical contingencies with the environment, then this concept can be viewed from different dimensions (Regev and Wegmann, 2004). First, the alignment can be classified as

strategic or *functional* (internal or external) alignment. *Strategic* alignment refers to the degree to which business strategy choices and strategic choices concerning IT deployed, corresponded to each other (Regev and Wegmann, 2004; Henderson and Venkatraman, 1993; Maes et al., 2000). *Functional* alignment, however, refers to the degree to which the internal components (structure, technology, or human resources) of an organization correspond to each other. Second, alignment can be classified as *intellectual* or *personnel* (Lederer and Mendelow, 1989), or, *social* alignment as identified by Lederer and Mendelow (1989) and Reich and Benbasat (1996). The *Intellectual* dimension is related to the consistency and validity of IT and business objectives. On the other hand, *personnel* or *social* alignment concerns with the degree of involvement of the different participants in the two planning domains: business and IS (Reich and Benbasat, 1996). Third, alignment can be considered either as *static* or *dynamic* (Regev and Wegmann, 2004). *Static* alignment refers to the situation of alignment at a given point in time, while *dynamic* alignment refers to the evolution of alignment in time. Most alignment research treats the alignment as a static end-state and not as a "moving target"(Thompson, 1967), or an "emergent process" (Jarvenpaa and Ives, 1994). Finally, the alignment may be approached from the *process, content* or *outcome* perspectives. *Process* research involves investigating planning activities in the alignment; *content* research investigates how well the firm has aligned their IS with organizational strategy while *outcome* research involves the already realized strategies (Hussin et al., 2002; Reich and Benbasat, 2000; Avison et al., 2004).

2.2.1. The performance implication of strategic alignment

Literature has suggested that a firm cannot be competitive if its business and IT strategies are not aligned. Moreover it is argued that in order for an organization to derive significant value from IT investment, managers have to ensure a clear link between business goals and the IT strategies that support them (Burn, 1993; Chan et al., 1997). Much research in the IT strategic alignment revealed that the alignment between IT and business strategy can maximize the return on IT investment, helps organizations in achieving competitive advantage through IS and directs them to react to new opportunities in IT investment (Avison et al., 2004; Weiss and Anderson, 2004). Moreover, the alignment between organizational strategy and the IT infrastructure increases the likelihood of developing systems which are more beneficial to the organization. Such alignment will not just allow the organization to achieve synergy and facilitates the development of business plans, but it will also increase the organizational profitability and efficiency (Lederer and Mendelow, 1989). These tangible benefits allow the management to focus on the application of IT as a means to leverage their core competencies, skills and technology scope and improving the organization's efficiency (Papp, 2003; Luftman et al., 1999). It is also reported that organizations benefit from strategic alignment because information resources are more likely to support business objectives thus increasing opportunities for the strategic use of IS (McLean and Soden, 1977; Premkumar and King, 1994; Kearns and Lederer, 2000). Thus, it is well recognized by researchers that there is a strong relationship between alignment and performance

(Avison, et al., 2004; Weiss and Anderson, 2004; Kefi and Kalika, 2005; Kearns and Lederer, 2000; Tallon et al., 2000; Chan et al., 1997).

2.2.2. Strategic alignment models

Although strategic alignment is one of the top management concerns, no single comprehensive model of the constructs is commonly used. Despite the available models, there is a need for a clearer framework (Henderson and Venkatraman, 1991; Ciborra, 1997). Avison et al. (2004) demonstrated that there is a lack of agreement in the literature how should organizations approach the strategic alignment issues. The lack of standard strategic model is attributed to the different perspectives and views of the alignment as it was discussed previously.

A number of frameworks for strategic alignment have been proposed in the literature (Henderson and Venkatraman, 1991, 1993; Beeson and AlMahamid, 2003). Among these frameworks, the most well known is the one proposed by Henderson and Venkatraman which is known as the *Strategic Alignment Model (SAM)*. SAM describes the interrelationship between business strategies and IT strategies. It focuses on the maintenance of the balance between internal and external environment and is based on the relationship between strategic fit and functional integration (Smaczny, 2001). Although SAM model introduces an original reasoning model for strategic alignment in the IS field, it provides mainly a descriptive view of the different perspectives of strategic alignment and does not help organizations in deciding what perspective to adopt and in

what circumstances (Kefi and Kalika, 2005). Almost all subsequent models and consulting practices in alignment have originated from Henderson and Venkatraman's model (Maes et al., 2000). Most of the proposed models have aimed at modifying Henderson and Venkatraman's model by transforming the model into a management tool (Luftman et al., 1999).

2.3. Knowledge as strategic resources

In recent years, knowledge is increasingly recognized as the most important and valuable asset in organizations and a key differentiating factor in business (Stewart et al., 2000; Murray, 2000). Teece (2000) argued that the competitive advantage of organizations depends on their ability to build, utilize, and protect difficult to intimate knowledge assets. Moreover, Skyrme (1999), Zack (1999b), Murray (2000), Teece (2000) and Tiwana (2002) stated that knowledge is the only source for innovation and sustainable competitive advantages. For this reason, many organizations are positioning themselves strategically based on their tangible and intangible internal resources, and their capabilities rather than on their products and services (Zack, 2002 a, b; Jashapara, 2004; Murray, 2000; Kankanhalli et al., 2003). It is also recognized that competitive advantage based on resources and capabilities is more important in contributing to superior performance and sustainability than just solely based on products and market positioning (Prahalad and Hamel, 1990; Zack, 2002a; Jashapara, 2004). Therefore organizations need to identify, know and analyze their knowledge-based resources and capacities in order to uncover their most superior or distinctive assets.

However, not all the resources identified by the organization are strategic or are capable to achieve a competitive advantage. Even if the resources are unique, competitors might imitate it or develop an adequate substitute. The most unique and inimitable resource however is the organizational knowledge (Zack, 1999). There are many characteristics of organizational knowledge that make it the organizations' most precious resource. Unlike other resources in the organization such as technology, market share, capital, or products, knowledge is the only resources that cannot be copied (Tiwana, 2002), and is difficult to imitate. Moreover, knowledge is different from material resources which decrease when used. On the other hand, knowledge asset increases with use (Evans, 2003; Davenport and Prusak, 2000). Both resource-based and knowledge-based theories have viewed the competitive advantages based on the organizational internal resources and capabilities are much more important (Prahalad and Hamel, 1990; Zack, 2002b; Jashapara, 2004). The resource-based view treats knowledge as a generic resource rather than having special characteristics. On the other hand, knowledge-based theory considers knowledge as the most strategically significant resource of the firm. This approach perceives knowledge is usually difficult to imitate and socially complex. Hence, heterogeneous knowledge bases and the unique capabilities among firms are the major determinants of sustained competitive advantage and superior corporate performance (Grant, 2003).

2.4. KM perspective of alignment

It has been discussed in Section 2.2 that knowledge has been recognized as the most strategic resources of an organization and it is a vital asset for an organization's survival and advancement (Maier and Remus, 2002; Stewart et al., 2000; Abou-Zeid, 2003). Knowledge is also claimed by many researchers to have an enabling role in the formulation of successful strategies and achieving the organizational overall objectives (Snyman and Kruger, 2004; Zack, 2002; Jones, 2000; Maier and Remus, 2002). Academics and researchers also advocated that the true power of knowledge lies in its ability to positively influence, and enable the business strategy. Zack (2002), for instance, suggested that the vital role of knowledge and its management should be reflected by the organizational related strategies in order to achieve the organizational desired competitive advantage.

A survey conducted by KPMG consulting in the year 2000 on 423 organizations confirmed that the KM initiatives in 75% of these organizations were derived by the senior management or board level engagement. This illustrated that top-management believe that KM must be an organization-wide initiative (McKellar, 2000). There are clear empirical researches demonstrated that KM has become a part of many large corporations' strategic agenda (Maier and Remus, 2002). A survey conducted by the European Foundation for Quality Management (EFQM) in partnership with CIBIT Consultant between 2001 and 2002 confirmed that 63% of respondents reported that KM was still a hot topic in their strategic agenda, and that 15% of them reported that KM had

became a natural way of doing business (Van der Spek and Carter, 2003). Evans (2003) proposed that strategists need to make certain that the managing of knowledge is not a separate managing activity and it should be an integral part of the organization day-to-day activities. Zack, (1999a) stated that:

"…… the most important context for guiding KM is the firm's strategy. Knowledge is the fundamental basis of competition. Competing successfully on knowledge requires either aligning strategy to what the organization knows, or developing the knowledge and capabilities needed to support a desired strategy."

Furthermore, it is recognized that the effective use of knowledge to drive competitive advantage depends upon using a holistic approach that spans five key business considerations: *Knowledge Management (KM)*, *business strategy*, *technologies*, *organizational culture*, and *human factors* (Cedar, 2003). Hamid (2003) argued that the effective management of KM system involves managing the entire system, people, structure, processes, culture, and technology to ensure there is holistic collaboration and participations in all the KM processes.

Despite the fact that KM literature strongly reveal the importance of the KMSA alignment, rather less attention has been paid to answer questions such as: how to define KMSA, how to align KM with the organizational strategies, which element(s) of KM should be aligned, and at which management levels should KM be aligned (Zack, 2002 a, b; Sabherwal and Sabherwal, 2003; Asoh, 2004; Shih and Chiang, 2005; Bloodgood and

Morrow, 2003). Building on the existing investigation and discussion of the IT strategy alignment (section 2.2), the current study contributes to the field of KM by providing an investigation of the issues related to the concept of alignment in KM. This study provides an investigation into the different perspectives of KMSA alignment; in addition, the study puts forward a discussion on the different models and types of KM alignment, and their performance significance.

2.5. Types of KMSA

Wiig (1997) admitted that the focus of KM has changed from an operational perspective for the purpose of improving efficiency and quality, to a strategic perspective for the support of enterprise innovation and broad effectiveness. Moreover, Pablos (2001) identified two major types of KM: *operational KM* and *strategic KM* (cited in Tissen et al., 1998). On one hand, the main concern of *operational KM* is to connect people to the process of distribution and transfer of knowledge. On the other hand, *strategic KM* is a process that links organizational knowledge with the organizational structure and business strategy. In this study, two types of KMSA are therefore identified as *strategic KM alignment* and *functional (or operational) KM alignment* as shown Figure (2.1).

Jashapara (2004) declared that KM can be considered from different perspectives: *strategy, HR process*, and *IT or IS strategy*. First, the *strategy* perspective of KM recognizes KM as a strategic process aimed at helping organization in achieving its goals by making the factor knowledge productive (Uit Beijerse, 2000), and mobilizing its knowledge based resources in order to ensure continuous innovation (Newell et al., 2000). Second, the *HR process* perspective of KM highlights the human dimension of

developing knowledge in individuals, teams and organizations which occurs through different learning processes. Third, KM has been perceived as *IT* or *IS* and accordingly it is defined as a holistic system that includes all methods, instruments and tools, that are used to contribute to the promotion of core knowledge processes (Mertins et al.; 2003). Accordingly, three different types of KMSA are identified: *KM and business strategic alignment (KMBS-SA)* (section 2.7), *KM and IS strategic alignment (KMIS-SA)* (section 2.8), and, *KM and HR strategic alignment (KMHR-SA)*. Moreover, there is another perspective of alignment concerning the relationship between KM and the organizational environment. The KMSA alignment between KM and business strategy or IS strategy can be considered as *strategic alignment* (Abou-Zeid, 2003), while the alignment between KM and the IT strategy, HR, or organizational environment can be considered as *operational (or functional) alignment* (section 2.12.3).

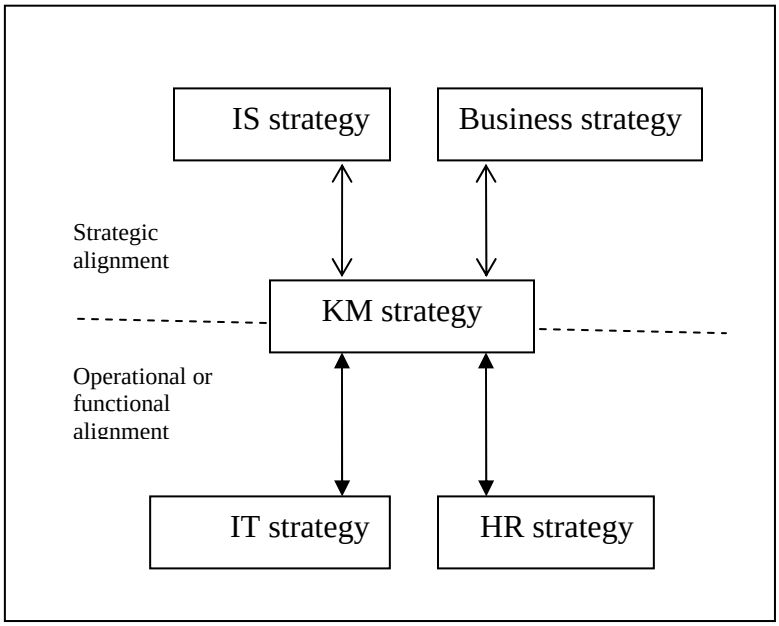


Figure 2.1: KMSA at the strategic and functional levels

2.6. Definition of KMSA

The concept of alignment in the KM field is complex as it addresses both KM and organizational strategies. The complexity of the organizational strategy is related to the market place uncertainty, market share, profit growth, customer retention, and competition (Bawany, 2001). KM is complex as it touches human behaviors, attitudes and capabilities, business philosophies, operations and practices, and complicated technologies (Wiig, 1997). Although some research has made an attempt to provide definitions for the KMSA alignment, Zack, (2002 a, b); Asoh, (2004); Abou-Zeid, (2003); Evans, (2003); Maier and Remus (2002), tended to focus on KMBS-SA as it is discussed in Section 2.7. Most of these definitions however have overlooked the alignment between KM and IS strategy, HR strategy and the organization's environmental elements.

The various perceptive of KM in addition to the fundamental complexity of the KMSA do necessitate the establishment of appropriate definitions for the KMSA alignment. The following points are noted:

- It has been mentioned in section 2.4 that there are three perspectives for the KMSA: *KMBS-SA*, *KMITIS-SA*, and *KM-HR management strategy*. For each of these facets KMSA could imply different kinds of relationship such as *supportive* or *integrated*. The *supportive* relationship entails that KM strategy considered as a separate strategy that is supporting or is supported by the other strategies. Whereas the *integrated* relationship presumes that KM strategy is an integrated part in the other strategies.

Thus, the definition for KMBS-SA may have a different perspective than that for the alignment between KM strategy and HRM strategy or IS strategy.

- There are numerous definitions which have been proposed for the concept of strategic alignment in the IS and strategic management literature as discussed in section 2.2. The section moreover, identified many terms for the concept alignment, such as "fit", "linkage", "coherent", "harmony", "fusion", and "synthesis". Each of these terms defined different perspectives of the alignment as it has been discussed in section 2.2. Consequently, to locate an appropriate definition for KMSA, there is a need to find which of the above terms best describes KMBS-SA and KMIS-SA.

The primary objective of this study as has mentioned in Chapter One is to investigate the alignment between KM strategy and both business strategy and IS strategy. By considering the above mentioned points, section 2.7 and section 2.8 will identify different definitions for KMBS-SA and KMISIT-SA respectively.

2.7. The alignment between knowledge strategy and business strategy (KMBS-SA)

This alignment has been extensively discussed and emphasized by academics and researchers in the KM and management disciplines (Zack, 1999b, 2002 a, b; Marier and Remus, 2002; Sabherwal and Sabherwal, 2003; Carrillo et al., 2003; Abou-Zeid, 2003; Asoh, 2004; Snyman and Kruger, 2004). The literatures have identified different perspectives for the alignment between KM and business strategy according to the role

played by knowledge and their strategies in formulating the business strategy and which of (business or KM strategies) them are built upon the others.

Asoh (2004) and Snyman and Kruger (2004) for instance, believed that business strategy and KM strategy should feed upon each other and need to work interdependently. Tiwana (2002) states that "Knowledge drives strategy and strategy drives knowledge management", and, "without a clearly articulated link between knowledge management and business strategy, even the world's best KM system will deliver nothing." Civi (2000) contended that the organization's competitive strategy must drive KM strategy, and KM strategy, on the other hand should reflect its competitive strategy. Dunnick (1996), Snyman and Kruger (2004), and Jones (2000) moreover, declare that the knowledge-based strategies begin with strategy, not knowledge. Jones (2000) stated that knowledge-based strategy requires the organization first understand the business needs, in term of technical, human and structural aspects, as bad choices or decision hurt the organizational productivity. Thus in order to formulate a KM strategy, the Chief Knowledge Officer (CKO) needs to be fully conversant with all aspects of the business strategy. The Chief Executive Officer (CEO), however, should be able to articulate the organization knowledge-related activities with the organization strategic activities and strategic plan. This perception of KMSA revealed that KM must support business strategy, which means that there are two separate strategies, one for business and the other for KM. In this case, the term linkage and coherent can be used to describe KMBS-SA. Therefore, the alignment can be defined as the degree to which the KM missions, objectives, and plans supported and are supported by business mission, objective and plans.

Alternately, Evans (2003) argued that the management of knowledge becomes an integral part of the organizational strategies. Thus, the organization will have one integrated strategy that is changing according to its internal and external environmental changes. Maier and Remus (2002) stated that KM is either integrated within the overall business strategy or treated as a separate business strategy in parallel with other strategies. Thus, they declared that KM and BS should be one strategy and not separated strategies. In this case, KM needs to be in harmony with business strategy. Fusion or harmony is the suitable terms to describe the relationship between KM and business strategy in which there should be a unity between organizational strategies and KM strategy.

Based on the above discussion and despite the different perspectives of the KMBS-SA, for the purpose of the current study the following definition was identified for KMBS-SA:

> *The degree to which knowledge resources and capabilities provided by the knowledge strategy, is supporting and supported by the strategic and intellectual requirements of the business strategy in order to manage the strategic and knowledge gap.*

The impact of KMBA-SA on the performance and the organization competitive advantage have been revealed by many researchers (Zack, 2002 b; Stewart et al., 2000; Snyman and Kruger, 2004; Tiwana, 2002; Maier and Remus, 2002; Seeley, 2002). Intuitively, it makes sense that the organization that knows more about its customers, products, technologies, markets, and optimizing the synergy between them should

perform better. Nevertheless, in order to gain competitive knowledge, organizations need to be able to enhance what they know and predicate what they must know and to recognize the kind of value it intends to provide and to whom. Thus an organization needs to capitalize on what they know and need to align their strategic goals and the strategies of KM (Snyman and Kruger, 2004). Dunnick (1996) argued that the existing objectives set by the organization for serving customers and beating competitors needs to be linked to the new organizational intellectual capital (intellectual resources and capabilities), otherwise all the organizational learning, technical capabilities and skills, or knowledge-based processes are "mere costly diversions".

Hansen, et al. (1999) however, drew attention to the importance of the alignment between business strategy and the strategies of KM at both the strategic and operational strategic levels. While at the strategic level the alignment between KM and business strategy or KMBS-SA is vital for enhancing the strategic decision making processes, the organization needs to practice effective operational KM to ensure that it brings all the required knowledge to execute their strategies (Hansen, et al., 1999). Furthermore, the organization’s fundamental capabilities relating to its culture, technology and system, and management needs to be supported and leveraged by the knowledge assets (Hasan and Handzic, 2003). An empirical study conducted by Liu et al. (2005) on the correlation between the KM methods and new product development revealed that the integration of the internal and external knowledge in the organization and in maintaining good management will lead to a positive effect on new product development performance. Therefore, it can be concluded that the organization's strategic context is essential for

identifying the KM initiatives that support the organization purpose or mission, strengthen its competitive position and create shareholder value (Zack, 2002; Tiwana, 2002; Hansen et al., 1999, Snyman and Kruger, 2004).

Unfortunately, KMBS-SA, while often talked about, has been widely ignored in practice (Zack, 2002b). Zack (2002c) state that "*while many of the organizations recognize the importance of developing a strategic rationale for investing in knowledge creation and exploitation, they continue to be, for the most part, are driven by focus on short-term, first-order outcomes rather than by broader, longer term strategic goals*".

2.8. The alignment between knowledge strategy and IS strategy (KMIS-SA)

The second facet of KMSA is the alignment between KM and IS strategy. Jashapara (2004) stated that KM strategies need to be developed in consultation and partnership with both IS strategy and HR department. However, many organizations are still misleading the relationship between technology and knowledge (Spiegler, 2003). In practice, it is not enough to consider KM as an isolated construct, but effective management of knowledge should be based on sound information management (Nelson and Middleton, 2003). In fact, the focus on knowledge and its management has led to an increased attention towards IT as one of the most important sources of competitive advantages (Johannessen et al., 2000). The role of IT in KM is a vital consideration for any company wishing to exploit emerging technologies to manage their knowledge assets

and a critical success factor in the development of an effective KM system (Egbu and Botterill, 2002). KMIS-SA can then be defined as:

> *The degree to which IS/IT resources (technological infrastructure, computer system applications, and organizational information) are influence, leverage and execute knowledge strategic choices to manage the organizational knowledge gaps or surpluses and permit knowledge to flow effectively.*

The relationship between KM and IT has been approached from the capabilities of IT infrastructure and from the processes of KM (Okunoye, 2003). Junnarkar and Brown (1997) discussed the role of IT in KM as a mechanism to facilitate knowledge creation and transfer. This role lies in the new IT capabilities to support communication and collaboration in order to enable collaborative learning (Alavi and Leidner, 1999). IT is also capable to radically change the production and distribution of products and services, thereby bringing about fundamental socioeconomic changes (Sage and Rouse, 1999). According to Manasco, (1996), the critical role of IT lies in the ability to support communication, collaboration, and search for knowledge and information dynamically instead of just getting information from static repositories of best practices. Studies by American Productivity and Quality Center (APQC) (1996, 1997) consider technology as a significant enabler for KM and organizations embarking on KM initiatives must establish a suitable IT infrastructure in order to successfully accomplish the goals of the organization.

IT and its supportive strategy should be aligned and integrated with the organization's knowledge strategy and to attempt to combine IT with the organizational structure, business process, organization culture and human factors. As a result of this integration, KM initiative can provide better services to the customers, leveraging knowledge for innovation and empowering employees through the exchange of knowledge with others in the business environment (Hlupic, et al., 2002). Bloodgood and Salisbury (2001) have assessed the degree of fit between IT and KM strategy. They mentioned that certain uses of IT may be more common for certain types of KM strategies than others. They have identified two types of KM strategies: *knowledge transfer strategy* and *knowledge creation strategy*. They argued that IT can support knowledge transfer strategy in leveraging their knowledge assets, and knowledge creation strategy in creating knowledge network and enabling communication between those who need the knowledge and those who have it. In addition, many researches agreed on the IT support for *codification* and *personalization* KM strategy (McMahon, et al., 20004; Kankanhalli et al., 2003).

There have been some attempts to show a direct relationship between effective information management, KM practices and corporate performance (Marchand, et al., 2000). Blumentrit and Johnston, (1999) argued that well-organized information management and KM are seen to be complementary with both required to operate effectively to ensure adequate supply of both "old and new knowledge". However, IT should be understood less in its capacity to store explicit information and more in its potential to aid collaboration and co-operation between people to enhance the tacit

knowledge (Egbu and Botterill, 2002). Thus IT has a supporting role, not the main role, in a KM program (Carvalha and Ferrira, 2001). The increasing capabilities of IT which look promising for facilitating KM process and program can certainly support just some aspects of KM. Bloodgood and Salisbury (2001) demonstrated that the misuse or misalignment of IT with the KM strategy can lead to adverse effects on the organization. For examples, tacit knowledge may be neglected by an organization as a result of the overemphasizing on digitalization of explicit knowledge (Johannessen et al., 2000).This could have a negative impact on the organization's ability to create and maintain sustainable competitive advantages.

While numerous research works have been done in integrating IT with the business strategy, few attempts were done in discussing and exploring the relationship between IT and KM. Most of the published research work develop recommendations for successful KM, or discuss the technological tools available for supporting the management of the tacit or explicit knowledge without an empirical basis (Gottschalk, 2001). Table (2.2) shows a summary of some of these studies on the support of IT for KM. Although the studies of Willcocks, et al., (2003) and Okunoye, (2003) have investigated the relationship between IT and KM as they discussed the integration between IT outsourcing and KM, they did not derive a detailed model or framework for the IT/KM integration which can be employed for the purpose of this study.

Table 2.2: A summary of some studies on IT support to KM

Study	Aim and objective of study	IT support and role for KM
(Egbu and Botterill, 2002)	Explore the role of IT for KM in the construction industry.	IT for acquiring, developing and applying knowledge. Such as the conventional technologies and the Radical IT.
(Gottschalk, 2001)	Investigate the use of information technology to support inter-organizational knowledge management at the Norwegian law firms	IT support for inter-organizational knowledge management. IT support firm cooperation IT support of knowledge cooperation
(McMahon et al., 2004)	Explore the application of KM in engineering by considering approaches to KM in light of the distinction between personalization and codification.	IT for personalization IT for codification
(Bloodgood and Salisbury, 2001)	Discuss issues that should be addresses when using information technology to implement general knowledge management strategies in support of strategic change.	IT for codify knowledge IT for create networks
(Borghoff and Pareschi, 1997)	A selection of papers from the First Conference on Practical Applications of KM	Knowledge-orientation information technology • Process management • Corporate Memories • Information Filtering
(Kankanhalli et al., 2003)	Investigates the role of IT in successful KM initiatives	IT support codification approaches IT support personalization approach

2.9. Research on alignment in the field of KM

It has been noticed that little research especially in empirical approaches have been carried out to provide management indicators and supportive confirmation for the performance impact of KMSA (Asoh, 2004; Shih and Chiang, 2005; Maier and Remus, 2002). In fact, the review of the available literature in KM showed that most of them provided only an overall scheme for KM planning, including infrastructure evaluation, and KM system analysis (Franken and Braganza, 2006). The available literature is yet to

provide frameworks to depict how the organization can effectively align appropriate KM models with organizations' strategies, structures, processes and IT (Hansen et al., 1999; Teece, 2001). However, there are many other studies which have made an effort to investigate the relationship between KM and the organization using different perspectives and hence introduced frameworks reflecting their perspectives. Among these studies are Asoh (2004), Franken and Braganza (2006), and Shih and Chiang (2005) that have presented different models for aligning KM and business strategy. These models can be considered as a fundamental approach for subsequent research studies in this area.

Without doubt, one of the most widely discussed models on the alignment between KM and business strategy is that proposed by Zack (1999b, 2002a, b). Zack developed the *Knowledge-Strengths-Weakness-Opportunities-Threats (K-SWOT)* as a fundamental way for aligning knowledge with business strategy. The link has been developed by applying the traditional notion of strategy SWOT to the resources-based view and knowledge-based view as shown in Figure (2.2). While traditionally the SWOT analysis has an external focus, the focus of K-SWOT is mostly internal because it is about what the organization knows rather than on what the organization produces. The linkage between SWOT and K-SWOT represents the linkage between what the organization is doing and what it is already has as knowledge and intellectual assets (Zack, 2002 b).

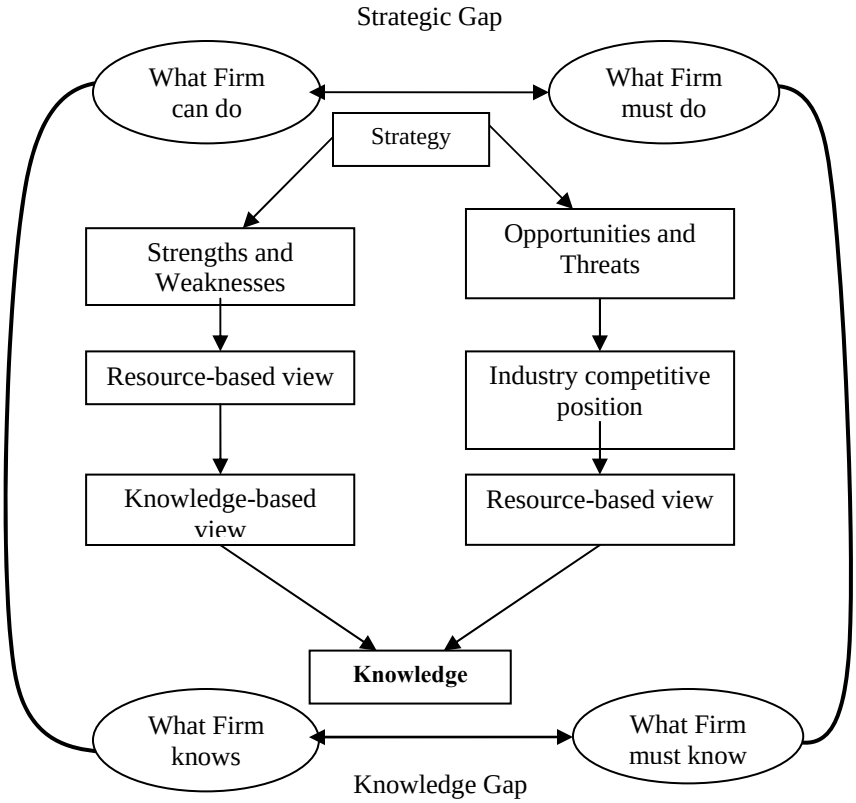


Figure 2.2: The strategic and knowledge gap (adopted from Zack (2002b)

An alternative approach to the K-SWOT for aligning KM initiatives with competitive strategy is by determining the critical performance gap or the strategic and knowledge gap (Earl, 2001) (see Figure 2.2). The strategic gap is a gap between what a firm must do to compete and what it can do (actually doing), while the knowledge gap is a gap between what the firm must know to execute its strategy and what it does know (Zack, 1999b). The knowledge gap should be directly derived from and aligned with the strategic gap. Based on the association between the identified strategic and knowledge gaps, an organization can recognize the extent to which its various categories of existing knowledge and capabilities are in alignment with its strategic requirements and hence

new knowledge business vision can be framed (Zack, 2002 b). Although, the K-SWOT and the knowledge-strategy gaps can be considered as fundamental theoretical models for KMSA, there are no studies attempted to examine these models empirically. The reasons behind this are the complexity of the K-SWOT and the knowledge-strategy gaps models in addition to the difficulties of the constructing and the operationalization of the models dimensions.

Asoh (2004) in his study integrated theories about knowledge and alignment to develop an alignment framework and model for KM research, developed a knowledge strategy construct, and empirically tested the alignment model within a mediation perspective along with Miles and Snow (1978) strategic typology. Asoh (2004) argued that organizations can improve organizational performance by strategically aligning business strategies with knowledge strategies. The principal result of the study indicated that the same organizational performance is achieved irrespective of whether it is business strategy or knowledge strategy that was considered as the mediator.

Franken and Braganza (2006) instead, integrated, for the first time, Miles and Snow typology (*prospector*, *analyzer* and *defender*) with the KM models by Nonaka (1994). According to Nonaka (1994) there are three choices of KM model, *Top-down*, *Bottom-up*, or *Middle-up-down*. Through the integration of these two frameworks, it is shown that the choice of KM approach cannot be unqualified but must be closely aligned with the organization's strategic and operational form in order for the anticipated benefits to be reaped. Franken and Braganza (2006) hypothesized that the effective management of

knowledge creation within *defender, prospector* and *analyzer* organizational forms is achieved by adopting the *Top-down, Bottom-up* and *Middle-up-down* KM models respectively. Although the theoretical framework proposed by Franken and Braganza (2006) is apparently well structured when viewed from the hypothesis aspect and the theoretical arguments, the overall model is very elusive when it comes to operationalization.

While Miles and Snow (1978) typology for business strategy has been used frequently in the strategic alignment literature, Shih and Chiang (2005) have examined Porter's (1985) typology for corporate strategy which includes: *cost leadership* and *differentiation* strategy. Two types of KM strategies have been examined in their model of alignment: *codification* and *personalization* strategy. Furthermore, they expanded their model of KM alignment to include the human resources management (HRM) strategy which they believe has a strong relationship with the selected KM strategy. The major finding of their study on 147 large Taiwanese firms indicated that both corporate and human resources management (HRM) strategy are closely related to KM strategy and that this strategic harmony significantly contributes to better KM effectiveness. The model developed by Shih and Chiang (2005) although is based on three well structured models from KM, strategy and HRM, there are some limitations in the measurement and analysis applied. They attempted to examine the fit concept regardless of identifying which perspectives of fit: *moderation, mediation, co-variance* or *matching*, is in existence.

In considering the relationship between KM strategy and HRM, Hislop (2003, 2005) attempted to develop the linkage between them. Hislop (2005) believes that in order to articulate the type of HRM policies and practices that can support an organization's KM efforts, it is necessary to understand the type of KM strategy that the organization is pursuing. In his study, he examined the alignment between HRM and KM strategies by illustrating the fundamental centrality of human and social factors in shaping the attitudes of workers towards knowledge-sharing initiatives. He tried to show how commitment of the organization has a dominant effect on the worker's tendency to be involved with the KM initiative. However, Hislop (2005) did not expand the discussion on the relationship between KM strategies and HRM strategy by including the business strategy.

Based on Henderson and Venkatraman's (1993) Strategic Alignment Model (SAM), Abou-Zeid (2003), established his KM Strategic Alignment Model (KMSAM). In his model he replaced IT strategy by knowledge strategy. Consequently, knowledge strategy is acting in an equivalent way between the external domain (opportunities and threats) and internal domain (strength and weaknesses) of the organization. The external domain involves knowledge-scope, knowledge-systematic competencies, and knowledge-governance. However, the knowledge strategy internal domain comprises knowledge-infrastructure, knowledge-process and knowledge-skills. Despite the well structured and formulated model, the proposed knowledge strategy is complex and difficult to be implemented due to the fact that it is not explicit enough.

By analyzing all the different perspectives with regard to strategy formulation from the business as well as the knowledge points of view, Snyman and Kruger (2004) introduced a holistic model that incorporates the major principles involved in strategy formulation and illustrated the interdependency between strategic management and strategic KM. The model emphasized specially on the management of knowledge as a strategic resource. The model consisted of four steps: starting from analyzing the external and internal environment, setting strategic objectives, establishing strategic initiatives, and ending by the institutionalization of strategy. Moreover, adopting from Weill and Broadbent (1997), Tiwana (2002) has illustrated the relationship between business strategy, competitive environment, KM strategy, and KM technology. Tiwana demonstrated another perspective for the alignment between KM and business strategy. According to him, the process of articulating the link between business and knowledge strategy includes an external and internal mapping for the organizational knowledge. The internal knowledge mapping can determine the focus of the organizational KM strategy through either *personalization* or *codification*. However, the external knowledge mapping which includes both strategic SWOT and Knowledge-based SWOT will determine the KM strategy as either *exploitation* or *exploration*. The conceptual models provided by both Snyman and Kruger (2004) and Tiwana (2002) indeed, can be used as a guideline, or a tool in the quest to demonstrate the interdependency between the management of strategic resources and the formulation of business strategies.

2.10. Business strategy in strategic alignment

Business strategy can be defined as the outcome of decision made to guide an organization with respect to the environment, structure and processes that influence its organizational performance (Foss, 1997; Croteau, et al., 1999; Combe, 1999; Hakansson and Snehota, 2006, Anderson, 2001). By integrating the organization activities and allocating the scare resources, business strategy makes certain that the organization's objectives and goals will be met (Walker and Ruekert, 1987; Varadarajan and Clark, 1994; Luffman, and et al., 1996).

According to the normative theory in business strategy, there are three different perspectives to adopt business strategy: *process*, *content*, or *context* (Ketchen et al., 1996, cited by Morgan and Strong, 2003). While, the strategy *process* proposes that the strategic orientations can be explained by the *intended strategies*, the strategy *content* suggests that strategic orientations can be interpreted as *realized strategies* (Combe, 1999; Manu and Sriram, 1996). The process research examines the management and administrative activities resulting in strategic decision (Mintzberg et al., 1998). The context perspective of business strategy focuses upon the conditions and the different environment situations under which each strategic orientation can be adopted by the organization (Hartman, et al., 1995). In contrast, the *content* research addresses the properties of the *strategic decision* the business strategy by itself (Combe, 1999). It concerns mainly on the result of strategic decision and the approach in which business strategy content is manifested in a firm (Morgan and Strong, 2003).

Moreover, there are three approaches to identify content perspective of business strategy. This includes the *narrative (textual) approach*, the *classificatory (typological) approach*, and the *comparative (multivariate) approach* (Morgan and Strong, 2003; Combe, 1999; Croteou et al., 1999). Among these approaches, the *typological approach* is well grounded in the management literature (Morgan and Strong, 2003) and is recognized that it is able to create a better understanding of the strategic reality of an organization (Croteau et al., 2001). This is because all types of business strategy are viewed as having particular characteristics but there should exist common strategic orientations (Croteau et al., 2001). The *typology approach* overcomes many of the constraints inherent in the narrative stance and has been regarded as the conversation of narrative when attempting to investigate business strategy (Combe, 1999).

2.10.1. Miles and Snow typology

While several typologies have been proposed (Porter, 1980; Miles and Snow, 1978), the most frequent used in empirical research is Miles and Snow's typology (Zahra and Pearce, 1990; Smith, Guthrie and Chen, 1986, Combe, 1999). Miles and Snow (1978) viewed an organization as a complete and integrated system in dynamic interaction with its environment (Gupta et al., 1997). According to this interaction the organization could be associated with a strategy type (Morgan, Strong and McGuinness, 2001) which will reflect the organizational and environmental processes, as well as the attributes of product, market, technology, organizational structure and management characteristics

(Combe, 1999). Miles and Snow's (1978) typology proposed that more than one strategy type can be successful in a given environment (Gupta et al., 1997). Moreover, they argued that a particular strategic type requires the organization to be organized appropriately and to plan and implement relevant strategies.

Miles and Snow's typology consists of four ideal types of business strategy defined as *prospector, analyzer, defender*, and *reactor* (Tan, 1997). Firms choose one type rather than another according, to the perception they have of their environment (Tan, 1997). The previous studies related to Miles and Snow provide a strong support for the proposition that four different generic strategies exist in a variety of environmental settings (Gimenez, 2000). The key dimensions underlying this typology are the rate at which a firm changes its products or markets to maintain alignment with its environment (Gupta et al., 1997). Moreover, Miles and Snow argued that any strategy (except the *reactor*) can be successful in any given environment if the firm acts consistently in all areas of its operation. The Miles and Snow framework is especially appropriate for this study because of four reasons. First, Miles and Snow's strategy typology has been used extensively in empirical research (Snow and Hrebiniak, 1980; Hambrick, 1983; Smith, Guthrie and Chen, 1986; Zajac and Shortell, 1989; Tan, 1997; Burn, 1993; Combe, 1999). Second, it is useful for analyzing the ways in which firms interact with their environment. As such it specifies relationships among strategy, structure and process in a manner that allows the identification of organizations as integrated entities in interaction with their environment (Gimenez, 2000). Third, there is an extensive body of empirical research that supports the efficiency of this typology, as a reliable classification of competitive strategy, for linking MIS dimensions with competitive strategy and the utility

of the Miles and Snow's typology (Das et al., 1991). Finally, Miles and Snow's (1978) typology is well researched that can be selected with less need to explore its operationalization status (Gimenez, 2000) which enable researchers to use the typology with confidence in future work on organizations and their strategies (Shortell and Zajac, 1990).

In addition to the above mentioned reasons for choosing Miles and Snow (1978), Asoh (2004) provided some assessment for three approaches to business strategy. He provided a discussion for Miles and Snow (1978), Venkatraman's STROBE (1993) and Porter (1986). He set three criteria for selecting the best among them for his model which include: business strategy must have been *operationalized*, the findings from the previous studies based on the business strategy must have been *consistent*, and the business strategy must be '*systemic*' meaning it should not be narrowly focused. Based on his assessment the following table is created. One observation by Asoh is that Miles and Snow (1978), Venkatraman's STROBE (1993) and Porter (1986) meet the first criteria and that only Miles and Snow (1978) that meets the three criteria as shown in Table (2.3).

Table 2.3: Assessment of the three business strategy candidates (adopted from Asoh (2004))

Business strategy	**Operationalization**	**Systemic**	**Consistently in term of studies**
Miles and Snow (1978)	✓	✓	✓
Porter (1986)	✓		
Venkatraman's STROBE (1993)	✓	✓	

Porter (1986) and Venkatraman's STROBE (1993) reported inconsistent results. While there are many studies using Porter (1986) and Venkatraman's STROBE (1993) have revealed a positive correlation of some dimensions of these strategies with the performance, mixed results have been reported by other studies. Porter's typology is not systemic because of its narrow focus on market positioning. Moreover, Venkatraman's STROBE (1993) has been described as encompassing a broad set of the choices managers have made to attain organizational goals, their model is less systemic as compared to Miles and Snow's typology.

According to Miles and Snow (1978), organizational adaptation is concerned with finding complementary sets of solutions to three problems: (1) an *entrepreneurial* problem set centering on the definition of an organization's product market domain; (2) an *engineering* problem set focusing on the choice of technologies and processes to be used for production and distribution; and (3) an *administrative* problem set involving the selection, rationalization, and development of organizational structure. For the purpose of this study *defender*, *prospector*, and a*nalyzer* will be described in terms of the *entrepreneurial* and *engineering* problems, and solutions. The following are the description and explanation of the Miles and Snow's typology based on the abovementioned context:

Defenders:

Defenders are organizations with an entrepreneurial question of "How to seal off a portion of the total market?" (Miles and Snow, 1978). Defenders then characterize organizations that usually operate in predictable, stable and mature environmental and

that tend not to search outside their domains for new opportunities (Miles and Snow, 1978). Instead, they focus attention internally on ways to enhance organizational effectiveness (Miles and Snow, 1978). As such they are usually not at the forefront of new product development in their industries, often ignoring industry changes not directly related to their operations (Benedetto and Song, 2003). Thus, defenders tend to perceive developments in their organization's limited areas of operations and lead most of their efforts and investments towards improving their operational domain, but do not search outside their market domain for new opportunities (Gimenez, 2000; Franken and Braganza, 2006). Defenders actually attempt to locate and maintain a secure position in relatively stable product or service areas (Benedetto and Song, 2003).

The defenders engineering or technological problem is how to produce and distribute goods or services as efficiently as possible (Miles and Snow, 1978). Thus, they emphasize the excellence of their products, the quality of their services, and lower prices. The solution for this problem relies heavily on a cost-efficient technology (Miles and Snow, 1978). Defenders then concentrate on updating their current technology and tend to focus on a niche or single core technology to provide high quality products and maintain efficiency. Moreover, they emphasize cost-efficient technologies, operational efficiencies and economies of scales, engage in continuous improvement of processes, and employ mechanistic organizational structures with vertical integration (Miles and Snow, 1978).

Prospectors:

Prospectors' entrepreneurial problem involves locating and exploiting new product and market opportunities (Miles and Snow, 1978). Unlike defenders, whose market/product domain is narrow and stable, prospectors' domain is usually broad and in a continuous state of development. As such prospectors need to have access to the largest possible market (Brown and Iverson, 2004) and monitor wide range of environmental conditions and events, they therefore continually search for new market opportunities, and they regularly experiment with potential responses to emerging environmental trends (Miles and Snow, 1978). Given that they tend to thrive in innovative, dynamic environments, capitalizing on growth opportunities (Gimenez, 2000), change and innovation are indeed, two of the major tools used by the prospectors to gain an edge over competitors (Miles and Snow, 1978). Furthermore, Prospectors are characterized by their repeated efforts to innovate and bring changes in their industry and are expected to be more likely to take the initiative in location/distribution innovations (McDaniel and Kolari, 1987). The concern with changing and innovativeness often leads to a lack of controls and low operational and production efficiency. In fact, prospectors compete by motivating and meeting new market opportunities although they may not sustain their strong positions in all markets they enter (Benedetto and Song, 2003).

The prospectors' technology is dependent on both organization's current and future product mix (Miles and Snow, 1978). So their overall engineering and technological problem is how to avoid long-term commitment to a single technological process. Given

the dynamic nature of their domain, prospectors seldom try to attain high levels of stability and efficiency in their production (Miles and Snow, 1978). Instead, they seek flexibility in technological investments and they frequently embark on multiple technologies. Technological flexibility permits a rapid response to a changing domain, but the organization cannot develop maximum efficiency in its production and distribution system because of multiple technologies.

Analyzers:

The analyzers define their entrepreneurial problem as how to locate and exploit new product and market opportunities while simultaneously maintaining a firm base of traditional products and customers (Miles and Snow, 1978). This problem could be solved by adopting a moderated combination of the prospector and defender characteristics. Thus, analyzers make fewer and slower product-market changes than prospectors, but are less committed to stability and efficiency than defender (Benedetto and Song, 2003). As such they are operating in two types of product-market domains, one relatively stable, and the other changing (McDaniel and Kolari, 1987). In their stable areas, these organizations maintain a stable, limited line of products or services and operate routinely and efficiently through use of formalized structures and processes (Gimenez, 2000). Instead, in their more turbulent areas, these organizations closely monitor key competitors and adopt only those innovations which appear to have strong market potential (Benedetto and Song, 2003). Most large companies use this approach because they want to protect their operations and to create new market opportunities as

well. Given the mixture nature of analyzers in term of products and markets, they are able to serve their mixed domain by creating a dual technological core. This dual technology allows the organization to produce familiar products or services efficiently while keeping pace with developments engendered by prospectors.

2.10.2. Strategic orientation profile of Miles and Snow's typology

Business strategy needs to be assessed by way of multiple traits of dimensions common to all organization (Morgan and Strong, 2003) and to be considered in terms of the relative emphasis made by the organization along each strategic orientation dimension. This approach for business strategy is called the *comparative approach*. The comparative approach overcomes the empirical limitations of the classificatory method in that strategic orientation is viewed not across strict strategy classification but alternatively, along specific dimensions.

Venkatraman (1989b) has proposed six dimensions of strategic orientation (called **STR**ategic **O**rientation of **B**usiness **E**nterprise or STROBE) – *defensiveness, risk aversion, aggressiveness, proactiveness, analysis,* and *futurity* that view the realized business strategy in term of management actions. The conceptualized dimensions of Venkatraman of strategic orientation represented a broad, holistic perspective of strategy built on research by Miles and Snow (1978). This is illustrated in Table (2.4). The strategic orientation moreover, represents a realized strategy and is defined at the level of the business unit, and adopts a holistic rather than functional perspective (Bergeron et al., 2002). Venkatraman (1989b) viewed organizations as having characteristic orientations

evident with respect to their marketplace behavior. The STROBE reflects the actual strategies pursued by a firm with respect to its competitors and involves a host of organizational activities, whether be product-related, price related, process related, or financially related (Lefebvre et al., 1997).

Table 2.4: Venkatraman's (1989b) strategic orientations

STROBE – Strategic Orientation of Business Enterprises	
Aggressiveness	Push to domain (i.e., increase market share) even if this means reduced prices and cash flow
Analysis	Reliance on detailed, numerically oriented studies prior to action
Defensiveness	Emphasis on cost cutting and efficiency; internally 'lean and mean'
Futurity	Having forward-looking, long-term focus
Proactiveness	First to introduce new products and service; a step ahead of the competition
Risk Aversion	Reluctance to embark on risky projects
Innovativeness	Creativity and experimentation are strengths

2.11. IS strategy in strategic alignment

The lack of common understanding of the concept of strategy as it relates to Information System (IS) has been very strongly commented by Earl (1989). For IS researchers, it is useful to understand and evaluate the strategy for the management of IT and IS. It is also useful to focus on the strategy content, which concerns with the strategy that the organization is pursuing (e.g., Chan and Huff 1993, Das et al. 1991, Sebherwal and Chan, 2001). When focusing on content, it is important to distinguish between three strategies: *Information System (IS) strategy*, *Information Technology (IT) strategy*, and *Information Management (IM)* strategy. *IT Strategy* is concerned with the technological infrastructure

including such aspects as policies, architecture, standards and security levels, which are essential to meet the requirements of the IS (Allen, 1995; Earl, 1989). *IM strategy* "is the management framework which guides how the organization should run IS or IT activities" (Earl, 1989). Finally, *IS strategy* focuses on systems or business applications of IT and is concerned primarily with aligning the applications with business needs and using them to derive strategic benefits (Earl, 1989).

Moreover, it is useful to assess both the intended (what was planned) and the realized (what actually happened) strategy to have a complete understanding of an organization's IS strategy (Chan et al., 1997). Realized, or actual strategy, is that part of the planned or intended strategy which is achieved together with emergent strategy developed in response to unanticipated situations (Broadbent and Weill, 1993). A lot of the past IS research have focused on shedding light on intended strategy, and has dealt with the matter of IS strategic planning (e.g. Earl, 1989; Keen, 1991; Raghunathan and King, 1988). However, very little research has examined realized IS strategy (Chan et al., 1997).

The current study focuses on the *realized IS strategy*, which is the part of the planned or intended strategy that has been achieved and pursued by the organization. IS strategy is viewed as the IS capabilities and supports provided to the business strategy. IS strategy has been chosen because it brings together the business aims of the company, an understanding of the information needed to support those aims, and the implementation of computer systems to provide that information. Moreover, IS strategy considered as a

plan for the development of systems towards some future vision of the role of information systems in the organization. Finally, IS strategy is concerned primarily with aligning IS development with business needs and with seeking strategic advantages from IT. It determines requirements to meet business needs, that is, the application to be developed (Peppard, 1993).

2.11.1. Chan's STROIS model for IS strategies

Little research has addressed the measurement of either intended or realized IS strategy. Moreover, researchers and practitioners have few tools with which they can assess alternative IS strategies. Focusing on Henderson and Venkatraman's (1993) definition of IS strategy, many researches have developed models to study the effect of this strategy on the business strategy and organization performance. They revealed different dimensions in their studies. For example, Bergeron et al. (2002) stated that IS strategy construct includes two dimensions: *IT environment scanning* and *strategic use of IT/IS*. Based on Henderson and Venkatraman's (1992) definition of IS strategy, three dimensions of IT can be conceptualized which include *IT scope*, *IT system and capabilities*, and, *IT governance*. By emphasizing on the types and the capabilities of IS and the IS support provided for business strategy, Chan et al. (1997) developed and validated an instrument to measure the *realized IS strategy*, which focuses on IS applications. This IS strategy instrument is named the **STR**ategic **O**rientation of the **P**ortfolio of **I**nformation **S**ystem (STROPIS) or **STR**ategic **O**rientation of **I**nformation **S**ystem (STROIS) in an organization (Chan et al., 1997). The model is designed to determine the way in which

information systems are used by an organization to provide support for business strategy and operation. This instrument consists of seven dimensions: IS support for the company's *aggressiveness, analysis, defensiveness, futurity, proactiveness, risk aversion* and *innovativeness.* This seven–dimensional model of realized IS strategy is designed to complement the Strategic Orientation of Business Strategy (STROBE) instrument developed by Venkatraman (1989b) for measuring organizational strategy (section 2.10.2). Table (2.5) shows the IS strategy support for business strategy according to Chan, et al. (1997) model. These dimensions of IS strategy were used in this study for assessing the alignment and the association of IS strategy with knowledge strategy.

Table 2.5: STROIS: Dimension definition and simple indication (Sources: Chan et al., 1998)

Dimensions	Definitions
IS to Support Company Aggressiveness	IS deployments used by the business unit when pursuing aggressive marketplace action.
IS to Support Company Analysis	IS deployments used by the business unit when conducting analysis of business situations
IS to Support Company Defensiveness	IS deployments used by the business unit to improve the efficiency of company operations and strengthen market place links
IS to Support Company Futurity	IS deployments used by the business unit for planning and projection purposes
IS to Support Company Proactive-ness	IS deployments used by the business unit to expedite the introduction of products/services
IS to Support Company Risk Aversion	IS deployments used by the business unit to make business risk assessments
IS to Support Company Innovativeness	IS deployments used by the business unit to facilitate creativity and exploration

2.12. Strategies for managing knowledge

2.12.1. Knowledge strategy and KM strategies

Essentially, KM initiatives in most organizations are often started with the development of what are called or considered as "KM strategy or Knowledge strategies" (Robertson, 2004). They are in the best cases just as an outline for high-level goals such as 'become a knowledge-enabled organization' (Robertson, 2004). A recent survey of construction organizations shows that about 40% already had a KM or knowledge strategy and that another 41% planned to have a strategy within a year (Carrillo et al., 2003).

Although the concept of KM strategy is receiving attention, there have not been many studies investigating KM or knowledge strategies. Most of these studies have focused on identifying which strategies are pursued by organizations and have investigated the driving forces behind selecting theses strategies (Hansen et al., 1999; Haggies et al., 2003, Rollo, 2002). One fact that does seem to be agreed on is that there is a confusion concerning the meanings of key KM related terms such as knowledge strategies and KM strategies (Asoh, Belardo and Neilson, 2002; Zack, 1999b). While these terms are not the same (Snyman and Kruger, 2004; Zack, 1999b; Hofer-Alfeis, 2003) they have been used exchangeably in the literature. A summary of this is shown in Appendix A, Table A.2. The existence of this confusion may be due to the failure in finding an acceptable definition for KM (Rollo, 2002). Petrash (2000) warns that strategy is a massive concept which needs a precise and thorough definition without which no meaningful discussion

can come about. Therefore, there is a need to clarify and make a distinction between the terms knowledge strategy and KM strategy and to identify the typical roles they play in leveraging the organizational knowledge.

2.12.2. Differences between KM strategy and knowledge strategy

Zack (1999a, b) deduced that knowledge strategy and KM strategy are different strategies that have different roles to play in an organization. Knowledge strategy is asserted to be related directly to the knowledge gap as it oriented toward understanding what knowledge is strategic and why (Zack, 2002a, b). Knowledge strategy in essence, is a higher-order competitive strategy built around a firm's intellectual resources and capabilities and derived from future organizational goals (Snyman and Kruger, 2004). Moreover, it defines the needs, ways, and actions to identify the strategic knowledge which should have a high impact on the business key performance (Hofer-Alfeis, 2003; Zack, 2002a).

While knowledge strategy focuses on identifying which knowledge is strategic and why, KM strategy on the contrary, focuses on addressing critical processes for bridging the strategic and knowledge gaps and rationalizing the knowledge surpluses (knowledge overload) (Zack, 1999b). Knowledge strategy should accordingly provide governance to the formulation of KM strategy (Snyman and Kruger, 2004). KM strategy then can be defined as a high-level plan that defines and outlines the processes, the tools, and infrastructure (organizational and technological) required for managing knowledge gaps

or surpluses (Zack, 2002b; Sunassee and Sewry, 2002). KM strategy and knowledge strategy should reflect the organizational competitive strategy with a focus on creating value for the customer, yielding profits, and managing people (Hansen et al., 1999). Hence, they need to take place within a complex system of organizational structure, culture and information technology (Alavi and Leidner, 2001).

From the above discussion, it should be clear that knowledge strategy and KM strategy are different terms that describe different aspects of strategy in relevant to KM. However, it is still ambiguous around the use of these terms in the knowledge literature as illustrated in Appendix A, Table A.2. While authors such as Zack (2002a, b, 1999a, b), Jones (2000) and Abou-Zeid (2003) and Smith and McKeen (2003) have asserted that knowledge strategy need to be aligned at the business strategic level, other researchers such as Smith and McKeen (2003), Hofer-Alfeis (2003), Sunassee and Sewry (2002), and Maires and Rumes (2003) have emphasized on the alignment between KM strategy and the organization at business strategy level. This means that while knowledge strategy and KM strategy are not the same, they have been used as analogous concepts in investigating the KMSA.

2.12.3. Strategic levels in the strategy perspective of KM

In addition to the confusion and contradictions in using knowledge strategy and KM strategy, none of the available studies concerning the strategy perspectives for KM has clarified why they considered that knowledge strategy or KM strategy should be aligned

at the business strategy level and not at other strategic levels. In other words, they failed to place knowledge strategy and KM strategy at their appropriate position within the organizational strategic levels: *corporate, business* or *functional (operation).* It is believed that providing a structure for the different levels in the strategies relevant to KM is imperative for the examination and discussion on KMSA. It could moreover, assist the researchers in recognizing a specific definition for the KM strategy and knowledge strategy.

Asoh (2004) contended that knowledge strategy is analogous to business strategy that it should be understood at a higher level, while KM strategy needs to be considered at a lower level as it corresponds to functional/operational strategy. Moreover, Asoh stated that strategy perspective in KM may have a four-level hierarchy of *global knowledge strategy*, *corporate knowledge strategy*, *knowledge strategy*, and *KM strategy*. This is equivalent to that of organization strategy which includes: *global strategy*, *corporate strategy, business strategy,* and *functional strategy*. Although Asoh (2004) offers an interesting discussion concerning the strategic level relevant to KM, however, his argument would be stronger if more theoretical evidence regarding the four-level hierarchy for the strategic perspective of KM was included. The current study is agreed on KM strategy and knowledge strategy as strategic levels relevant to KM. However, since there is no discussion in the KM literature regarding the global knowledge strategy and corporate knowledge strategy as identified by Asoh (2004), these two dimensions were discarded from the current study.

Civi (2000) stated that at the strategic level, the organization needs to be able to analyze and plans its business in terms of knowledge it currently has and the knowledge it needs for supporting its strategic goals and objectives. As knowledge strategy is seeking competitive advantages from organizational knowledge, it must answer questions such as "What knowledge is strategic?" and "Why this particular knowledge is considered strategic?" as shown in Figure (2.3). Thus, knowledge strategy should be formulated wherever business strategy is formulated, typically at the level of strategic unit or business strategy (Snyman and Kruger, 2004). Moreover, IS strategy is concerned primarily with aligning IS development with business needs and with seeking strategic advantage from IT. Thus it is formulated at the level of business strategy as it answers the "What" and "Why" IS questions (Earl, 1989). In line with Earl (1989), a knowledge strategy focuses on the "what" aspects of knowledge just as an IS strategy focuses on the “what" aspects of IS.

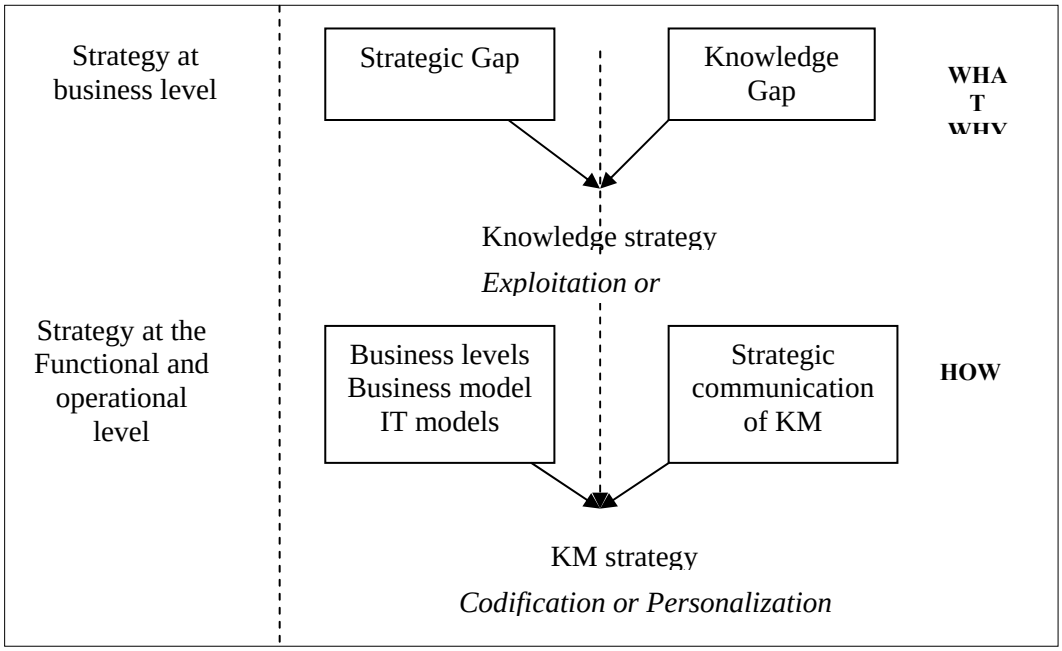


Figure 2.3: The position of knowledge strategy and KM strategy at the organizational strategic levels

KM strategy, on other hand, answers the “How" questions. It is supposed to plan and outline the processes, the tools and the infrastructure supporting the knowledge defined by knowledge strategy. Civi (2000) stated that at operational level, knowledge is used in every day practices by professional who needs access to the right knowledge at the right time in the right location and at the appropriate tactical level. However, the organization is concerned with formulizing existing knowledge, creating systems that enable effective and efficient application of knowledge within the organization. KM strategy then aims at managing and controlling the tactical and operational activities to support knowledge strategy. Therefore, KM strategy should be integrated with business at the functional level (tactical level) and operational level. This is illustrated in Figure (2.3).

However, IT strategy provides the fundamental framework that guides the organization through IT initiatives. These initiatives involve appropriate IT applications and technical architecture to ensure that an organization's IT infrastructure is leveraged and well positioned to support future profitability (Earl, 1989). Thus IT strategy and KM strategy can be considered to be formulated at the same level. Table (2.6) summarizes the relationship between KM strategic levels and the organizational strategic levels and IT/IS/IM framework.

Table 2.6: The position of knowledge strategy and KM strategy in the organizational strategic profile adopted from Earl (1989)

Organizational strategic level	**Focus**	**Strategic focus**	**Strategic responsibility**	**Information linkage**	**Knowledge linkage**
Corporate	-	Global business	Board	IM strategy	-
Business	Who, what, when and why (Zack, 1999)	Product market	SBU management	IS strategy	**Knowledge strategy**
Activity	How	Delivery	Functional management	IT strategy	**KM strategy**

2.12.4. Shortcomings in the approaches to knowledge strategy

Several studies have investigated and identified different approaches to knowledge strategy (Abou-Zeid, 2003; Zack, 1999b, 2002b; Jones, 2000; Smith and Mckeen, 2003). Although, the works by Zack (1999a, b, 2002a, b) are notable, most of the other works have proposed complex frameworks such as those by Abou-Zeid (2003), Jones (2000) and, by Smith and Mckeen (2001). There have been many discussions regarding the merits and/or shortcomings of knowledge strategy (Choi and Lee, 2000, 2002; Choi and Jong, 2005; Asoh, 2004). Hence, some of the arguments related to knowledge strategy approaches in this section are based on the outcomes of the investigations carried out by Choi and Jong (2005), and, Asoh (2004).

The drawbacks of the available approaches to knowledge strategy can be summarizes in two main points. First, in most cases there are no consistent measurements on the

available approaches to knowledge strategy in a similar way as those available for business strategy and IS strategy. Although some of the approaches have been operationalized, there is no declaration about the consistency of the results, as the supportive statistical reports were not adequate (Asoh, 2004). Much of the inconsistency in these approaches is due to the fragmented nature of research in KM. Besides, the collection of terminologies for the same knowledge-related strategies (as mentioned in sections 2.12.1 and 2.12.2) indicates fragmentation and possible misunderstanding among researchers (Choi and Jong, 2005). Second, the relationship between knowledge strategy or KM strategy and financial performance is still ambiguous. While, some studies stated that some approaches to knowledge strategy have demonstrated a significant difference in financial performance, other studies discovered that other approaches to knowledge strategy have no significant differences in financial performance (Choi and Jong, 2005).

With the abovementioned shortcomings of the available approaches to the knowledge strategy, it is believed that what has been identified as knowledge strategy approaches should not be considered as the best or the perfect approach.

2.12.5. Dimensions of knowledge strategy

The discussion in section 2.2 revealed different definitions for knowledge strategy. However, knowledge strategy as a set of "strategic choices, action or dimensions" has been asserted by many authors (Bierly and Chakrabati, 1996; Burn, 1993; Bierly and

Daly, 2002; Asoh, 2004). Therefore for the purpose of this study, the following definition is proposed for knowledge strategy:

> *Knowledge strategy is defined as a set of strategic actions or choices made at high strategic level to identify the strategic knowledge assets, resources and capabilities, and then orientating them towards achieving the organizational goals and improving the organizational performance.*

Given that knowledge is a significant determinant for the performance of organizations (Zack, 1999b, Sabherwal and Sabherwal, 2003), knowledge strategy can be considered as a critical strategic choice for the firm (Bierly and Chakrabarti, 1996). Thus, decisions on the knowledge strategic choices to shape the organization's knowledge strategy should be made and executed at a high strategic level. They could be either explicitly declared by top management or implied by their actions regarding the allocation of resources (Bierly and Chakrabarti, 1996). Several researchers have offered insights about strategic choices that define the knowledge strategy (Bierly and Chakrabarti, 1996; Asoh, 2004, Bierly and Daly, 2002, Choi and Lee, 2002). Actually the dimensions they have recognized are based on what the organizations identify and classify their knowledge strategies as knowledge strategic choices. Thus, the knowledge strategic choices are believed to be the attributes that identify the profile of the organization's knowledge strategy (Zack, 1999b, Bierly and Daly, 2002, Choi and Lee, 2000, 2002). Table (2.7) shows some of the strategic choices or dimensions that have been identified in the literature. It is clear that the strategic choices concentrate mainly on the origin, type and source of knowledge.

Zack (1999b) presents a 3x3 matrix based on the internal/external and exploitation/exploration of knowledge dimensions. According to his matrix, organizations oriented toward exploiting internal knowledge exhibit the most conservative knowledge strategy while the most aggressive knowledge strategy is pursued by organizations that are both creator and user of knowledge while integrating internal and external knowledge. Skyrme (1999) addressed another two major strategic choices based on the origin of the knowledge. The "knowing what you know" dimension involves the identification of the knowledge that the organization already possesses and those originate from outside. On the other hand, the "faster and better innovation" dimension aims at converting innovative ideas into saleable product quickly and efficiently.

Bierly and Chakrabarti (1996), on other hand, analyzed the knowledge strategies of twenty one U.S. pharmaceutical companies based on four dimensions of their strategic learning which include: *internal/external, radical/incremental, slow/fast,* and *broad/deep learning*. The authors categorized the companies into four groups as *explorers, exploiters*, *loners* and *innovators*. Bierly and Daly (2002) moreover, stated that knowledge strategy can be identified based on two core dimensions: *the creation of new knowledge* and *the leveraging of existing knowledge*. Based on these dimensions organization can be considered as *explorers* (high creation, low leverage), *bimodal learner* (high creation, high leverage), *maintainer* (low creation, low leverage), or *exploiters* (low creation, high leverage). Many other approaches to knowledge strategy based on the above strategic choices are shown in Table (2.8).

Table 2.7: Knowledge dimensions or knowledge strategic choices

	Knowledge strategy: strategic choices or dimensions	
1	Internal knowledge source	Knowledge sources/activities within the organization's boundaries. Internal knowledge may reside within peoples' heads; be embedded in behaviors, procedures, software and equipment
2	External knowledge sources	Knowledge sources/activities outside the organization's boundaries. Common sources of external knowledge include publications, universities, government agencies, professional associations, personal relations and etc.
3	System (codification)	Codifying, storing, sharing and using an organization's explicit knowledge
4	Human (personalization)	Acquiring and sharing tacit knowledge and interpersonal experience.
5	Exploitation (leveraging knowledge)	Focuses on creating new knowledge
6	Exploration (creating knowledge)	Focus on incrementally enhancing and utilizing the existing knowledge base
7	Centralized knowledge profile	High degree of integration in knowledge flows across different functions in an organization
8	Decentralized knowledge profile	Each sub units or functional departments has its relatively independent knowledge requirements
9	Deep knowledge base	Focus on specific domain of knowledge or core competencies
10	Broad knowledge base	Multiple/generic knowledge and product. Integrated different knowledge streams

Many organizational factors include those which are internal and external to the organization are affecting the organization's decision toward the strategic choices that profiling their knowledge strategy. The internal factors are embedded in the organizations and reflected by their strategic requirements and goals. The external factors are reflected by the organization environment. Strategic objectives such as either to close the

organizational knowledge gap or the external competitive knowledge gap can have an effect of which knowledge strategy to be pursued. Other factors such as the extent to which the level of the organization knowledge satisfies their strategic requirements, and the extent to which the knowledge in the industry is changing rapidly, are affecting the organizational discussion on the capturing of external knowledge or utilization of the internal knowledge.

The dimensions presented in Table (2.7) have been considered by many authors as knowledge strategic choices (Zack, 1999b; Asoh, 2004, Choi and Lee, 2002; Bierly and Daly, 2002; Bierly and Chakrabarti, 1996). Asoh (2004) for instance, stated that most of the dimensions shown in Table (2.6) are deemed as strategic choices because they required trade-offs. The trade-offs implies a decision to be made with full understanding of both the upside and downside of a particular choice. It is supported on the premise that a firm has limited resources and cannot pursue several goals simultaneously without detrimental effects (Porter, 1985). Actually, most of the organizations have limited tangible/intangible resources in term of time, humans, skills; technology and etc. Moreover, the shortcomings and the inconsistency of the prevailing approaches to knowledge strategy revealed that the choosing or pursuing specific approach for knowledge strategy is a critical decision for the organization that aims at sustaining its competitive advantage. Therefore the decision to pursue one knowledge-related activity or the other is a strategic decision that can lead to the success or failure of the firm (Asoh, 2004).

Table 2.8: Summary of the proposed profiles of knowledge strategy based on the identified knowledge strategic choices in Table (2.6)

Reference	Knowledge strategy	Definition
Zack (1999)	Aggressive	Firm exploring the external (unbound) knowledge
	Conservative	Firm exploit internal knowledge
Choi and Lee (2002)	Dynamic	Takes an aggressive role on both codifications and the personalization strategies with un-boundaries source
	System-oriented	Explicitly attempts to increase organizational effectiveness by codifying and reusing knowledge through advanced information technology
Swan et al. (2000)	Cognitive	emphasizes linear information flows and knowledge codifying through IT (utilize existing knowledge)
	Community	Emphasizes dialogue and knowledge sharing through social network. (creating new knowledge)
Bierly and Chakrabarti (1996)	Explores	Emphasis on the acquisition of knowledge from the outside source then it transferred throughout the organization.
	Exploiter	Emphasis on the utilization of knowledge from the internal source.
Bierly and Daly (2002)	Explores	Firm that excel at developing new, radical knowledge but are not strong at exploiting existing knowledge
	Exploiter	Firm that successfully exploit existing knowledge areas but are not effectives in generating radically new knowledge
Jordan and Jones (1997)	Tacit-oriented	Attempts to acquire external and focused knowledge and share it informally
	Explicit-oriented	Attempts to acquire internal and focused knowledge and share it formally

2.13. Summary

This chapter focused on the theoretical background and literature review on IT strategic alignment. Based on this finding, a discussion on the strategic alignment perception of KM has been presented. The chapter has identified different perspectives for the KM strategic alignment – KMSA - this includes the alignment between knowledge strategy and business strategy, and, the alignment between knowledge strategy and IS strategy. It illustrated the need for a comprehensive view that combines these strategic components. A KMSA research model has then been introduced in this chapter as the basis of this study. The chapter moreover, provided a discussion about knowledge strategy, business strategy, and IS strategy and how they are inter-related in the current research model. The next chapter presents the research conceptual model and hypotheses of this study in details.

Chapter Three

Research Conceptual Model and Hypotheses

3.1. Introduction

The espoused positive relationships between KM, business strategy and IS strategy have been described in the previous Chapter Two. Their impacts on performance outcomes have been a core belief of the KM, IT and management researchers. Even though there has been little empirical evidence to confirm or refute this belief, there are adequate number of studies argued on the importance of the alignment between IT and KM for the effectiveness of the KM initiatives and the organizational performance. This was discussed in section 2.11. Yet, most of the studies have not provided theoretical or empirical work to substantiate their arguments. Thus, there are still many important unanswered questions regarding the strategic alignment in the discipline of KM. Such questions include: "What is the real impact of KMBS-SA and KMIS-SA on organizational performance?", and, "What is the role played by knowledge strategy in the contribution of business strategy and IS strategy on organizational performance?" The aim of the current study is then to find the answers to these questions.

An empirical study needs to be to be underpinned by theories so that the hypotheses can be established and rationale can be given for interpreting and summarizing the research results. This chapter builds specific concepts into an inclusive framework by drawing on

the relevant literature that has been reviewed earlier. The purpose of the framework is to present a conceptual model for KMSA. The formal model and hypotheses to be discussed in the following sections are based on an integration of terms and constructs rooted in literature review in the earlier chapter.

This chapter consists of four sections. Section 3.1 is the introduction. Section 3.2 discusses the research model which delineated the KMBS-SA, KMIS-SA and the different conceptualizations of the research model. In addition, it discusses how knowledge strategy business strategy, IS strategy and organizational performance were conceptualized in the research model. Section 3.3 addresses the research hypotheses and comprises of four subsections. Section 3.3.1 and section 3.3.2 address the hypotheses regarding KMBS-SA and KMIS-SA and their contribution to organizational performance respectively. Section 3.3.3 concentrates on the research hypotheses regarding the strategic alignment between certain business strategic types and certain profiles of knowledge strategy. Section 3.3.4, on the other hand, addresses the research hypotheses regarding the strategic alignment between certain IS strategic orientations and certain profiles of knowledge strategy. Finally, section 3.4 presents a summary for the chapter.

3.2. Research model - KMSA

The conceptual model underlying the current research focuses on the relationship between the alignment between the organizations' strategies and organizational performance, based upon the argument that strategic fit has performance implications. Moreover the conceptual model has been built based on the discussion of the IT strategic alignment models (Section 2.3); available models (frameworks) established or developed for investigating the relationship between knowledge strategy and business strategy (Section 2.9), and theories from business strategy (Section 2.4). The conceptual model was developed to achieve the research aims and objectives as detailed in section 1.1 and section 1.2.

The model is comprehensive as it has two underlying sub-models: KMBS-SA and KMIS-SA. The relationships between the constructs (business strategy, knowledge strategy and IS strategy), which have been discussed and tested in pairs in previous studies, are examined in this research based on the proposed model. In fact, the relationships between the three constructs, business strategy, knowledge strategy and IS strategy are conceptualized in one complete model for the purpose of this study. This is also a significant contribution of this research. Knowledge strategy and KM strategies have been discussed intensively in the literature, however, there are few studies attempted to empirically investigate knowledge strategy and provided a measurement to evaluate the

available knowledge strategy. Thus, the inclusion of knowledge strategy in this model is another contribution of this research.

The structure of this proposed research model necessitates the illustration of a detailed conceptualization in order for the model to cater for the different relationships between knowledge strategy, business strategy, and IS strategy. Then, the conceptualization of the model illustrates the proposed overall KMSA model, which delineates KMBS-SA and KMIS-SA as shown in Figure (3.1). Figure (3.2) illustrates a detailed conceptualization for the research model as it exhibits the alignment between three types of business strategy, two profiles for knowledge strategy, and six IS strategic orientations. In addition, the model illustrates the proposed contribution of the above mentioned associations on organizational performance. Moreover, using the research conceptualization, the role of knowledge strategy as a *mediator* or *moderator* in the contribution of the business strategy and IS strategy on the organizational performance can be examined. The research model includes *business strategy, knowledge strategy, IS strategy* and *organizational performance*. Each of these constructs is discussed in the following sections.

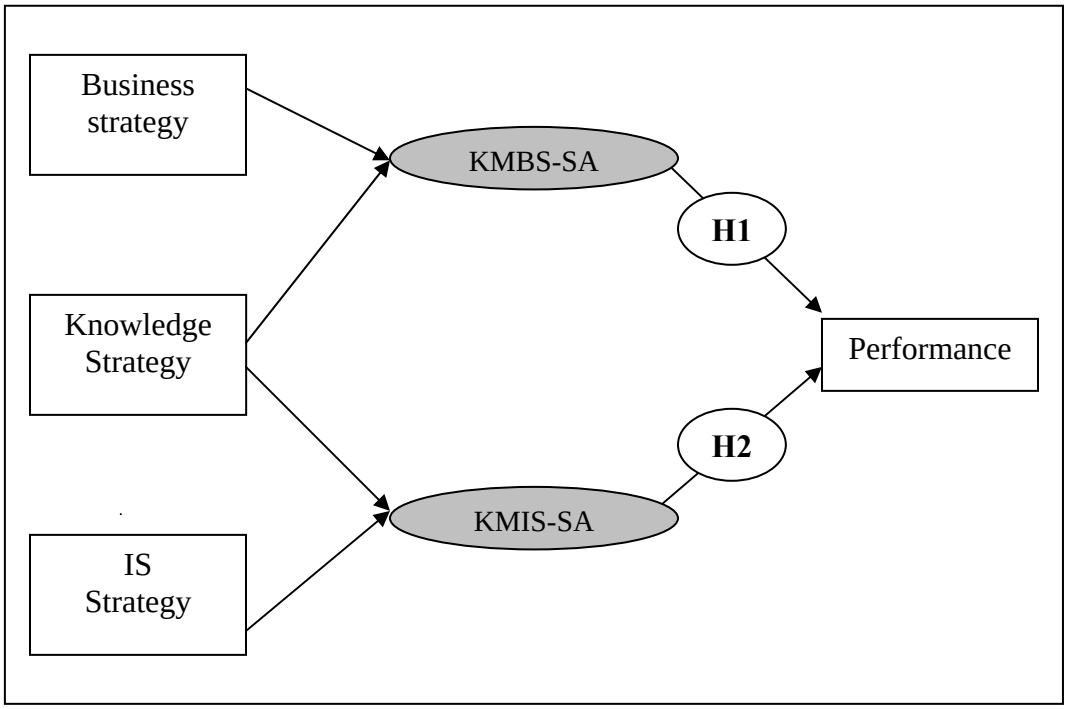


Figure 3.1: Conceptualization of the proposed research model

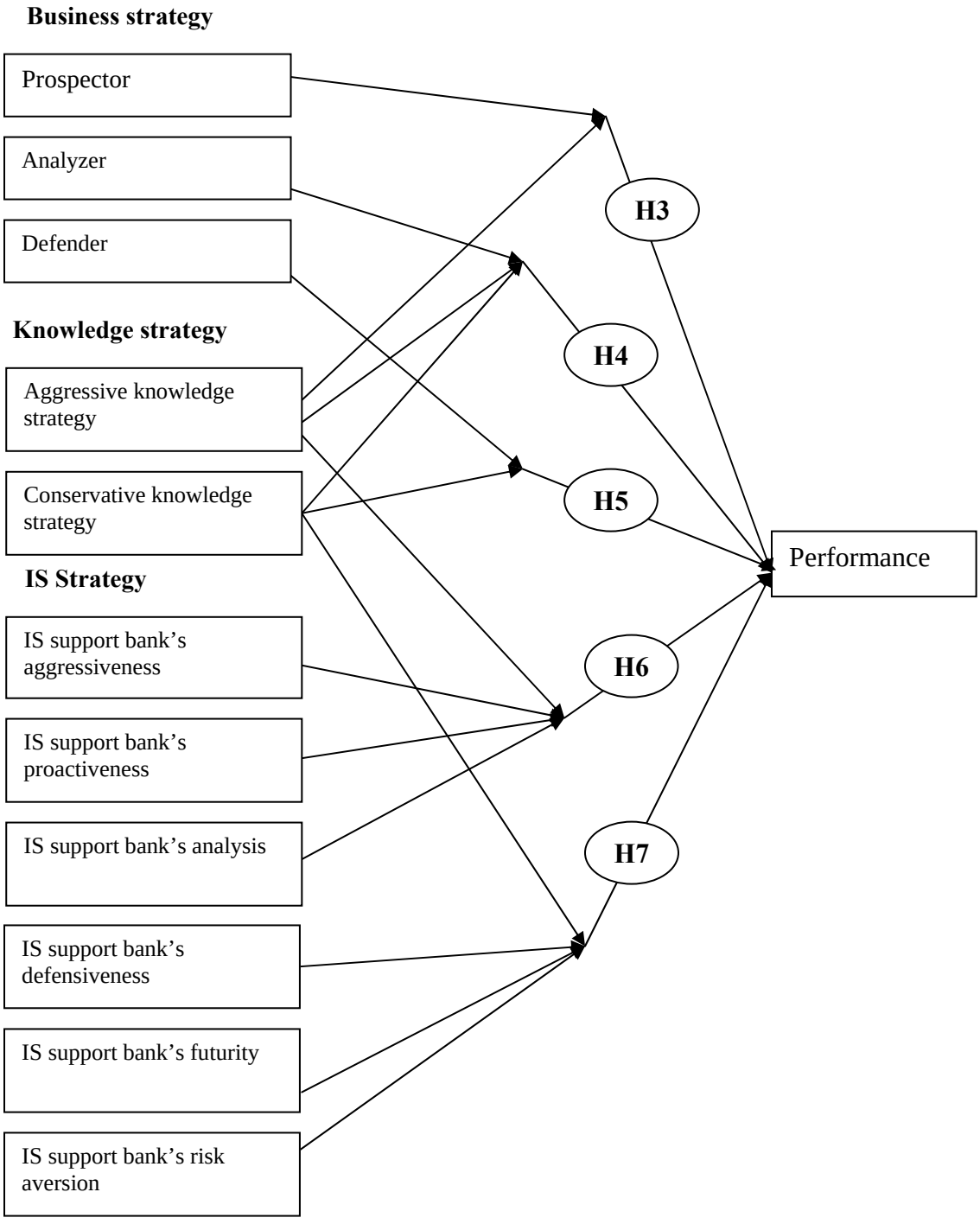


Figure 3.2: A detailed conceptualization of the research model

3.2.1. Knowledge Strategy

Strategic actions or choices are used to identify the strategic knowledge assets, resources and capabilities of an organization. Many knowledge strategic choices have been identified in the literature as it was discussed in section 2.12.5. Among the identified knowledge strategic choices, six were selected for the purpose of the current study. These knowledge strategic choices include: *internal source of knowledge, external source of knowledge, system-focus (codification), human focus (personalization), exploitation,* and *exploration*. These strategic choices have been extensively investigated and discussed in literature from the theoretical and practical perspectives. Moreover, most of the researchers that studied and investigated these strategic choices argue that by following such strategic choices of knowledge strategy, organizations will improve performance (Bierly and Daly, 2002; Bierly and Chakrabarti, 1996).

One aim of the current research is to explore the effect of the alignment between specific profiles of knowledge strategy and the Miles and Snow's (1978) typology of business strategy, and also the effect of the alignment between these profiles and the IS strategic orientation. Two profiles for knowledge strategy were identified in the research model. These profiles for knowledge strategy have been based on the selected strategic choices. The first identified profile for knowledge strategy is the *Aggressive Knowledge Strategy* or (AKS) which encompasses three strategic dimensions of knowledge strategy: *external sourcing, exploration,* and *human*. This profile of knowledge strategy emphasizes the innovation and creation of new knowledge (Rollo, 2002). It views knowledge as ongoing

process of creative destruction (Zack, 2002b) and innovation as a set of interacting knowledge processes (Skyrme, 1999). It involves exploring the external knowledge and enhancing the communication and the interpersonal exchanging of tacit knowledge.

The second profile for knowledge strategy is the *Conservative Knowledge Strategy* or (CKS). This can be mapped by: *internal, exploitation,* and *system focus* strategic choices. CKS profile of knowledge strategy views knowledge primarily as an objectified proprietary asset to be protected and financially exploited (Zack, 2002b). It focuses on maintaining knowledge in its original and constructive state and keeping knowledge from unauthorized transfer to other organization (Bloodgood and Salisbury, 2001). Moreover it relies on the effective utilization of existing assets and resources, including the existing level of knowledge (Sharkie, 2003).

Descriptions of both AKS and CKS profiles of knowledge strategy are given in Table (3.1). Both ACS and CKS are well established profiles for knowledge strategy in the KM literature (Zack, 1999b). They have been shown to have an influence on organizational performance (Zack, 1999b; Choi and Lee, 2002).

3.2.2. Business strategy

Business strategy can be defined as the outcome of decisions made to guide an organization with respect to the environment, structure and processes that influence its organizational performance. Business strategy needs to be assessed by way of multiple

traits of dimensions common to all organization and considered in terms of the relative emphasis made by the organization along each strategic orientation dimension. In this study, business strategy is conceptualized using Venkatraman's (1993) STROBE dimensions of strategic orientation (Chapter 2.10.1). As such conceptualization, business strategy reflects the actual strategies pursued by a firm with respect to its competitors and involves a host of organizational strategic activities (Lefebvre et al., 1997).

Table 3.1: Definitions of the selected knowledge strategies

Knowledge Strategy	Strategic Choices	Characteristics
AKS	▪ External source of knowledge ▪ Exploration ▪ Human (personalization)	▪ Emphasizes the innovation and creation of new knowledge (Rollo, 2002). ▪ Views knowledge as ongoing process of creative destruction (Zack, 2002b) and innovation as a set of interacting knowledge process (Skyrme, 1999). ▪ Involve exploration of the external source of knowledge ▪ Enhances the interpersonal and the exchange of the tacit knowledge
CKS	▪ Internal source of knowledge ▪ Exploitation ▪ System (codification)	▪ Views knowledge primary as an objectified proprietary asset to be protected and financially exploited (Zack, 2002b). ▪ Focuses on maintaining knowledge in its original and constructive state and keeping knowledge from unauthorized transfer to other organization. (Bloodgood, Salisbury, 2001). ▪ Relies on the effective utilization of existing assets and resources, including the existing level of knowledge (Sharkie, 2003). ▪ Enhances the codification and storing of knowledge

The current research aimed at investigating the effect of the alignment between Miles and Snow's (1978) typology and the AKS and CKS profiles for knowledge strategy as it was mentioned previously. Using the above mentioned strategic orientations, business strategy was conceptualized to identify three types of Miles and Snow's (1978)

typologies of *prospector*, *analyzer*, and *defender*. According to this conceptualization, business strategy reflects the organizational and environmental processes, as well as the attributes of products, market, technology, organizational structure and management characteristics as it was discussed in section 2.10.1.

3.2.3. IS strategy

The current study focuses on *realized IS strategy*, which is the part of the planned or intended strategy that has been achieved and pursued by the organization (Section 2.11). IS strategy is viewed as the IS capabilities and supports provided to the business strategy. Therefore, the IS strategy is conceptualized in the current research as strategic orientations of IS in the organization. As such conceptualization IS strategy is designed to determine the way in which information systems are used by an organization to provide support for business strategy and operation. Accordingly, IS strategy was conceptualized as six strategic orientations (Chan, et al., 1997) include: IS support company *aggressiveness*, IS support company *analysis*, IS support company *defensiveness*, IS support company *futurity*, IS support company *proactiveness*, and IS support company *risk aversion*.

3.3. Research hypotheses

3.3.1. KMBS-SA and its impact on organizational performance

The impact of KMBS-SA on organizational performance and organizational competitive advantage have been investigated by many researchers (Zack, 2002a, b; Stewart et al., 2000; Snyman and Kruger, 2004; Tiwana, 2002; Maier and Remus, 2002; Seeley, 2002).

The literature has implicitly accepted the notion that alignment between an organization's business strategy and knowledge strategy helps enhance organizational performance (Section 2.2.7). Bloodgood and Salisbury (2001) contended that the proper alignment between the type of business strategy that has been chosen by the organization and the knowledge resources that an organization needs to successfully implement this strategy can enhance a firm's performance. Greater alignment between business strategy and KM indicates that the organization is pursuing the business strategy most suited for its KM capabilities (Sabherwal and Chan, 2001).

Seeley (2002) stated that when an alignment between the knowledge strategy and the business strategy is clearly established, the KM system is moving in a direction that holds promise for long-lasting competitive advantage (Snyman and Kruger, 2004). Snyman and Kruger (2004) and Tiwana, (2002) argued that organizations may lose many opportunities by the misalignment between the business strategy and knowledge strategy. Thus, organizations may fall into the trap of attempting to explicate knowledge that is not explicable and failing to explicate knowledge that should have been converted from tacit to explicit (Tiwana, 2002). While studies such as those by Zack (1999a, 2002a,b) and Smith and McKeen (2003) provided a theoretical perspective on the influence of KMBS-SA on performance, there have been many other empirical studies to test and assess this impact. For instance, Asoh (2004), and Shih and Chiang (2005) examined the impact of KM alignment using two different dependent variables, organizational performance and KM effectiveness respectively. The finding of their studies has presented evidence suggesting that alignment of KM is profitable, and that it helps to secure better

organizational performance. A survey of 200 organizations conducted by Maier and Remus (2002) also revealed that the greatest benefits concerning the relationship of KM initiatives to business goals expected to be in areas like 'improve customer satisfaction', 'improve speed of innovation' and 'improve productivity'. The expected relationship between KMBS-SA and performance therefore leads to the following hypothesis:

H1: Alignment between business strategy and knowledge strategy in the banking sector at the GCC countries is associated with better performance

3.3.2. KMIS-SA and its impact on organizational performance

Little empirical research has been conducted on IT support for KM (Emmanuel, et al., 2004; Ann, et al., 2005; Gottschalk, 2006). Moreover, what little there is has mainly involved the support of IT as a tool in the form of hardware and software support. There has been less discussion of the strategic role of IT for KM in these research studies or of KMIS-SA. By understanding the complexity of KM initiatives and the variety of IT solutions available on the market, the challenging task of deciding the appropriate type of IT solutions to be deployed in support of KM initiatives that will lead to a competitive advantage can be realized (Kankanhalli et al., 2003). Thus, effective IT support for KM can serve as a competitive advantage and as a valuable professional aid to organization (Whitfield-Jones, 1999). Bloodgood and Salisbury (2001) have assessed the degree of fit between IT and the various types of strategic changes and knowledge strategy. They argued that certain uses of IT may be more common for certain types of strategic changes

and knowledge strategy. Moreover, they add that any mismatching between IT and the knowledge strategy pursued by the organization could affect the effectiveness of KM and therefore the overall organizational performance. In order to address the challenge of the continuous changes in IT and the importance of effective IT to KM, IS strategy and knowledge strategy need to be associated and aligned in order to support the business goals of organizations and enhance organizational performance. This expected relationship between KMIS-SA and organizational performance leads to the following hypothesis:

H2: Alignment between IS strategy and knowledge strategy in the banking sector at GCC countries is associated with better performance

To get more precise information about the KMSA-performance relationship both the KMBS-SA and KMIS-SA, in depth investigation was done to study the effect of strategic alignment between specific business strategy types and certain profiles of knowledge strategy and the organization performance. In addition, the effect of the strategic alignment between certain IS strategic orientations and certain profiles of knowledge strategy were also investigated as discussed in the following sections.

3.3.3. The strategic alignment between certain type of business strategy and certain profiles of knowledge strategy

There are not enough evidence in the literature regarding the relationship between the identified profiles of knowledge strategy, Miles and Snow (1978) typology, or that

between Chan et al.'s (1997) STROBIS and the profiles of knowledge strategy. However, the literature on Miles and Snow's (1978) typology of business strategy and Chan and et al.'s (1997) STROBIS identified several aspects related to the selected profiles for knowledge strategy (Gupta et al., 1997; Sabherwal and Sabherwal, 2003; Sabherwal and Chan., 2001). Sabherwal and Sabherwal (2003) strongly believe that there are different knowledge strategies that would be appropriate for each of the three business strategies. Sabherwal and Sabherwal (2003) investigated the effect of the alignment between an organization's business strategy using Miles and Snow's (1978) typology and the nature of the KM announcement on the organization value. They identified the profiles of KM effects that they believe are the most suitable for each business strategy as shown in Table (3.2).

Table 3.2: Characteristics and features of Miles and Snow's model (1978) related to knowledge strategic choices (Source: Sabherwal and Sabherwal (2003))

Knowledge strategy	**Business strategy**		
Strategic choices	**Defenders**	**Analyzer**	**Prospectors**
Exploitation of knowledge) (Knowledge utilization)	High	Medium	Low
Knowledge sharing	Medium	High	Medium
Exploration of knowledge (Knowledge creation)	Low	Medium	Low
Internal knowledge source (Focal organization)	High	Medium	Low
External knowledge source (Partner)	Low	Medium	High
Both Internal and Internal knowledge source	Medium	High	Medium
Human	Low	Medium	High
System	High	Medium	Low

Zack (1999b) on another hand explained that the first step in KMBS-SA is identifying the strategic gap and knowledge gap. Identifying knowledge gaps may help the organization in recognizing the sources of knowledge needed by the organization and the role of knowledge in the organization. Thus, profiling the existing knowledge characteristics of the organization should be useful for managers to gain deeper insight into their organization's resources and capabilities needed to plan their business strategy (Jordon and Jones, 1997). Thus, to set the relation between the proposed profiles of knowledge strategy (AKS and CKS) and the Miles and Snow's typology, there is a need to find out how AKS and CKS profiles of knowledge strategy are related to the typologies of *defender, prospector* and *analyzer*.

Consequently further investigation has to be done on the available studies on AKS and CKS profiles of knowledge strategy. This investigation has based on a comprehensive review of the literatures on knowledge strategy and aimed at providing insights on what roles AKS and CKS are playing in the organization and what profile of knowledge they are specifying for the organization. Table (3.3) presents the roles played by AKS and CKS profiles of knowledge strategy in the organization in addition to the profile of knowledge they are specifying for the organizations.

Therefore, based on the Miles and Snow's typology profile that is presented in Table (3.2) and the characteristics of AKS and CKS of the organizational strategy that are presented in Table (3.3), the initial framework depicting the proposed relationships between of Miles and Snow's typology and the proposed profiles of knowledge strategy is shown in

Figure (3.3). In the following sections, the proposed alignments between particular profiles of knowledge strategy and types of business strategy pursued by an organization and their contribution to the organizational performance are discussed.

Table 3.3: Knowledge profile of the organization and knowledge strategy role in the organization

Knowledge profile of the organization	Knowledge strategy role in the organization
AKS	
▪ Operate at higher level of knowledge across many more knowledge positions (Bierly and Chakrabarti, 1996) ▪ Operate in an environment that promotes fresh new ideas that challenge environmental wisdoms (Zack, 1999b) ▪ Operate in an intensive knowledge industry ▪ Require high level knowledge processing to close their internal gap (Zack, 1999b) ▪ Knowledge in their industry is changing rapidly (Bierly and Daly, 2002)	▪ Seeks to help organizations in constructing new knowledge that can be used to develop new products and services (Bloodgood and Salisbury, 2001) ▪ Helps the organization that faces a trade-off to be successful in the long-run (Bierly and Chakrabarti, 1996) ▪ Helps the organizations to dominate in knowledge position and remain viable in its market place ▪ Helps the organizations in building a broader knowledge base that can help to increase the flexibility of the organizations which is critical in a dynamic environment (Grant, 2003) ▪ Provides the knowledge capital to propel the company into niches while maintaining the viability of existing ones (Zack, 1999b)
CKS	
▪ Operate at a lower level of knowledge to execute its strategy or to define their position (Zack, 1999b) ▪ Operate in immature industry where efficiency and cost reduction are critical and new advances are less common (Bierly and Daly, 2002) ▪ Knowledge in the industry is changing slowly (Bierly and Daly, 2002) ▪ Require high level knowledge processing to close their internal gap (Zack, 1999b)	▪ Helps organizations to improve their quality and service by redefining and leveraging existing knowledge ▪ Allows the organization to develop its own core competencies and appropriate more profit (Bierly and Chakrabarti, 1996) ▪ Helps the organization that faces a trade-off to be effective in the short run (Bierly and Chakrabarti, 1996) ▪ Helps the organization in improving the competitive ideas (Bierly and Chakrabarti, 1996)

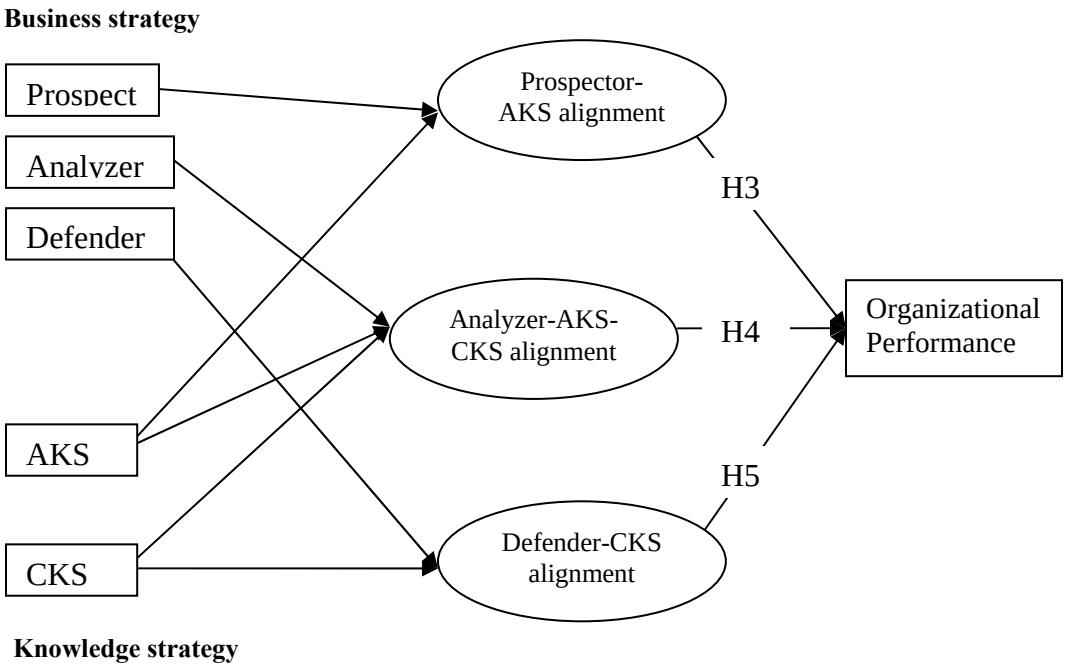


Figure 3.3: Framework depicting the relationship between AKS and CKS profiles of knowledge strategy and business strategic types of defender, prospector and analyzer

3.3.3.1. Business strategic type of prospector and AKS profile of knowledge strategy

Organizations that follow prospector type of business strategy (or prospectors) must develop and maintain the capacity to find and exploit new product and market opportunities within a board and a continuous state of development domain (Miles and Snow, 1978). Such organizations need to seek and scan the external environment for new knowledge and build a broader knowledge-based domain to drive it into new market positions while maintaining and enhancing the practicability of their existing one (Zack,

1999a). As such, it believes that AKS, which emphasizes constructing new knowledge and exploring the external environment for new opportunities that can be used to develop new products and services, is an appropriate profile of knowledge strategy to be adopted by the organizations following prospector business strategy.

Given that prospector type organizations tend to succeed in innovative, dynamic environments, capitalizing on growth opportunities (Gimenez, 2000), change and innovation are indeed two of the major tools used by such organizations to gain an edge over competitors (Miles and Snow, 1978). Then they need to build and strengthen their knowledge power and their own capabilities that they can use to maximize the advantage to be obtained from future opportunities and to defend against future threats and actions of the rivals (Sharkie, 2003). Hence, by aggressively seeking existing knowledge as well as creating new knowledge faster then competitors, AKS profile of knowledge strategy is believed to support prospectors in finding new opportunities for innovation in produces, services, and processes and that to stay ahead of the competition (Blackler, 1995; Choi and Jong, 2005; Bierly, 1999; Bloodgood and Salisbury, 2001). Moreover, by leveraging and reducing the risk of overtaxing knowledge and resources, an AKS profile of knowledge strategy should support prospector type organization in securing their future profitability and managing their risks (Bierly, 1999; Sharkie, 2003). Accordingly, the following research hypothesis was proposed:

H3: The alignment between the business strategic type of prospector and AKS profile of knowledge strategy in the banking sector at the GCC countries is associated with better performance

3.3.3.2. Business strategic type of analyzer and AKS and CKS profiles of knowledge strategy

Analyzers represent organizations that operate in relatively stable conditions as well as changing product-market domains (Miles and Snow, 1978). To thrive in such environment, analyzer type organizations need to direct their effort for developing competitive response to "market offerings" by other analyzers, as well as defender and prospector type organizations in their industry sector (Franken and Braganza, 2006). It is argued that the effective management of the processes in the analyzer type organizations is complex, specifically with regard to the creation of knowledge (Franken and Braganza, 2006). The complexity in managing knowledge is believed to be raised from the need of analyzer type organizations to balance between the exploitation and exploration of the organizational knowledge. It is also believed that such organizations need to take advantage of their existing knowledge to define a niche in the market and to maintain a stable domain of core products. However, the exploration of new knowledge can help such organizations in differentiating their structure and processes to accommodate both stable and dynamic areas of operation and to encourage value innovation that can help analyzers in minimizing risk while maximizing opportunities for growth.

Consequently, it is believed that organizations follow an analyzer type of business strategy need to adopt a moderate combination of the CKS and AKS profiles of knowledge strategy. Adopting just one profile of knowledge strategy (AKS or CKS) may not satisfy the strategic requirements of an organization that is pursuing an analyzer business strategy. Moreover, it is also believed that the hybrid nature of analyzers type organizations necessitates them to view AKS and CKS as complementary profiles of knowledge strategy.

Accordingly, the following research hypothesis was proposed:

H4: The alignment between the business strategic type of analyzer and CKS and AKS profiles of knowledge strategy in the banking sector at the GCC countries is associated with better performance

3.3.3.3. Business strategic type of defender and CKS profile of knowledge strategy

The success of organizations pursuing a defender strategy depends on their ability to maintain aggressively their distinction within the chosen market segment. Organizations with a defender strategy limit their search for new opportunities and instead, focus attention internally on ways to enhance organizational effectiveness (Miles and Snow, 1978). In such organizations, where efficiency and cost reduction are crucial and advances are less common, utilizing and enhancing existing knowledge is essential and thus CKS is believed to be a successful profile of knowledge strategy to be adopted.

A CKS profile of knowledge strategy views knowledge primarily as an objectified proprietary asset to be protected and effectively exploited (Zack, 2002b). The effective utilization and protection of existing knowledge, assets and resources allows defenders to achieve efficiency and an excellent reputation in certain markets (Das et al., 1991). Moreover, the focusing on internal knowledge should allow the defender type organizations to develop their own core competencies and capabilities and appropriate more profit. CKS profile of knowledge strategy focuses on maintaining knowledge in its original and constructive state and keeping knowledge from unauthorized transfer to other organizations (Bloodgood and Salisbury, 2001). This permits defender type organizations to refine and become very efficient at their current practices, and maximize organizational short-term profits (Bierly, 1999).

Accordingly, the following research hypothesis was proposed:

H5: The alignment between the business strategic type of defender and CKS profile of knowledge strategy in the banking sector at the GCC countries is associated with better performance

3.3.4. Strategic alignment between AKS and CKS profiles of knowledge strategy and the IS strategic orientations

It has been discussed in Section 2.8 that there have been few attempts in discussing and exploring the relationship between IT and KM. It was also mentioned that most of the published research developed recommendations for successful KM, or discussed the

technological tools available for supporting the management of the tacit or explicit knowledge without an empirical basis. There are no evidence from the literature in supporting what have been proposed in the current research as hypotheses regarding the alignment between the IS strategic orientation and the identified profiles of knowledge strategy. Thus the proposed hypotheses are based on an assumption that certain characteristics and requirements of one or more IS strategic orientations is/are appropriate to fulfill the characteristics and requirement of the identified profiles of knowledge strategy.

Bloodgood and Salisbury (2001) argued that the organizations need to address the generic capabilities provided by IT for KM. Based on this knowledge, an organization can address how IS or IT strategy interacts with knowledge. Sebherwal and Chan (2001) have mapped Venkartaman's (1989) six dimensions of organization strategy or strategic orientation: *defensiveness, proactive-ness, risk aversion, aggressiveness, analysis*, and *futurity* onto Miles and Snow's typologies of *defenders, prospectors* and *analyzers* (see Appendix A, Table (A-3)). The mapping suggested by Sebherwal and Chan (2001) implicitly indicates that the selected knowledge strategies have some aspects related to Venkartaman's (1989) six dimensions of organization strategy or strategic orientation.

Based on the discussion about strategic orientation by Venkartaman (1989) and about STROIS by Chan, et al.(1997, 1998), and the previous studies on the proposed profiles for knowledge strategy, relationships between AKS and CKS profiles of knowledge strategy and the six dimensions of IS strategy have been proposed and as shown in Figure (3.4).

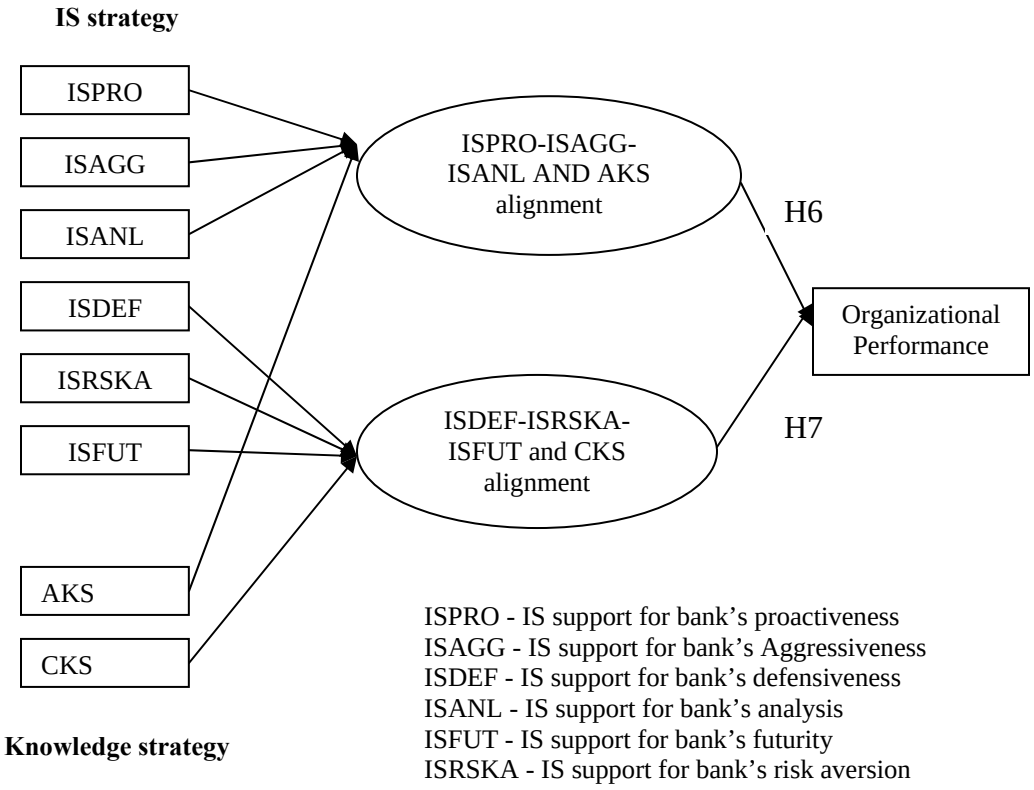


Figure 3.4: Framework depicting the proposed relationship between AKS and CKS profiles of knowledge strategy and the IS strategic dimensions

3.3.4.1. AKS profile of knowledge strategy and IS support for bank's proactiveness, IS support for bank's aggressiveness and IS support for bank's analysis

An AKS profile of knowledge strategy promotes the exchange of tacit knowledge through knowledge networks and the process for organizational learning (Hansen et al., 1999). In addition, it supports organizations in capturing and sharing best practices, lessons learned and other reusable assets in order to build the knowledge capacity. Thus, the alignment between AKS profile of knowledge strategy and IS support for organizational analysis is believed to enable organizations to carry out detailed analysis of their major business decisions and present situations. Besides, by working together, AKS and IS support for organizational analysis may help organizations in generating the best possible solution alternatives, in keeping track of their competitors, and in assisting them to preempt their competitors.

By having an IS strategy that provides support to the proactiveness behavior of the organization, it is supported by a knowledge strategy profile involving the exploration of the external source of knowledge, the enhancing of the interpersonal communication, and the exchanging of the tacit knowledge. Organizations will be able to understand both the internal and external environmental context and investigate the best IS solution alternatives for their IS critical problems (Morgan, et al., 2001 and 2003).

Moreover, by creating new knowledge and maximizing the advantage to be obtained from future opportunities, the alignment between an AKS profile of knowledge strategy and IS support for organizational aggressiveness is believed to support the aggressive

behavior of the organizations in introducing effective and efficient ways to promote IS product innovation. This can be achieved by capturing attention to promote the new computer usages and to encourage users' involvement and interaction with the IS in the organization (Ragu-Nathan et al., 2001).

Therefore, an AKS profile of knowledge strategy believed to be aligned with the IS is to support the organization's behaviors of proactiveness, aggressiveness or analysis. Accordingly, the following research hypothesis was proposed:

H6: The alignment between the AKS profile of knowledge strategy and the IS support for a bank's proactiveness, IS support for a bank's analysis or IS support for a bank's aggressiveness in the banking sector at the GCC countries is associated with better performance

3.3.4.2. CKS profile of knowledge strategy and IS support for bank's defensiveness, IS support for bank's risk aversion and IS support for bank's futurity

IS support for defensiveness is adopted to defend organizational IT and market position by helping the organization in maximizing the efficiency of the business operation (Chan et al., 2001). However, having IS support for futurity helps organizations in developing medium and long term measures of IS achievement and tracking significant future trends in IT (Ragu-Nathan et al., 2001; Chan et al., 2001). IS support for risk aversion provides the organization with facts and strategic details about their current situation to support their conservative decision making. In addition, such IS strategy orientation aims at

providing the organization with the information they need to minimize business risk (Chan et al., 2001).

CKS profile of knowledge strategy which is based on effective utilization and protection of the existing assets and resources of the organization is believed to help the IS support of organizational defensiveness in defining the organization's IT current and future position. Besides, by providing IT and market place knowledge and a strategic expertise in their product-market domain, CKS profile of knowledge strategy can support such IS orientation in defending the organizations against competitors and enabling them to achieve a reputation in certain IT and market domain (Das et al., 1991, Ragu-Nathan et al., 2001). By the effective utilization and exploitation of the organization's existing knowledge, CKS profile of knowledge strategy believes to assist IS support for organization futurity characteristic in forecasting and evaluating the opportunities surrounding the organization's IT position and IS market.

The alignment between a CKS profile of knowledge strategy with IS support of risk aversion is believed to provide organizations with a sufficient and detailed information and knowledge to support their conservative decision making. Moreover, this alignment is believed to allow organizations to attain a conservative attitude in their resource allocation and product choice (Ragu-Nathan et al., 2001)

Accordingly, the following research hypothesis was constructed:

H7: The alignment between the CKS profile of knowledge strategy and IS support for a bank's defensiveness, IS support for a bank's futurity or IS support for a bank's risk aversion in the banking sector at the GCC countries is associated with better performance

3.4. Summary

The main objectives of the current study are to investigate KMBS-SA and KMIS-SA, and to examine the alignment among different types of business strategy, different profiles of knowledge strategy and different dimensions of IS strategy. This chapter introduced the KMSA research model, which comprises the knowledge strategy, business strategy, IS strategy and organizational performance. The other sections were concerned with the different aspects of relationship between KMBS-SA, KMIS-SA and organizational performance. The alignment among different types of business strategy and different profiles of knowledge strategy has also been considered. These relationships were established as the research hypotheses in order to be tested in the study empirically. This will be described in the subsequent chapter.

Chapter Four

Research Methodology

4.1 Introduction

This chapter presents the research approach and methodology adopted in the current study, specifically in relation to the research design and the data collection process. The major part of the work used a quantitative method to empirically test the research hypotheses, which were stated in the previous chapter. Moreover, the chapter explains the way in which the constructs in the research model discussed in Chapter Three and as shown in Figure (3.1) and Figure (3.2) are operationalized.

This chapter consists of eight sections. Section 4.1 is the introduction to this chapter. Section 4.2 includes a discussion on the sampling design and a description of the sampling framework used in the study. Section 4.3 provides a discussion on the measurement of the research constructs and the item scales used. Section 4.4 presents a discussion on the questionnaire design. The section also portrays the development of the questionnaire employed by the study. Section 4.5 is concerned with the quantitative data collection; it explains why Chief Executive Officers (CEO) and Chief Knowledge Officers (CKO) or Chief Information Officers (CIO) were used as the research respondents in this study and the strategies that were utilized to improve the precision of the collected data. In addition, the section explains the procedures that have been followed in administering the mail survey. Section 4.6 focuses on the process of

obtaining and calculating scores for research key variables. Section 4.7 addresses two approaches for measuring alignment which include *moderation* and *mediation*. Finally, section 4.8 presents a summary for the chapter.

4.2 Sampling design

This study was conducted in a field setting within an information-based, banking sector. The banking sector in the Gulf Cooperation Council (GCC) countries was deemed to be appropriate for this research due to their high information intensity. Using a single industry for the current study has many advantages. Among the advantages is the homogeneous nature within one industry generates better control of the industry context (Pollalis, 2003) and of market level influences (Slater and Atuahene-Gima, 2004). Therefore, a single industry study can be conducted with a smaller sample that satisfies the detection of reasonably substantial effects (Slater and Atuahene-Gima, 2004). The use of multiple industries however, demands a large sample size to accurately reject the null hypothesis, in addition, weaker relationships have been found in multi-industry studies (Slater and Atuahene-Gima, 2004).

The GCC countries comprise of six Arab states. They are the Kingdom of Saudi Arabia (KSA), Kingdom of Bahrain (KB), Kuwait, Qatar, United Arab Emirate (UAE), and Oman. The GCC countries share many characteristics that unite them under a common umbrella. These characteristics include a common language (Arabic), shared religious and cultural heritage, similar geographical conditions, infrastructure, and similar

economic structures (Abdul-Gader, 1997). The GCC countries have been considered by the world as a significant economic power. While the majority of these countries are highly dependent on the export of oil, they are trying to diversify their economies and to increase the participation of the private sector in the development efforts (Al-Jasser and Al-Hamidy, 2003). In the last decade, the GCC countries have made significant progress in building a modern financial sector and specifically, banking, due to the crucial role played by this important sector. Research in this region has revealed that the banking sector has great opportunities in accelerating the process of economic growth and ultimately could play a leading role in economic growth in broad cross-sectional countries (Islam, 2003; Simpson and Evans, 2004).

Collectively, the Gulf countries have a mature, efficient, stable and profitable banking system (Cunningham, 2005), which can be characterized by product and services innovation, high technology, and a good management environment (Islam, 2003). However, the environment surrounding GCC banking has been described as turbulent and unstable (El-Kharouf, 2000). There are dynamic changes in regulations, demands for deregulation, diversity of customer types and the growing in the banking techniques and services (El-Kharouf, 2000). Moreover, liberalization, globalization and rapid technology changes are engendering the major challenges for Gulf banks (Khalfan and Alshawaf, 2004, AlAhli, 2002; Islam, 2003). Most of the governments in the GCC countries have encouraged a competitive banking environment by allowing country and regional banking consolidation, and, by joining the World Trade Organization (WTO). With the arrival of more foreign banks on the scene, the GCC banks are experiencing tremendous

pressure to satisfy the increasingly demanding international standards (Limam, 2001). They have to compete with large, financially strong, global banks with broader product offerings, high-quality and skilled personnel, and, a greater capacity to take risks.

There are six central banks in the GCC countries, one in each country. These central banks include: Qatar Central Bank, Bahrain Monetary Agent, Saudi Arabia Monetary Agent, Oman Central Bank, UAE Central Bank, and Kuwait Central Bank. Based on the reports issued by these central banks at the end of 2005, the GCC banking sector consists of about 239 banks, of which 106 are locally owned by these countries and 133 are foreign banks from Europe, USA and Asia. In addition, there are 1,627 branches affiliated to the local and foreign banks scattered among the GCC countries and world wide. Reports also state that banks in this region can be classified into five types: *commercial, investment, Islamic, specialist* and *foreigner* banks. According to the available information on the GCC banks, there are 52 commercial banks, 20 investment banks, 16 Islamic banks, 18 specialist banks, and 133 foreign banks as shown in Table (4.1).

Table 4.1: Details of the banking sector in the GCC countries (end of 2005)

Country	No. Local banks					No. Foreign banks	Total number of banks
	Commercial	Investment	Specialist	Islamic	Total Local banks		
Kingdom of Saudi Arabia KSA	6	7	4	2	19	10	29
United Arab Emirate UAE	12	7	3	6	28	35	63
Kuwait	3	3	2	4	12	20	32
Oman	4	2	3	0	9	10	19
Qatar	2	2	2	3	9	10	19
Kingdom of Bahrain	12	10	2	5	29	48	77
Total number in each type	39	31	16	20	106	133	239

From the local perspective, commercial banks are considered as the main banks in the GCC countries. The Islamic banks are those banks that apply the Islamic rules in their operation and transactions. Investment banks, however, are an emergent type of bank that allows the investors of GCC countries to invest their money locally. The specialist banks are those banks that are operating in the fields of industry, agriculture and housing investments, and, rural development. Finally, the foreign banks have emerged in the region as a result of globalization and liberalization in the Gulf countries.

Since this study is aimed to investigate the KM and alignment situations among the Gulf banks, the selection of banks to participate in this study was based on one main basis: that the banks must be embedded in Arabic culture that affects their operation, strategies and management. Therefore, only the 106 local banks were involved. These banks comprise

four types: commercial, investment, specialist and Islamic banks as shown in Table (4.2). Foreign banks have been excluded due to the different styles of operation and management in these banks.

There is no single report that contains the required background information on all banks that operate within the six countries of the Gulf region. Moreover, sector-specific directories such as those provided by the central banks do not contain information on revenue or any other bank effectiveness information. Most of the websites of the GCC banks are either outdated, under construction, or only provide contact information. The reasons behind the absence of such information could be due to frequent address changes, merging or closure of banks. Therefore the researcher has required a fair amount of effort in collecting the address and the contact number of the selected banks. This necessitates the researcher to make several international calls and regional visits to get the contact information about the local banks in the Gulf countries.

Table 4.2: Numbers and types of GCC countries banks included in the sampling frame (source: collected from reports issued by the central banks in the six countries)

Type of Bank	Kingdom of Bahrain	United Arab Emirates	Kingdom of Saudi Arabia	Oman	Kuwait	Qatar	Total
	29	**28**	**19**	**9**	**12**	**9**	**106**
Commercial banks	12	12	6	4	3	2	39
Islamic banks	5	6	2	0	4	3	20
Investment banks	10	7	7	2	3	2	31
Specialized bank	2	3	4	3	2	2	16

4.3 Identification of concepts and measures leading to the development of the questionnaires

This section concerns the manner in which the constructs in the research framework represented in Figure (3.1) and Figure (3.2) are operationalized. As discussed in Section 3.2, the research model comprises four main constructs: *business strategy, knowledge strategy, IS strategy* and *organizational performance*. These constructs must be operationalized in order to be measured. To do this, the abstract notions of the constructs must be reduced into observable behaviors or characteristics (Sekaran, 2003). Operational definitions therefore provide meanings to the constructs and tangible ways to measure them. This section accordingly introduces the concepts and the measures of the four constructs. It describes how the items for each construct were chosen to build a homogenous scale with high internal consistency and validity. Flynn et al. (1990) indicate that it is very useful for researchers to use summated scales whose reliability and validity have already been demonstrated. Thus existing measures were used wherever possible.

As discussed in section 3.2.1 and section 3.2.2, the research hypotheses regarding KMBS-SA and KMIS-SA necessitate different conceptualizations for knowledge strategy and business strategy. Hypothesis H_1, for instance, hypothesizes the organization overall profile of KMBS-SA. To test this hypothesis knowledge strategy and business strategy need to be considered as single second-order variables. However, Hypotheses H_3, H_4, and H_5 which investigate KMBS-SA with different types of business strategy and different profiles of knowledge strategy need both knowledge strategy and business strategy to be conceptualized in different ways. Thus, business strategy and knowledge strategy need to

be structured as three second-order and two second-order variables, respectively. Therefore, these two different conceptualizations for testing KMBS-SA have been considered in developing the operationalization of knowledge strategy and business strategy. Moreover, IS strategy was considered as one second-order variable in Hypothesis H_2. Thus, for testing Hypothesis H_2, knowledge strategy and IS strategy were considered as single second-order variables. However, to test Hypotheses H_6 and H_7, knowledge strategy was conceptualized as two second-order variables, and IS strategy was considered as six first-order variables. Organizational performance, on the other hand, was conceptualized as one first-order variables in all research hypotheses.

4.3.1 Knowledge strategy

First, generic descriptions of knowledge strategy elements were produced. Next, a set of items was developed to measure the constructs proposed for knowledge strategy in the framework.

4.3.1.1 Knowledge strategy construct in the first (abstract) conceptualization of the research model

As discussed in section 3.2.1, in the first conceptualization of research model, knowledge strategy is considered as a set of strategic actions or choices made at a high strategic level to identify the strategic knowledge assets, resources and capabilities and orientate them toward organizational goals and improving organizational performance. Therefore,

knowledge strategy was depicted as a single second-order construct reflected by six first-order constructs that present the six knowledge strategic choices as shown in Figure (4.1).

The knowledge strategy in each bank can be characterized by the degree to which the bank scores in each of the knowledge strategic choices. To illustrate the dimensionality of the knowledge strategic choices of knowledge strategy, an organization's strategic objective toward their knowledge is considered.

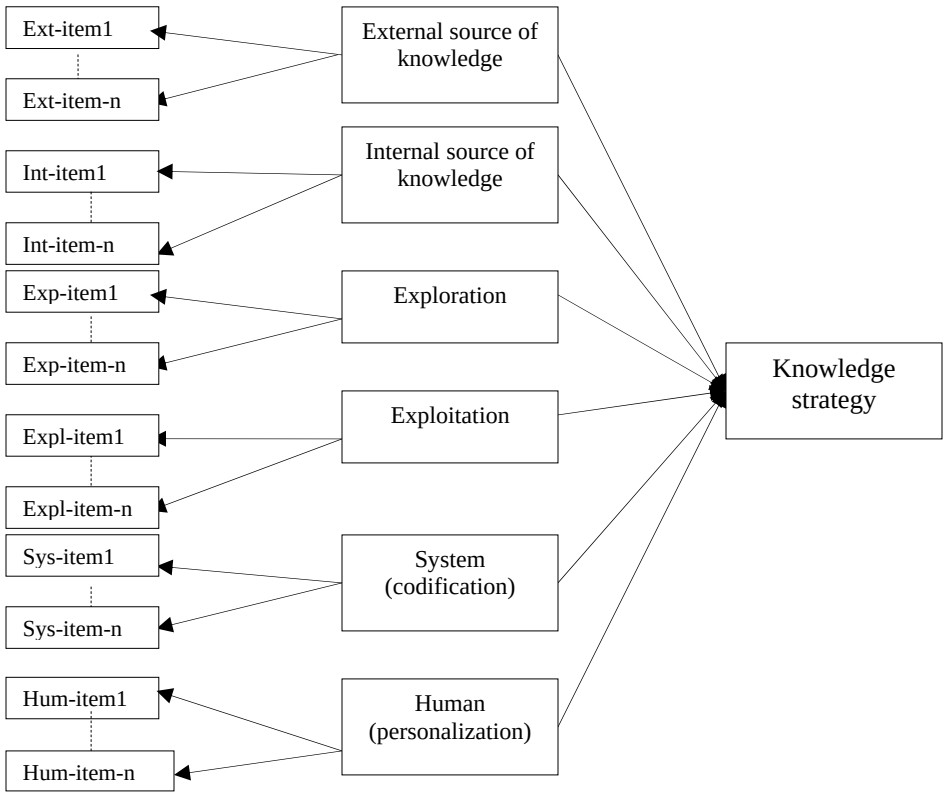


Figure 4.1: Knowledge strategy construct in the first conceptualization of the research model

If the banks are satisfied with their strategic requirement but are concerning about closing their organizational knowledge gap, then they will be more oriented toward utilizing their internal knowledge. However, if the banks are operating in an environment in which knowledge is changing, hence they are concerning about bridging their external competitive knowledge gap. In this case, these banks will have different perceptions regarding their knowledge. The banks will be more oriented towards exploring internal and external knowledge (Zack, 1999a, b). Thus, depending on the business strategic objectives and requirements for knowledge, its scores for the knowledge strategic choices might be high or low.

4.3.1.2 Knowledge strategy construct in the second (detailed) conceptualization of the research model

Knowledge strategy is modeled in the second conceptualization as two second-order variables representing the two proposed profiles on knowledge strategy: *AKS* and *CKS*. These two profiles have been proposed based on certain knowledge strategic choices as discussed in section 2.12.5. *AKS* is mapped by three knowledge strategic choices: *external source*, *exploration of knowledge* and *human focus* for creating knowledge. *CKS* is profiled by the strategic choices of: *internal source of knowledge*, *exploitation of knowledge* and *system focus* for creating knowledge. In this conceptualization, a bank's profile of knowledge strategy can be identified as *CKS* or *AKS* depending on how the banks have scored on the two groups of knowledge strategic choices as shown in Figure (4.2). If a bank scored relatively higher on the internal source of knowledge, exploitation of knowledge and system focus for creating knowledge, then the bank can be considered

as pursuing a *CKS* profile of knowledge strategy. However, if the bank has scored high on the others three knowledge strategic choices, then they can be considered pursuing an *AKS* profile of knowledge strategy.

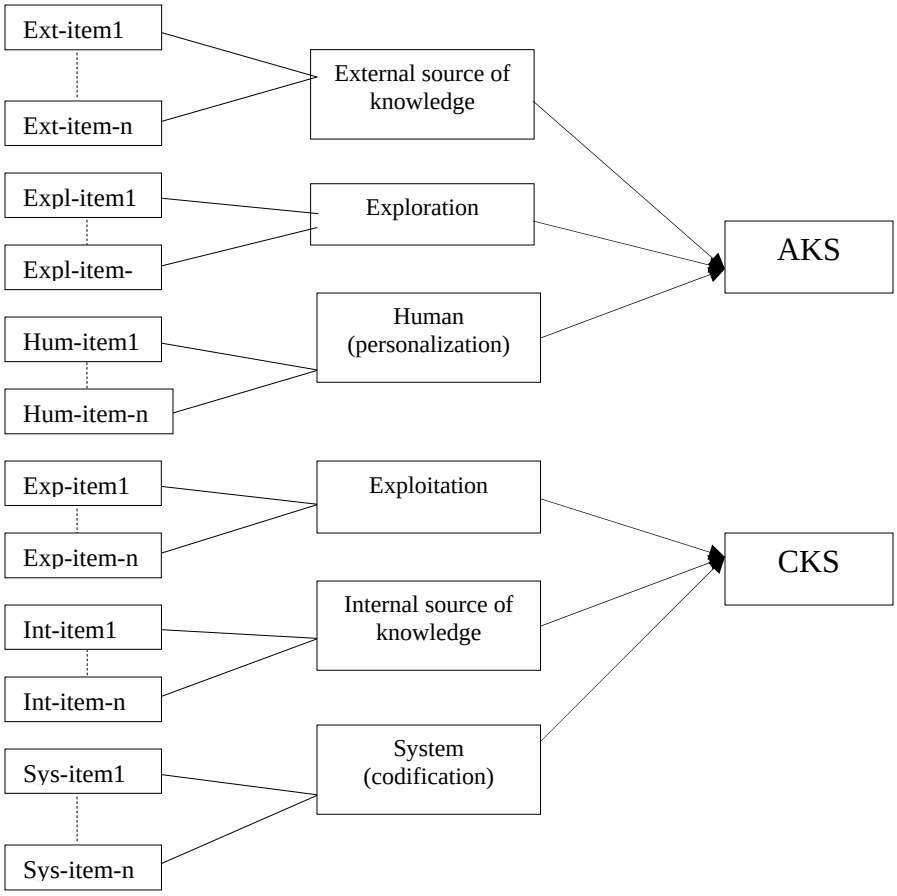


Figure 4.2: Knowledge strategy construct in the second conceptualization of the research model

4.3.2 Business strategy

Business strategy has been investigated in the same way as used in the investigation of the knowledge strategy construct. Generic descriptions of business strategy were produced first and then a set of items was developed to measure the constructs proposed for business strategy in the research framework.

4.3.2.1 Business construct in the first conceptualization of the research model

As stated in section 3.2.2, in the first conceptualization of research model, business strategy has to be assessed by way of multiple traits of dimensions common to all organizations and considered in terms of the relative emphasis made by the organization along each strategic orientation dimension. Thus, in this conceptualization, the nature of business strategy was measured from a comparative perspective. In such measurement approach, the bank's tendencies toward each strategic choice were of interest instead of forcing the firms into one of the three business strategic types (*defender*, *prospector*, and *analyzer*). The selection of this measurement does not mean that it is the best way for gauging business strategy. However, it is the most appropriate way to construct business strategy variable in the current research in order to measure hypotheses H_1 and H_2. Thus, business strategy is modeled as one second-order construct consisting of five first-order constructs corresponding to the STROBE dimensions of Venkatraman (1989b) which

include: *aggressiveness*, *proactiveness*, *defensiveness*, *analysis* and *futurity* attributes as described in Section 2.10.2) and as shown in Figure (4.3).

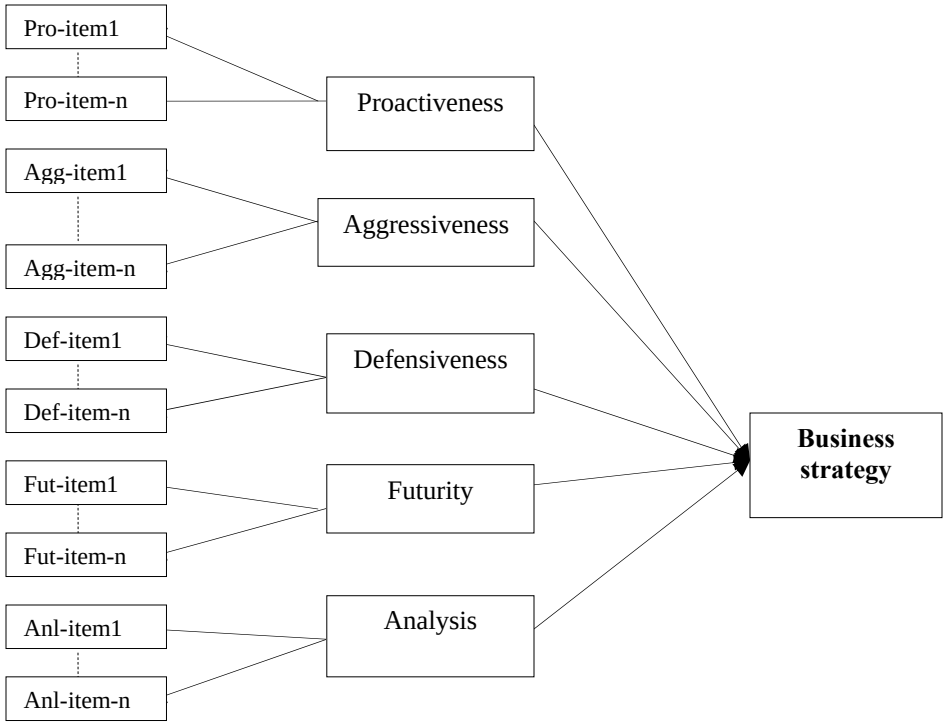


Figure 4.3: Business strategy construct in the first conceptualization of the research model

To illustrate the dimensionality of Venkatraman's (1989b) STROBE, consider two banks. Assume Bank A operates within an aggressive competitive environment, Banks A might score very high on aggressiveness, and proactiveness, while scoring moderately on defensiveness, futurity and risk aversion. On the other hand, Bank B aims at enhancing their effectiveness of their services might have a very different profile. This kind of bank might generate high scores for analysis and futurity, but lower scores for proactiveness. Thus, depending on their strategic priority and goals, the banks' scores will be based on

Venkatraman's (1989b) STROBE dimensions of aggressiveness, proactiveness, defensiveness, analysis and futurity attributes.

4.3.2.2 Business strategy construct in the second conceptualization of the research model

In the second conceptualization, business strategy is modeled as three second-order latent constructs. The three second-order constructs represent the active profile of Miles and Snow's typology: *defender*, *prospector*, and *analyzer*. Each second-order construct is mapped by its attributes which are modeled as first-order constructs as given in Figure (4.4). This means that the business strategy in this conceptualization forces the bank into one of the three strategic types. This follows the approach adopted by many researchers' work on Miles and Snow's (1978) typology (Smith, Guthrie and Chen, 1986; Shortell and Zajac, 1990; Parnell and Wright, 1993). Therefore, business strategy type pursued by the bank can be identified depending on the level of strategic orientation pertaining to this type. As has been already explained in section (2.10.2), the profile of Miles and Snow's typology can be identified using the five Venkartaman's (1989b) STROBE attributes of business strategy. Thus, the theoretical values of these business strategy attributes identified by Sabherwal and Chan (2001) (Section 3.2.3) were used to develop the business strategy profile for *defenders*, *analyzers*, and *prospectors*. Table (4.3) shows the ideal business strategy profiles developed for the three business strategy types focusing on one or more of the Venkartaman's (1989b) STROBE attributes (Sabherwal and Chan, 2001). They moreover, found that defenders were expected to score relatively high in the defensiveness and futurity attributes, and low in the proactiveness attribute.

Table 4.3: Business strategy profile of defenders, prospectors, and analyzers (Source: Sabherwal and Chan, 2001)

Business strategy Attributes	Defenders	Prospectors	Analyzers
Defensiveness	High	Low	Medium
Aggressiveness	Medium	High	Medium
Proactiveness	Low	High	Medium
Analysis	Medium	Medium	High
Futurity	High	Medium	Medium

Therefore, the bank responses of the STROBE attributes could be used to determine if the bank matches the *defender*, *analyzer*, or *prospector* business strategic type. Consequently, in the current study, *defender* is profiled by defensiveness and futurity. Two strategic attributes identify the profile of *prospector*: proactiveness and aggressiveness. Finally *analysis* can be identifying by high levels of analysis. Figure (4.4) depicts the business strategy constructs.

The Venkartaman's (1989b) dimensions of strategic orientation were measured using the STROBE instrument. This instrument is conceptually based and has been empirically validated in previous studies of strategic alignment (Tan and Litschert 1994; Venkatraman 1989; Luo, Tan and Shenkar, 1998; Bergeron, Raymond and Rivard, 2002; Sabherwal and Chan, 2001). This instrument consists of twenty-nine items tracing the organization's strategies course of action in terms of the five dimensions (see Appendix C).

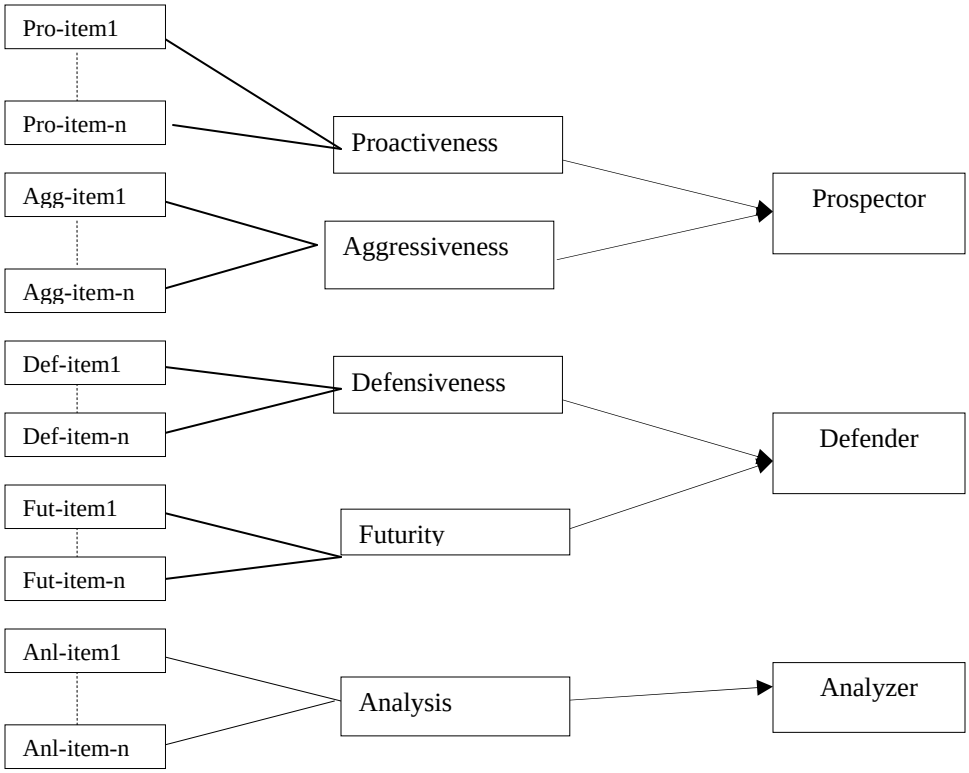
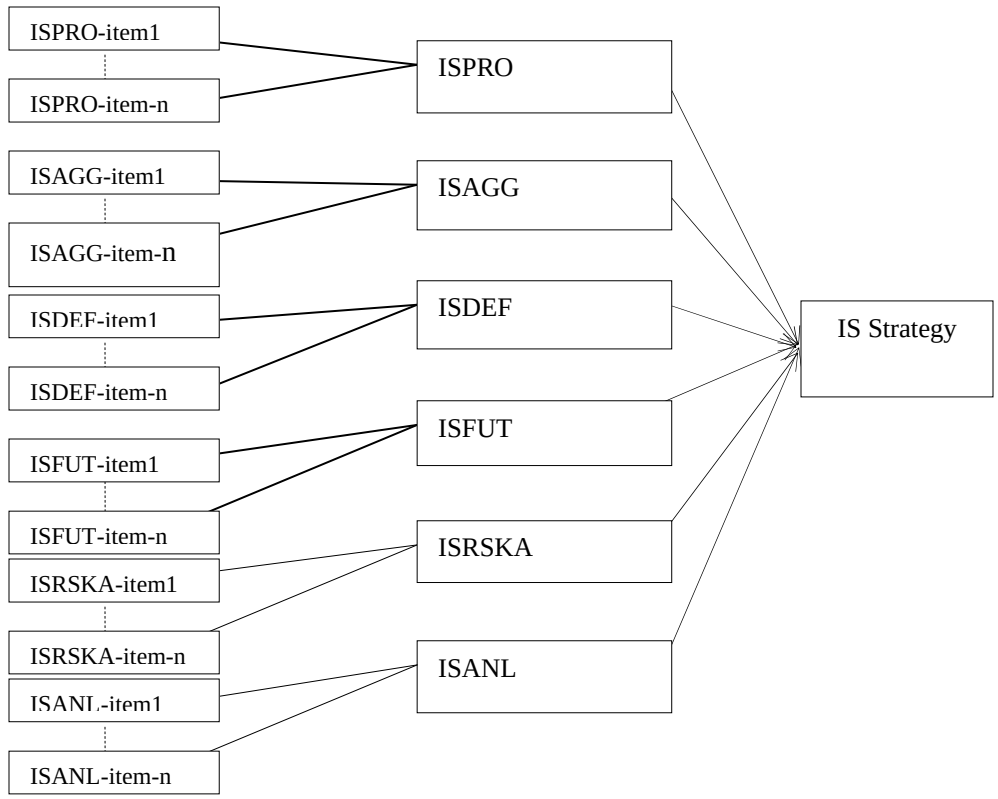


Figure 4.4: Business strategy constructs in the second conceptualization of the research model

4.3.3 IS strategy

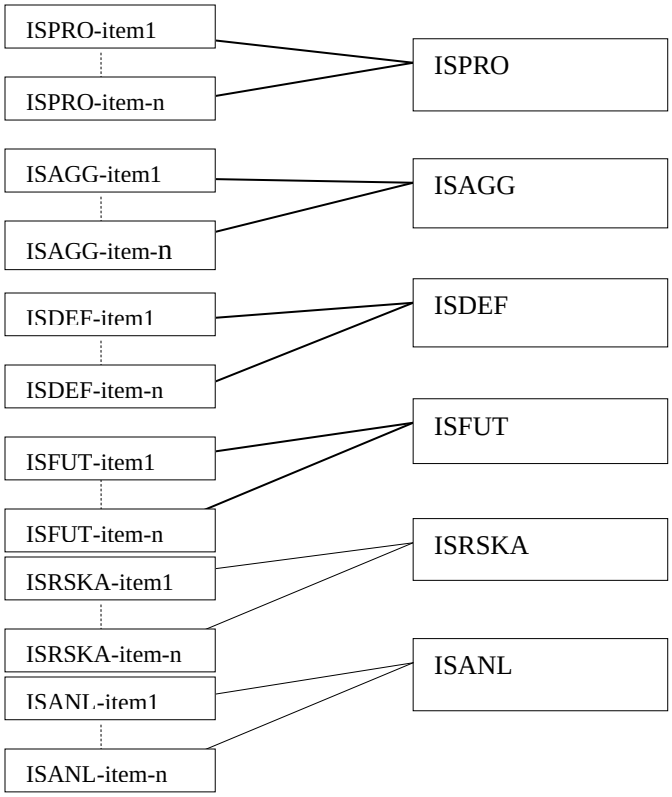
Business strategy and knowledge strategy were constructed in different ways within the different conceptualizations of the research model as discussed in the previous sections. IS strategy was constructed as one second-order variable in the first conceptualization of the research model to test hypothesis H_2 as shown in Figure (4.5). IS strategy however, was constructed as six first-ordered variables in the second conceptualization of the research model to test hypotheses H_6, and H_7 as shown in Figure (4.6).



ISPRO : IS support company proactiveness
ISAGG :IS support company aggressiveness
ISDEF : IS support company defensiveness
ISFUT : IS support company futurity
ISRSKA : IS support company risk aversion
ISANL :IS support company analysis

Figure 4.5: IS strategy construct in the first conceptualization of the research model

In section 2.11, it was stated that in the current research that IS strategy refers to those which have been realized, and not those which are merely intended. The six dimensions of IS strategy were measured using the STROIS instruments developed by Chan et al. (1997) to parallel the STROBE instrument developed by Venkatraman (1989b) to measure the business strategic orientation (see Appendix A, Table A-3).



ISPRO : IS support company proactiveness
ISAGG : IS support company aggressiveness
ISDEF : IS support company defensiveness
ISFUT : IS support company futurity
ISRSKA : IS support company risk aversion
ISANL : IS support company analysis

Figure 4.6: IS strategy construct in the second conceptualization of the research model

4.3.4 Organizational performance

Organizational performance was conceptualized as a first-order variable in both conceptualizations of the research model. The instrument used to measure organizational

performance in the current research was based on Morgan and Strong (2003), Cao and Schniederjans (2004), Sin et al. (2006), and, Sabherwal and Chan (2001). This instrument is a synthesized measure which includes a combination of traditional accounting-based items, market growth, profitability, company reputation, and product-service innovation. Using this instrument, the intended respondent in this study was asked to evaluate his or her bank's current business performance relative to its major competitors with respect to the following eight aspects: *(1) sales growth, (2) customer retention, (3) return on investment (ROI), (4) market share gain, (5) customer satisfaction, (6) net profit, (7) technological development and/or other innovation in business operations,* and *(8) reputation among major customer segments*. Responses were made on a 5-point scale ranging from much worse (1) to much better (5) than major competitors.

4.4 Questionnaires development and design

In gathering information pertaining to the current study, a questionnaire was used as the main instrument for data collection. Questionnaires were developed to collect data about the research model's constructs. In fact, to investigate the concept of KM strategic alignment in context such as the Gulf countries depends on just testing the proposed hypotheses is not likely to be sufficient to provide a whole view of the concept. Therefore, some questions were also developed to retrieve descriptive information. Descriptive information concerning the perceptions of the CEO, CKO and CIO on KMBS-SA and KMIS-SA and their influence on the performance was collected to support the statistical and analytical results.

Questionnaire design is one of the most critical stages in the research process (Zikmund, 2003). Good questionnaire design should focus upon areas such as the wording of the questions, the variables measurement, and the general appearance of the questionnaire (Sekaran, 2003). Therefore, the questionnaires used simple language to approximate the likely understanding level of the respondents. Moreover, ambiguous, double barreled, leading, and loaded questions were also avoided where it was possible to minimize confusion and bias of responses. Furthermore, to give respondents a consistent understanding of what KM is, a definition of knowledge strategy and other related topics such as KMBS-SA, KMIS-SA, knowledge gap and knowledge-based SWOT were included in the questionnaire. The definitions of that were provided in the questionnaire were proposed by the author for the purpose of this study as explained and defined in sections 2.8 and section 2.9. These definitions were based on the available definitions reported in the literature. The definitions of knowledge gap, strategic gap, and Knowledge-based SWOT – K-SWOT- were adopted from the literature as described in section 2.12.5.

Two questionnaires were developed for data collection in the study. The first questionnaire (Questionnaire A), was developed to investigate the current situation in the GCC banks regarding KMBS-SA. The second questionnaire (Questionnaire B), however, was developed to examine the current situation in the GCC banks regarding KMIS-SA. Each of the questionnaires was arranged into three sections as shown in Table (4.4) and Table (4.5). Section one in Questionnaire A contains descriptive questions about KMBS-SA in the GCC banks. The section moreover, was divided into five parts. These parts

include: (1) *the business manager perception of the responsibilities for developing and managing KM in the bank,* (2) *the role of the business manager in relation to KM,* (3) *the bank objectives of KMBS-SA,* (4) *the relationship between business manager and KM manager*, and (5) *the relationship between business strategy and knowledge strategy*. Section one in Questionnaire B includes four parts: (1) *the role of the IT manager in relation to KM,* (2) *the banks assumption on the role of IT and IS strategy in KM and KMIS-SA,* (3) *the relationship between IT manager and KM manager,* and (4) *the relationship between IS strategy and knowledge strategy*. Most of the questions in this section were adopted from Beeson and Al-Mahamid (2003). They used these questions as a measurement adopted in their research for assessing the KM alignment in the organization.

Section two in Questionnaire A contains questions regarding the business strategy pursued by the GCC banks. It contains 21 items from Venkartaman's (1989b). Section three contains eight items concern with the measurement of the organizational performance as shown in Table (4.4). Section two in Questionnaire B contains questions regarding the knowledge strategy pursued by the GCC banks. It contains 17 items which were developed specially to measure the knowledge strategic choices selected for the purpose of this study. Section three however, concerns with the IS strategy pursued by the GCC banks and is measured by 35 items of STROIS developed by Chan et al. (1997) as shown in Table (4.5).

Table 4.4: The structure of Questionnaire A

Section number	**Parts**	**No. Items**
One (Descriptive information regarding KMBS-SA)	2. The business manager perception of the responsibilities for developing and managing KM in the bank	1-3
	3. The role of the business manager in relation to KM.	1-5
	4. The bank objectives of KMBS-SA	1-4
	5. The relationship between business manager and KM manager	1-6
	6. The relationship between business strategy and knowledge strategy	1-7
Two	7. Business strategy (Venkatraman, 1989b) measurement	1-21
Three	8. Organizational performance measurement	1-8

Table 4.5: The structure of Questionnaire B

Section	**Parts**	**No. Items**
One (Descriptive information about the KMIS-SA)	2. The role of the IT manager in relation to KM	1-5
	3. The banks assumption about the role of IT and IS strategy in KMIS-SA	1-3
	4. The relationship between IT manager and KM manager	1-4
	5. The relationship between IS strategy and knowledge strategy	1-7
Two	6. Knowledge strategy	1-17
Three	7. IS strategy (Chan, et al., 1997) measurement	1-35

4.5 Data collection procedure

In the pilot study, a sample of 30 associate professors from the University of Bahrain, specifically from the Department of Banking and Finance, the Department of Marketing and Management, and the Department of Management Information System (MIS), were selected. The staff included: three from the Department of Management Information Systems, five from the Department of Marketing and Management, and five from the Department of the Banking and Finance. Moreover, a sample of six business mangers and six IT managers from six foreigner banks located in the State of Bahrain were selected to complete the research's questionnaires.

These academics and managers were asked to evaluate the questionnaires with a view to (1) *assessing the questions related to business strategy, IS strategy, knowledge strategy, KMBS-SA and KMIS-SA*, (2) *assessing the suitability of the terminology to specific sectors*, (3) *making alternative suggestions, criticisms and comments on the questionnaire and its facets*, and, (4) *uncovering unanticipated mistakes such as awkward expressions, leading questions and the like*. To ensure the usefulness of the items that were developed and used for the first time in the current instrument, advices of these academics and mangers were sought. They provided an assessment of the validity of the questions, the measures used, and the conceptual and functional equivalence of the survey instrument constructs. It is believed that the pilot study could eliminate unexpected problems in data processing and analysis as the data obtained from this activity were coded, tabulated, and analyzed (Zikmund, 2003). Most importantly, the questionnaires were pre-tested by the panel to ensure that the format was clear and

logical, and that the questions could be answered within duration of thirty minutes. This time limit was set because most respondents were executive managers who would not be able to spend more than half-an-hour in answering the questionnaires due to their work commitments.

Survey questionnaires were mailed out to the professors and the managers or delivered to them by hand. Only ten professors and just two business manger and two IT managers responded to the pilot survey. It was found that the respondents had no problem understanding and answering the questions. However, concerns were raised about the confidentially of information provided, the complexity of the topic and the capability of executives in the GCC countries to understand and respond. The IT managers moreover, have shown their concern about the collapse in the IT and KM and also in the IS strategy and knowledge strategy among the banks in the GCC countries. Despite the respondents concerns, the returned questionnaires were reviewed and no major reworks were required for the questionnaires. Consequently, some wording changes were made and the complete set of questionnaires is presented in Appendix C.

No statistical analysis was conducted for the pilot study, as the sample size of 14 was too small. The pilot study was meant to gauge the user-friendliness of the survey instrument and to identify other possible unforseen trouble spots.

Subsequent to the pilot and once the survey questionnaires were refined, the final data collection started in March 2006. The data collection was started by selecting the respondents. Selecting knowledgeable respondent who are uniquely qualified to report on

variables under study is critical (Slater and Atuahene-Gima, 2004). Therefore, the identification and selection of sampling respondents was deemed with a consideration being made to the focus of knowledge within the firm concerning the data generation requirements of the survey. Moreover, the current study investigates different perspectives of KMSA, KMBS-SA and KMIS-SA, with respect to the different strategies covering: knowledge strategy, IS strategy and business strategy. Therefore, different types of respondent were selected to limit the measurement errors. Slater and Atuahene-Gima (2004) stated that if more than one respondent per organization is to be selected, then potential respondent who is likely to know different aspects of the issue being studied, or, who has different perspectives on the issue should be identified. Hence, business managers (the CEOs or similar level of executive managers) (Group A) and IT managers (CIOs or similar executive managers, CKOs, IT managers or the Heads of IT Department) (Group B) in each sampling unit were invited as respondents for this study. Business managers should possess understanding of the firm's dimensions of strategic orientation, involve in the planning and initiating of the bank's KM, and they should be in a position to offer judgment on the bank's performance. IT managers have also been selected as they should have the knowledge about the firm's KM and IS strategy.

The survey was administrated pursuant with Dillman's (1978) guidelines for total design method. The respondents were first contacted by telephone, sent a notification letter (refer to Appendix A for the sample letter), and then the questionnaires were sent subsequently by mail. This was to ensure that all respondents understood the needs of the survey. A total of 212 questionnaires (106 of Questionnaire A and 106 of Questionnaire

B) were distributed to 106 banks. These banks include the commercial, Islamic, investment, and specialized banks as previously discussed in Section (4.2). The details of the categories of banks are shown in Table (4.6).

Table 4.6: Numbers and types of GCC banks that participated in the survey

Type of Bank	Kingdom of Bahrain	United Arab Emirates	Kingdom of Saudi Arabia	Oman	Kuwait	Qatar	Total
	29	**28**	**19**	**9**	**12**	**9**	**106**
Commercial banks	12	12	6	4	3	2	39
Islamic banks	5	6	2	0	4	3	20
Investment banks	10	7	7	2	3	2	31
Specialized bank	2	3	4	3	2	2	16

Questionnaire A was directed to Group A and Questionnaire B addressed Group B. The questionnaires were attached with a confidentiality agreement (refer to Appendix B-1) and a cover letter (refer to Appendix B-2). The cover letter outlined the research project and its objectives.

Three weeks after the initial mailing, a follow-up fax (Appendix B-3) was sent out to all banks reminding them about the importance of their participation in the study. Three weeks after the first reminder fax, follow-up phone calls were made to a sample of 75 banks (75 of Group A and 75 of Group B) that had not yet returned their questionnaire. Three weeks later, a second follow-up fax (Appendix B-4) was sent out to 36 banks reminding them again about the importance of their participation in the study. To increase

the response rate, several incentives were offered for participation, including a research report or published articles as a result of the survey. However, the main reasons for non-response were: bank policy prevented involvement in external studies, time constraints, the topic of the questionnaires was new and difficult to understand, and banks had moved or merged with other banks.

4.6 Obtaining and calculating scores for research key variables

The results of the current research are presented in three parts: the descriptive results, the analysis of the model conceptualization to investigate the KMBS-SA and KMIS-SA, and the analysis of the model conceptualization to order to investigate the alignment between certain types of knowledge strategy and certain types of business strategy or IS strategic orientations. Moreover, the items used in Questionnaire A and Questionnaire B in all the sections used the 1 to 5 Likert scale alongside an appropriate aspiration statement. Therefore, the data used for the analysis was calculated in different ways based on the measurement as follow:

- The score for the descriptive result, section one in Questionnaire A (part 1 to 5) and Questionnaire B (part 1 to 4) as shown in Table (4.4) and Table (4.5), were calculated. For each item in these parts, the number of banks (participant) responded to the response level of “Agree” was counted. This is done for the banks responded to the other response levels such as “Disagree”, “Neutral” and so on. At the end, there will be five figures for each item: number of banks responded to “Strongly agreed”,

"Agreed", "Neutral", "Disagreed" and "Strongly disagreed". Then, the percentage of the banks in each response levels for each item was computed. Moreover, it was discussed previously that five point Likert type scale was used for measuring the items in the research questionnaires. The five points scale used for the statistical analysis was combined into three points in order to get more meaningful, summative and readable descriptive results. As such, the levels of response used for the statistical analysis ranged from 'Agree', 'Neutral, and 'Disagree'. Thus, the results of responses on 'Strongly Agree" and "Agree' were added in one response level which is "Agree" and the results of responses on "Strongly Disagree" and "Disagree" were added in on response level of "Disagree". Moreover, in some cases, the level of response ranges from "Very important", "Quite important", and "Not important". In this case, the responses on "Extremely Important" and "Very important" were added in the response level of "very important", and the responses on "Some what important" and "Not important" were added in one response level of "Not important".

- The score of the five response levels is obtained directly from the questionnaire. The analysis of the data necessitates the calculation of the mean of the responses for each of the items (Hussin et al., 2002). Then, the scores for the items used to measure the research variables (dependent and independent) were averaged to give a single score. For example, to calculate the score for knowledge strategy, the average of the scores in the five response levels was computed for the whole sample. The same calculation was done for all independent variables (business strategy and IS strategy) and the independent variable (organizational performance).

4.7 Testing the alignment methods

The data in the current study were analyzed in different ways depending on the approach of the alignment. Among the available approaches available for measuring alignment, the *moderation* and *mediation* approaches were selected. Each of these approaches call for a particular type of analysis. The following are discussions on the moderation and mediation approaches of alignment.

4.7.1 Testing the moderation approach of alignment

The *moderation* perspective implies that the impact that an independent (predictor) variable has on a dependent (criterion) variable is dependent on the level of a third variable, termed by Venkatraman (1989a) as *moderator*. Within the framework of this study, *moderation* indicates that the causal relation between business strategy and performance or between IS strategy and performance changes as a function of the moderator variable (knowledge strategy). In other words, a *moderator* (knowledge strategy) affects the strength or the form of the relationship between the independent variable (business strategy or IS strategy) and the dependent variable (performance) (Baron and Kenny, 1986). Thus, the moderation perspective of fit can test the form of fit or the strength of the fit between variables. Venkatraman (1989a) stated that a particular data set may support one effect (form or strength) and not the other and hence it is critical that researchers articulate their conceptualization of moderation and justify their choice of analytical technique to ensure correspondence between the theory and the tests. Therefore, the moderation approach of alignment was tested from the form and strength

perspective to get more precise results about the alignment hypotheses proposed by the current research. The following methods were adopted to measure the form and strength perspectives of the moderation approach of fit.

4.7.1.1 Testing the strength of moderation

According to this perspective of moderation approach, in which the strength of the moderation is targeted, the impact of an independent variable on the dependent variable is dependent on the level of the moderator. In the context of this study, moderation can be assessed by evaluating the strength of the relation between the business strategy or IS strategy and performance variation across different levels of knowledge strategy.

Venkatraman (1989a) proposed a subgroup analysis for testing this perspective of moderation approach. This method has been also adopted by Bergeron et al. (1998, 2001b). In this method, the sample is first split into groups based on the moderator variable. It is also recommended that it may be more appropriate to split the sample on the basis of the dependent variable to evaluate the moderating role of the independent variable on the relationship between the moderator and the dependent variable.

Therefore the moderation in this study was evaluated by calculating the correlation of business strategy and IS strategy with organizational performance for two sub-samples based on the median knowledge strategy score (High-knowledge strategy and Low-knowledge strategy banks). High-knowledge strategy banks are those banks in which

business strategy and IS strategy and organizational performance, are associated with a high median for knowledge strategy. However, Low-knowledge strategy are those banks in which their business strategy and IS strategy and organizational performance are associated with a low median for knowledge strategy. The strength of moderation is supported when statistically significant differences exit in the value of correlation coefficient between business or IS strategy and organizational performance across the sub-samples of the moderator (knowledge strategy).

4.7.1.2 Testing the form of moderation

Moderation in this case is best understood when only two variables are involved. It is conceptualized as the interaction between those two variables (Venkatraman, 1989a). Thus, if it is specified that a dependent variable is jointly determined by the interaction of the independent variable and the moderator, then this reflects the form of moderation as it is shown in Figure (4.7). For instance, the verbalization of the KMBS-SA according to this perspective of moderation is: "*the interactive effects of business strategy or the knowledge strategic choices of a bank and the business strategic types for implementing the bank's knowledge strategy will have implications on the bank's performance*."

The form perspective of moderation can be assessed using the moderator method (Bergeron et al., 1999; Venkatraman, 1989). In this method, the performance outcome is jointly (multiplicative) determined by the interaction of the predictor (business strategy or IS strategy) and the moderator (knowledge strategy). Thus according to the interaction

perspective, the product of business strategy and knowledge strategy or that of IS strategy and knowledge strategy could have an effect on the performance if knowledge strategy and business strategy or IS strategy are aligned.

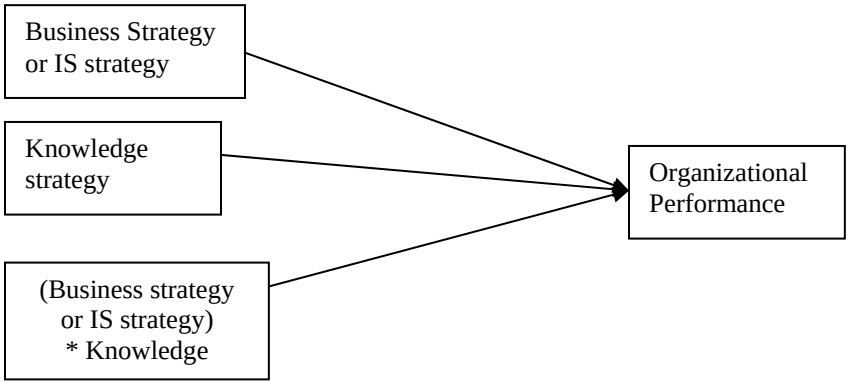


Figure 4.7: Moderation model

This perspective of moderation can be tested by computing the correlation between (business strategy*knowledge strategy) or (IS strategy*knowledge strategy) with organizational performance after partialing out the linear and quadratic effects of their two components (knowledge strategy, business strategy, knowledge strategy^2 and business strategy^2) or (knowledge strategy, IS strategy, knowledge strategy^2 and IS strategy$^{2)}$ to establish the presence or absence of multiplicative effects or evidence of curvillinearity (Venkatraman, 1989a). The test of the partial correlation between the organizational performance and the (business strategy*knowledge strategy), after partialling out the effects of business strategy, knowledge strategy, business strategy^2 and knowledge strategy^2, provides support for multiplicative interaction. Whereas the test of

the partial correlation coefficient between organizational performance and business stratgey^2, after partialling out effects of business strategy, knowledge strategy, (business strategy*knowledge strategy), and the partial correlation between knowledge strategy^2 and organizational performance after partialling out the effects of business strategy, knowledge strategy, (business strategy*knowledge strategy) provides evidence of curvillinearity (Venkatraman, 1989a). Adopting this method for testing the moderation perspective of fit without incorporates such control (the curvillinearity and multiplicative effect) could weaken the interpretation of the result. Therefore, this perspective of moderation approach of alignment is some times avoided by researchers (Venkatraman, 1989a).

4.7.2 Testing the mediation approach of alignment

A given variable may be said to function as a *mediator* to the extent that it accounts for the relation between the independent variable and the dependent variable (Venkatraman, 1989a; Baron and Kenny, 1986). Thus, there is an indirect effect (via the mediator) between the independent variable and the dependent variable. The mediation model assumes a three-variable system with three causal paths (Baron and Kenny, 1986) as shown in Figure (4.8). There are two causal paths feeding into the dependent variable: the direct impact of the independent variable (path c) and the impact of the mediator (path b). There is also a path from the independent variable to the mediator (path a). When path c is reduced to zero, this indicates that there is a strong evidence for a single, dominant mediator. If path c is not zero then this indicates that there are multiple

mediating factors or partial mediation. The mediation approach of alignment can be evaluated using different methods. These methods have been used by different authors depending on the objectives of their studies.

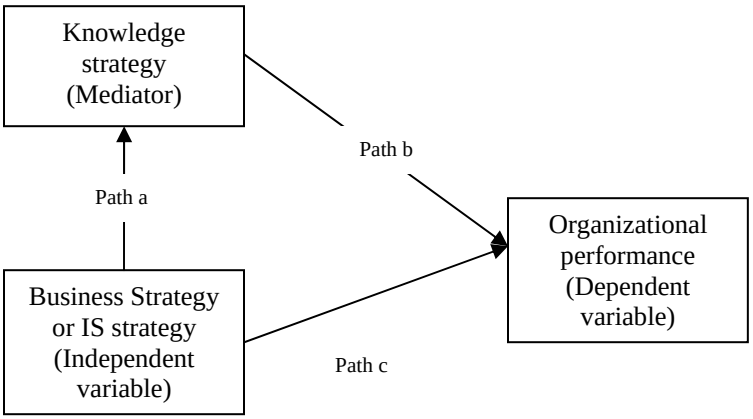


Figure 4.8: Mediation model

The following are the methods proposed to test the mediation approach that have been adopted by this study:

a- The first approach is used by Bergeron and et al. (1999). It involves calculating partial correlations of business strategy or IS strategy with performance, using knowledge strategy as a control variable. The result of the partial correlation is then compared with the zero-order coefficient of the same variables. In other words,

comparing the indirect effects of business strategy or IS strategy on the performance (via knowledge strategy) versus the total effects of these variables on the performance.

b- The second approach was proposed by Baron and Kenny (1986). Mediation according to them can be estimated using three regression equations. The first regression must be estimated between the mediator (knowledge strategy) with the independent variable (business strategy or IS strategy). In regression, knowledge strategy must affect business strategy or IS strategy. The second regression must be estimated between the dependent variable (organizational performance) and the independent variable (business strategy or IS strategy). Here, business strategy or IS strategy must be shown to affect the dependent variable. The third regression must be estimated between the dependent variable (organizational performance) and both the independent variable (business strategy or IS strategy) and the mediator (knowledge strategy). Knowledge strategy must be shown to affect the organizational performance. The effect of the independent variable on the dependent variable must be less in the third regression than in the second regression. The perfect mediation holds if the independent variable has no effect when the mediator is controlled.

4.8 Summary

The chapter focused on the methodology that is used to test the research questions and hypotheses. It described the sampling design of the research. It also demonstrated the operationalization and measurements of knowledge strategy, business strategy, IS strategy and organizational performance. The questionnaires development and the pilot test done to ensure the validity of the research measurements were also explained. In addition, the moderation and mediation approach of alignment were discussed at the end of the chapter together with the methods that were adopted by the current research. The next chapter discusses the reliability and validity of the constructs

Chapter Five

Constructs Reliability and Validity

5.1. Introduction

The purpose of this chapter is to describe and justify the methods used in the statistical analysis of the data collected from the survey in the main phase of this research. The chapter presents a review of the scales used to measure the major constructs of the model and the criteria for reliability and validity.

The chapter consists of five sections. After the introduction, section 5.2 presents a summary on the available approaches for measuring the reliability and validity of a research measurement. Section 5.3 discusses the reliability of the research measurements. Section 5.4 describes the Construct validity used to evaluate the validity of the measurement. Finally, section 5.5 presents a summary for the chapter.

5.2. An evaluation of the research measurements

Before analyzing any data, the issues of reliability and validity must be addressed. The evaluation of the measurements used in the current research instrument involved the assessment of these issues. Figure (5.1) shows the different methods proposed in the literature for the assessment of reliability and validity. The highlighted methods are those applied in this study. For reliability, consistency reliability is assessed. With regard to validity, discriminant and construct validity were calculated to assess the validity of measurement.

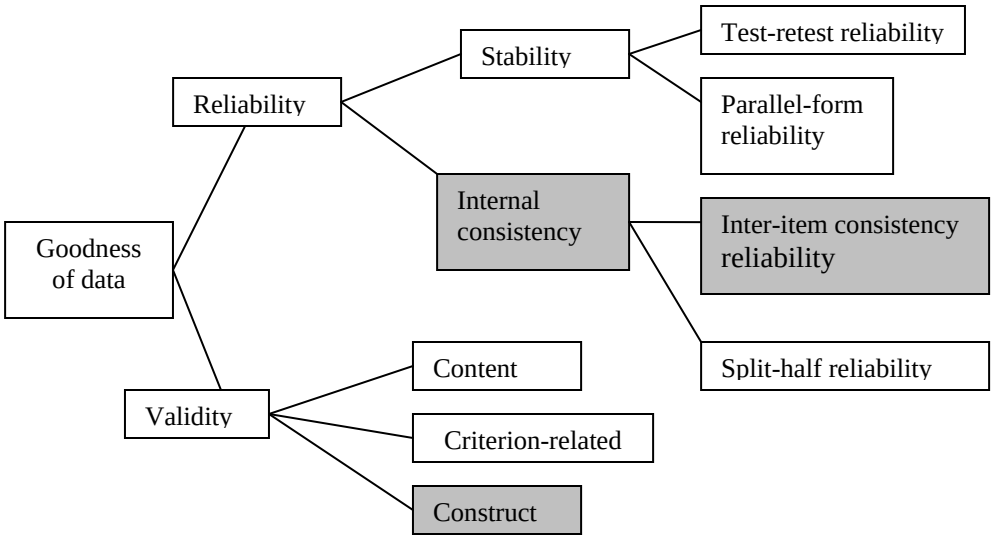


Figure 5.1: Testing goodness of measurement: different forms of reliability and validity [Source: (Sekaran, 2003)]

5.3. Reliability

Reliability indicates the degree to which measurement scores are free of random errors and hence ensures consistent measurement across time and across the various items in the instrument (Zikmund, 2003; Sekaran, 2003; Schwab, 2005). Reliability addresses only whether scores (items) are consistent, it does not address whether scores capture a particular construct as defined conceptually (Schwab, 2005). Thus a reliable instrument may not be valid (Zikmund, 2003). Reliability is a necessary but not sufficient condition for validity (Zikmund, 2003; Schwab, 2005). The style of measures in a study determines which type of reliability analysis could be performed in order to examine the psychometric properties of the instrument. There are two main methods for assessing reliability: *Stability* and *Internal consistency* as shown in Figure (5.1).

5.3.1. Stability reliability

Stability reliability refers to the consistency of measurement results across time (Schwab, 2005). It can be further classified as *Test-retest* and *Parallel Form* reliability. Test-retest is an estimation method for reliability that involves administrating the same scale or measure to the same respondents at two separate times to test for stability (Zikmund, 2003). Parallel Form reliability is an estimation approach based on the correlation of two equivalent forms of the scale. Both forms have similar items and the same response format, the only changes being the wording and the order or sequence of the questions (Sekaran, 2003).

There are several problems associated with the stability reliability and hence it was not appropriate for the current study. First the test-pretest method is very sensitive to the time interval between testing - the longer the time interval between the measurements, the lower the reliability (Zikmund, 2003). So this method cannot be applied in the current research because there is a limit time for the data collection procedure in addition to the difficulty of retesting the survey in six countries and within a limited period of time. One major problem with Parallel form reliability, on the other hand, is the difficulty of generating a lot of items that reflect the same construct or construct two equivalent forms of the same instrument. This exercise is not easy especially with concept of the KMSA. It would be expensive and time-consuming. Actually, the author found it very hard to create one version for the instrument of knowledge strategy and the instruments of KMBS-SA and KMIS-SA. Moreover, even if two versions have created for the instrument of knowledge strategy, it would be very difficult to ensure the equivalence in the content of the two separate versions.

5.3.2. Internal consistency

Internal consistency reliability, which is also known as internal construct reliability or internal reliability, estimates reliability by measuring the homogeneity of items in the measure (Zikmund, 2003; Sekaran, 2003). In other words, it can be assessed when items are intended to measure a single construct (Schwab, 2005). Thus, each item measures some aspects of the construct measured by the entire instrument (Schwab, 2005).

Consistency can be examined through the inter-item consistency reliability and split-half reliability test (Sekaran, 2003).

Inter-item consistency tests the consistency of the scores of all items in a measure. The most popular test of inter-item consistency reliability is Cronbach's coefficient alpha, which is used for multipoint-scaled items. Cronbach's alpha can be considered an adequate index of the inter-item consistency reliability (Sekaran, 2003). It is the average of all possible split-half coefficients resulting from the different ways of splitting the instrument items (Cronbach, 1971). Cronbach's alpha reliability coefficient normally ranges between 0 and 1.

Internal reliability measures of the scales are obtained through the utilization of Cronbach's coefficient alpha. This is done by testing to see that the items which make up the scale are all measuring a single idea (Bryman and Cramer, 1997). It has been mentioned in section (3.2) that the research uses two conceptualizations for testing the research hypotheses. Hence, the internal reliability measures of the scales of business strategy and knowledge strategy in both conceptualizations were obtained.

Table 5.1: Internal consistency reliability for the research model scales of knowledge strategy, business strategy, IS strategy and organizational performance.

Construct	Reliability		
Knowledge strategy			**0.644**
Aggressive Knowledge strategy		**0.881**	
External source of knowledge	**0.775**		
Exploration of Knowledge	**0.777**		
Human Focus (Personalization)	**0.759**		
Conservative Knowledge Strategy		**0.878**	
Internal source of knowledge	**0.971**		
Exploration of Knowledge	**0.706**		
System Focus (Codification)	**0.792**		
Business strategy			**0.650**
Prospector		**0.695**	
Aggressiveness	**0.657**		
Proactiveness	**0.683**		
Defender		**0.784**	
Defensiveness	**0.723**		
Futurity	**0.792**		
Analyzer		**0.779**	
Analysis	**0.779**		
IS/IT Strategy			**0.75**
IS for company Proactiveness	**0.919**		
IS for company Aggressiveness	**0.887**		
IS for company defensiveness	**0.844**		
IS for company Risk Aversion	**0.884**		
IS for company Futurity	**0.980**		
IS for company Analysis	**0.940**		
Performance			**0.954**

Table (5.1) presents the internal reliability for all scales utilized in the main study. The table shows that the internal reliability for most of the constructs of all scales is greater than the cut-off level of (0.7). However, the result in the table shows that the Cronbach alpha for the construct of proactiveness and prospector are very close to (0.7) (0.695 and 0.68) so they were acceptable. Moreover, the result shows that business strategy and aggressiveness have a Cronbach alpha of 0.650 and 0.657, respectively. Although, these values of Cronbach alpha are less than the cut-off level (0.7), they are acceptable as Rhee and Mehra (2006) and Sebherwal and Chan (2001) accepted values for Cronbach Alpha of 0.62, 0.6 and 0.55. Since all the internal reliability if all scales are acceptable then the internal consistency of homogeneity of the measures is confirmed.

5.4. Validity

The purpose of measurement is to measure what is intended to measure (Zikmund, 2003). In a general sense, a measuring instrument is considered to be valid if it does what it is intended to do. Validation of an instrument always demands empirical investigations, with the nature of the evidence required depending on the type of validity (Nunnally, 1978). Several types of validation procedures are suggested in the literature as shown in Figure (5.1) (Sekaran, 2003, Zikmund, 1993). Out of these, construct validity has been selected as being appropriate to the research reported in this thesis.

Construct validity is established during the statistical analysis of the data (Zikmund, 2003). It implies that the empirical evidence generated by a measure is consistent with

the theoretical logic about the concepts. It is the degree to which the measured variables used in the study represent the hypothesized constructs (Heppner, Kivlighan and Wampold, 1992). Construct validity can be assessed through convergent and discriminant validity. Both convergent and discriminant validity provide important evidence to establish construct validity.

5.4.1. Discriminant validity

Discriminant validity refers to the degree to which measures of different concept are different. This means that correlation of coefficients of items of the same scale should be higher than correlation coefficient of items across constructs. Discriminant validity is established when two variables are predicted to have a low correlation, and the scores obtained by measuring them confirms this (Sekaran, 2003). Tables (D-1, D-2, D-3, D-4, D-5) in Appendix D shows the discriminant validity of the scales measuring knowledge strategy, business strategy, IS strategy and performance. The results in these Tables show that the correlations between the scales are less than (0.3). It can be then concluded that the discriminant validity exists between the scales measuring the business strategy, knowledge strategy, IS strategy and performance. Thus the four scales measure theoretically different constructs.

5.4.2. Convergent validity

Convergent validity is established when the scores obtained with two different instruments measuring the same concept are highly correlated. Factor analysis can be used to assess the degree to which items are measuring the same concepts or variables. Therefore, confirmatory factor analysis was conducted to assess the overall measurement models. As it was mentioned in Section (3.4) that the research model has been conceptualized in two different ways in order to test the research model, then the confirmatory factor analysis were done to assess the overall measurement model in both conceptualizations. As such, knowledge strategy and business strategy necessitate the calculation of two different confirmatory factor analyses as it discussed in section 5.5.2.1 and section 5.5.2.2.

5.4.2.1. Factor analysis for knowledge strategy

In the first conceptualization, knowledge strategy was conceptualized as one second order variable that is explained by six factors. Hence, the first confirmatory factor analysis with varimax rotation was conducted to assess the underlying structure for the seventeen items of the knowledge strategy questionnaire. Six factors were requested, based on the fact that the items were designed to index six constructs: *exploration of knowledge, external source of knowledge, human focus, exploitation of knowledge, internal source of knowledge,* and *system focus*. Table (5.2) presents the loading factors for the knowledge strategy in the first conceptualization of the model. The results in the table (in the last

column with all values in bold) show that all the loading values are greater than the cut-off level (0.5). The result confirmed that the six factors of *exploration of knowledge, external source of knowledge, human focus, exploitation of knowledge, internal source of knowledge*, and *system focus*, were significantly related to knowledge strategy.

Table 5.2: Factor loadings for knowledge strategy (external source of knowledge (Factor1), knowledge exploration (Factor2), human focus (Factor3), internal source of knowledge (Factor4), knowledge exploitation (Factor 5), and system focus (Factor 6)).

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Loading
AKS1	**0.683**						**0.683**
AKS2	**0.701**						**0.701**
AKS3		**0.617**					**0.617**
AKS4		**0.799**					**0.799**
AKS5			**0.651**				**0.651**
AKS6	**0.624**						**0.624**
AKS7		**0.800**					**0.800**
AKS8			**0.783**				**0.783**
AKS9			**0.779**				**0.779**
AKS10	**0.728**						**0.728**
CKS1				**0.808**			**0.808**
CKS2				**0.813**			**0.813**
CKS3					**0.657**		**0.657**
CKS4				**0.657**			**0.657**
CKS5					**0.809**		**0.809**
CKS6					**0.812**		**0.812**
CKS7						**0.881**	**0.881**

In the second conceptualization, AKS and CKS profiles of knowledge strategy were modeled as second ordered variables that explained by the seventeen items of the knowledge strategy questionnaire. Hence, the second confirmatory factor analysis with varimax rotation was conducted to confirm that the seventeen items support the existence of the two profiles for knowledge strategies: AKS and CKS. It was discussed in section (4.3.1.2), that the constructs: *exploration of knowledge*, *external source of knowledge* and *human focus* should explain the AKS profiles of knowledge strategy. However, the other

constructs: *exploitation of knowledge, internal source of knowledge,* and *system focus* should explain the CKS profile of knowledge strategy. Therefore the items that loaded on Factor1, Factor2, and Factor3 should load in one factor AKS profile of knowledge strategy. Whereas, items that loaded on Factor4, Factor5, and Factor6 should load on one factor which is CKS profile of knowledge strategy.

Table 5.3: Factor loadings for AKS and CKS profiles of Knowledge Strategy

Items	Factor 1	Factor 2	Loading
AKS1	0.675		**0.675**
AKS2	0.691		**0.691**
AKS3	0.714		**0.714**
AKS4	0.725		**0.725**
AKS5	0.735		**0.735**
AKS6	0.713		**0.713**
AKS7	0.674		**0.674**
AKS8	0.633		**0.633**
AKS9	0.719		**0.719**
AKS10	0.685		**0.685**
CKS1		0.676	**0.676**
CKS2		0.702	**0.702**
CKS3		0.771	**0.771**
CKS4		0.790	**0.790**
CKS5		0.655	**0.655**
CKS6		0.732	**0.732**
CKS7		0.749	**0.749**
CKS8		0.788	**0.788**

Table (5.3) shows that the items that were intended to measure the constructs: *exploration of knowledge*, *external source of knowledge* and *human focus* loaded on one factor. Moreover, the items that were intended to measure the constructs: *exploitation of knowledge, internal source of knowledge,* and *system focus* loaded on another factor. Therefore, the instrument developed in this study is reliable and valid to measure knowledge strategy using six constructs representing the knowledge strategic choice:

exploration of knowledge, external source of knowledge and human focus exploitation of knowledge, internal source of knowledge, and *system focus*. Moreover, the instrument is valid to measure the AKS and CKS profiles of knowledge strategy using the above mentioned six factors that representing the knowledge strategic choice.

5.4.2.2. Factor analysis for business strategy

In the first conceptualization of the research model, business strategy was conceptualized as one second order variable that is explained by five factors. Therefore, the first confirmatory factor analysis with varimax rotation was conducted to assess the underlying structure for the twenty one items (Venkatraman, 1989b) proposed to measure the business strategy construct. Five factors were requested, based on the fact that the items were designed to index five constructs: *proactiveness, aggressiveness, defensiveness, analysis,* and *futurity*. Table (5.4) presents the loading factors for the business strategy in the first conceptualization of the model. The results in the table (in the last column with all values in bold) show that all the loading values are greater than the cut-off level (0.5). However, item (BSDEF2) which was proposed for measuring defensiveness strategic orientation, item (BSPRO3) which was proposed for measuring proactiveness strategic orientation, and item (BSANL5) which was proposed for measuring analysis strategic orientation were omitted because they have loading less than the cut-off level (0.5). This was been done to improve the measurement clarity. The result confirmed that the five factors of *proactiveness, aggressiveness, defensiveness, analysis,* and *futurity,* were significantly related to business strategy.

Table 5.4: Factor loadings for business strategic orientations: defensiveness (Factor1), futurity (Factor2), proactiveness (Factor3), aggressiveness (Factor4), and analysis (Factor5)

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Loading
BSDEF1	0.685					**0.685**
BSDEF3	0.715					**0.715**
BSDEF4	0.734					**0.734**
BSDEF5	0.688					**0.688**
BSDEF6	0.813					**0.813**
BSDEF7		0.823				**0.823**
BSDEF8		0.737				**0.737**
BSDEF9		0.782				**0.782**
BSPRO1				**0.625**		**0.625**
BSPRO2				**0.521**		**0.521**
BSPRO4			**0.735**			**0.735**
BSPRO5				**0.735**		**0.735**
BSPRO6			**0.743**			**0.743**
BSPRO7			**0.794**			**0.794**
BSPRO8				**0.788**		**0.788**
BSANL1					**0.764**	**0.764**
BSANL2					**0.799**	**0.799**
BSANL3					**0.584**	**0.584**
BSANL4					**0.882**	**0.882**

In the second conceptualization, the Miles and Snow's (1978) typologies for business strategy which include *defender*, *prospector* and *analyzer*, were modeled as second ordered variables that explained by the twenty one items of the business strategy questionnaire. Therefore, the second confirmatory factor analysis with varimax rotation was conducted to assess that the five factors confirm the existence of the three types of business strategy of *defender*, *prospector* and *analyzer*. It was discussed in section 4.3.2.2 that constructs such as *proactiveness; aggressiveness* should explain *prospector* type of business strategy. Other constructs such *defensiveness,* and *futurity* should explain the defender type of business strategy. However, *analyzer* type of business strategy should be explained by analysis. Therefore the items that loaded on Factor1 and Factor2 should load on one factor (*defender*). Items that loaded on Factor3 and Factor4 should load on

one factor (*prospector*). Whereas, items that loaded on Factor 5 should load on one factor (*analyzer*).

As shown in Table (5.5) items that explained the constructs proactiveness and aggressiveness loaded on one factor. The items that explained the constructs defensiveness and futurity loaded on another factor. However, the items for analysis loaded on one factor. Therefore, Venkartaman's (1989b) instrument is reliable and valid to measure the construct of business strategy using five constructs representing the business strategic orientation. Moreover, this instrument is valid to measure three constructs representing Miles and Snow's typology of business strategy of *defender*, *prospector*, and *analyzer*.

Table 5.5: Factor loadings for business strategic types (defender (factor 1), prospector (factor 2) and analysis (factor 3))

Items	Factor 1	Factor 2	Factor 3	Loading
BSDEF1	0.737			**0.737**
BSDEF3	0.720			**0.720**
BSDEF4	0.738			**0.738**
BSDEF5	0.517			**0.517**
BSDEF6	0.709			**0.709**
BSDEF7	0.552			**0.552**
BSDEF8	0.523			**0.523**
BSDEF9	0.533			**0.533**
BSPRO1		0.754		**0.754**
BSPRO2		0.674		**0.674**
BSPRO4		0.519		**0.519**
BSPRO5		0.658		**0.658**
BSPRO6		0.625		**0.625**
BSPRO7		0.676		**0.676**
BSPRO8		0.660		**0.660**
BSANL1			0.768	**0.768**
BSANL2			0.807	**0.807**
BSANL3			0.645	**0.645**
BSANL4			0.870	**0.870**

5.4.2.3. Factor analysis for IS strategy

IS strategy was modeled in the first conceptualization of the model as one second-order construct that explained by *IS for aggressiveness, IS for proactiveness, IS for defensiveness, IS for futurity, IS for risk aversion*, and *IS for analysis*. In the second conceptualization of the research model, IS strategy was modeled as six first-ordered constructs. Then only one confirmatory factor analysis with varimax rotation was conducted to assess the underlying structure for the thirty five items of Chan et al.'s (1997) STROIS proposed to measure the IS strategy construct in both conceptualizations.

Table 5.6: Factor loadings for IS strategy (IS support for bank's aggressiveness, IS support for bank's proactiveness, IS support for bank's defensiveness, IS support for bank's futurity, IS support for bank's risk aversion, and IS support for bank's analysis)

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Loading
ISAGG1	0.783						**0.783**
ISAGG2	0.781						**0.781**
ISAGG3	0.719						**0.719**
ISAGG4	0.776						**0.776**
ISAGG5	0.811						**0.811**
ISAGG6	0.839						**0.839**
ISPRO1		0.860					**0.860**
ISPRO2		0.899					**0.899**
ISPRO3		0.767					**0.767**
ISPRO3		0.892					**0.892**
ISPRO5		0.790					**0.790**
ISPRO6		0.812					**0.812**
ISDEF1			0.763				**0.763**
ISDEF2			0.846				**0.846**
ISDEF3			0.711				**0.711**
ISDEF4			0.781				**0.781**
ISDEF5			0.758				**0.758**
ISDEF6			0.783				**0.783**
ISDEF7			0.827				**0.827**
ISDEF8			0.708				**0.708**
ISDEF9			0.763				**0.763**
ISFUT1				0.966			**0.966**

ISFUT2				0.958			**0.958**
ISFUT3				0.951			**0.951**
ISFUT4				0.955			**0.955**
ISFUT5				0.962			**0.962**
ISRSKA1					0.589		**0.589**
ISRSKA2					0.801		**0.801**
ISRSKA3					0.865		**0.865**
ISRSKA4					0.723		**0.723**
ISRSKA5					0.742		**0.742**
ISRSKA6					0.843		**0.843**
ISRSKA7					0.800		**0.800**
ISANL1						0.928	**0.928**
ISANL2						0.919	**0.919**

Table (5.6) above presents the loading factor for the IS strategy. The results in the table show that all the loading values (in the last column with all values in bold) are greater than the cut-off level (0.5), so they are acceptable. The result then, confirmed that the six factors of *IS for aggressiveness, IS for proactiveness, IS for defensiveness, IS for futurity, IS for risk aversion*, and *IS for analysis*, were significantly related to IS strategy.

5.4.2.4. Factor analysis for organizational performance

Performance construct was modeled in both conceptualization of the research model as one first order variable. Then one confirmatory factor analysis with varimax rotation was conducted to assess the underlying structure for the eight items proposed to measure the performance construct. Table (5.7) presents the loading factor for the performance construct. The results in the table show that all the loading values are greater than the cut-off level (0.5), so this measurement was acceptable.

Table 5.7: Factor loadings for organizational performance

Items	Factor 1	Loading
PERF1	0.857	**0.857**
PERF2	0.903	**0.903**
PERF3	0.871	**0.871**
PERF4	0.889	**0.889**
PERF5	0.874	**0.874**
PERF6	0.883	**0.883**
PERF7	0.832	**0.832**
PERF8	0.891	**0.891**

5.5. Summary

In this chapter the researcher reviews several aspects concerned with the preparation of the survey for statistical analysis. The internal reliability and validity of the research study scales has been assessed. In addition, factor analysis has been conducted for all the research study instruments to obtain their factor loadings, which in turn determine which items to be included for further analysis. For business strategy and knowledge strategy, two factor analyses were conducted in order to confirm the validity of their measurement to measure business strategy and knowledge strategy in both conceptualizations of the research study. Having assessed the validity and the reliability of the research measurements, next chapter will provide the data analysis and hypotheses testing.

Chapter Six

Data Analysis and Results

6.1. Introduction

The purpose of this study was to examine KMSA from the KMBS-SA and KMIS-SA perspectives. This study also investigated the impacts of both KMBS-SA and KMIS-SA on organizational performance. A KMSA model was developed and was tested for its ability to measure KMBS-SA and KMIS-SA, and their implications for organizational performance.

Chapter six is organized into eight sections. Section 6.1 is the introduction of the chapter. Section 6.2 provides the descriptive statistic of the study sample. Section 6.3 presents the descriptive statistic of the dependent variable (organizational performance) and the independent variables (knowledge strategy, business strategy, and IS strategy). Section 6.4 focuses on the descriptive results concerning the current situation in the GCC banks regarding KMBS-SA and KMIS-SA. This section is divided into nine subsections providing descriptive results on the business managers' perceptions of the responsibilities for developing and managing KM in the banks, the roles of business managers in relation to KM, the roles of IT managers in relation to KM, the banks' objectives for KMBS-SA, the bank's assumption on the role of IT and IS strategy in the KM and KMIS-SA, the relationship between KM managers and business managers, the relationship between the KM manager and IT managers, the relationships between knowledge strategy and business strategy, and the relationship between knowledge strategy and IS strategy. The

focus of section 6.5 is on investigating the relationship between knowledge strategy, business strategy, IS strategy and their impacts on the organizational performance. Section 6.6 discusses the results of testing the hypotheses regarding the KMBS-SA and KMIS-SA. Section 6.7 provides the results of testing hypotheses regarding the strategic alignment between different business strategic types and two profiles of knowledge strategy and the alignment between six IS strategic orientations and two profiles of knowledge strategy. Finally, section 6.8 provides a summary for the chapter.

6.2. Descriptive statistics of the study sample

The questionnaires were sent to 106 banks. The respondents were business managers (Group A), and IT managers (Group B) as discussed in Section 4.5. Ten questionnaires were returned as undelivered, because the managers were no longer at their positions. Twenty six cases had many missing response items and thus were considered ineligible. Responses from 70 banks (70 Questionnaire A, and 70 Questionnaire B) were returned in a form eligible for the analysis. The overall response rate for this study is 66%. This is relatively high, since the respondents are managers who could be too busy to answer the questionnaires. However, the effort put in by the author to get the responses may have attributed to the high rate of return as discussed in Section 4.6. Tables (6.1), Table (6.2) and Table (6.3) below provide a general summary of the characteristics of the participants from the GCC banks who responded to the survey.

Table 6.1: Survey response by country

Country	Kingdom of Bahrain KB	United Arab Emirates UAE	Kingdom of Saudi Arabia KSA	Oman	Kuwait	Qatar
Number of returns	14	24	16	3	9	4
% of total return	20%	34%	23%	4%	13%	6%

Table (6.1) demonstrates that most of the respondents were from UAE and KSA as they comprised 57 % (34% and 23%) of the total number of respondents followed by the Kingdom of Bahrain which represented 20% of the total number of respondents. Oman, on the contrary, has the smallest numbers of banks in the GCC (see Section 4.2, Table (4.1) and Table (4.2)) and hence, accounted for just 4% of the total number for respondents.

Table 6.2: Survey response by bank's type

Type of bank	Commercial banks	Islamic banks	Investment banks	Specialized bank
Number of returns	30	18	12	10
% of total return	43%	26%	17%	14%

Table (6.2) presents the number and percentage of the different types of banks that participated in the study. As seen in Table (6.2), the commercial banks have the largest representation (43%), followed by Islamic banks which represented (26%) of the total number of participants. However, the investment and specialized banks have shown a low

participation as they accounted for 17% and 14%, respectively, of the total number of participants.

Table (6.3) presents results regarding the positions of the participants in Group A and Group B. The result in the table show that 43% of the participants from Group A were middle and lower level managers. Moreover, the results show that the CEOs represented 27% of the participants in this group.

Table 6.3: Survey response by respondent's position

Total number of completed questioners returned						
Questionnaire A (KMBS-SA) Group A			Questionnaire B (KMIS-SA) Group B			
CEO	Executive Managers	Middle and Low level Managers	CIO	Director of IT or Head of IT	Specialist in the IT Department	CKO or KM Managers
19	21	30	12	30	28	0
27%	30%	43%	17%	43%	40%	0%

One important point observed from the result in Table (6.3) was the lack of participation of CKO or KM managers. The results show that 0% of the participants from Group B were in the positions of CKO or KM manager. The result also shows that the CIO represented just 17% of the total participants from Group B. However, the directors of IT or Head of IT showed a high participation as they account for 43% of the total number of the participants in this group.

6.3. Descriptive results

The descriptive results in the current research were used to provide an overall picture about the current situation in the GCC banking sector regarding the KMBS-SA and KMIS-SA. Admittedly this is not a sophisticated statistical test, but as the researcher's interest was in the percentage of responses to the questions, sophisticated statistical tests were not required. However, the descriptive result can provide some indications about the KMBS-SA and KMIS-SA in the banking sector in the GCC countries.

The first section in Questionnaire A and Questionnaire B was included to investigate KMBS-SA and KMIS-SA. The first section in Questionnaire A covered five topics: (a) perceptions of the responsibilities for developing and managing KM in the bank, (b) perceptions of the bank's objectives for KMBS-SA, (c) perceptions of business managers on their roles in relation to KM, (d) the relationship between business manager and KM manager, and (e) the relationship between business strategy and knowledge strategy. Conversely, the first section in Questionnaire B cover five topics: (a) perceptions of the responsibilities for developing and managing KM in the bank, (b) bank's assumption regarding the role of IT and IS strategy in KMIS-SA, (c) perceptions of IT managers on their roles in relation to KM, (d) the relationship between IT manager and KM manager, and (e) the relationship between IS strategy and knowledge strategy.

The tables and figures presented in sections 6.3.1 to 6.3.9, show the percentage of responses in the various categories for each statement.

6.3.1. The business manager's perception of the responsibilities for developing and managing KM in the GCC banks

The business managers at the participating banks were asked to identify who among the CEO, CIO, CKO, Director of IS Function, Senior functional manager, staff member, or other, was responsible for three of the main activities of KM*: initiating KM in the bank, designing and creating the bank's knowledge infrastructure,* and*, designing and implementing KM system.* The results in Table (6.3) revealed that there were no CKO or KM managers among the participating banks. However, the results in Figure (6.1) show that only four percents of the respondents revealed that the CKO is responsible for initiating KM in the bank and a minimum percentage of 2% of them demonstrated that the CKO is responsible for designing and implementing KM system in the banks. The low percentages on this result may come from the belief of some managers in GCC that IT managers can be considered as CKO or KM manager if they tackle the responsibilities of managing KM in the bank.

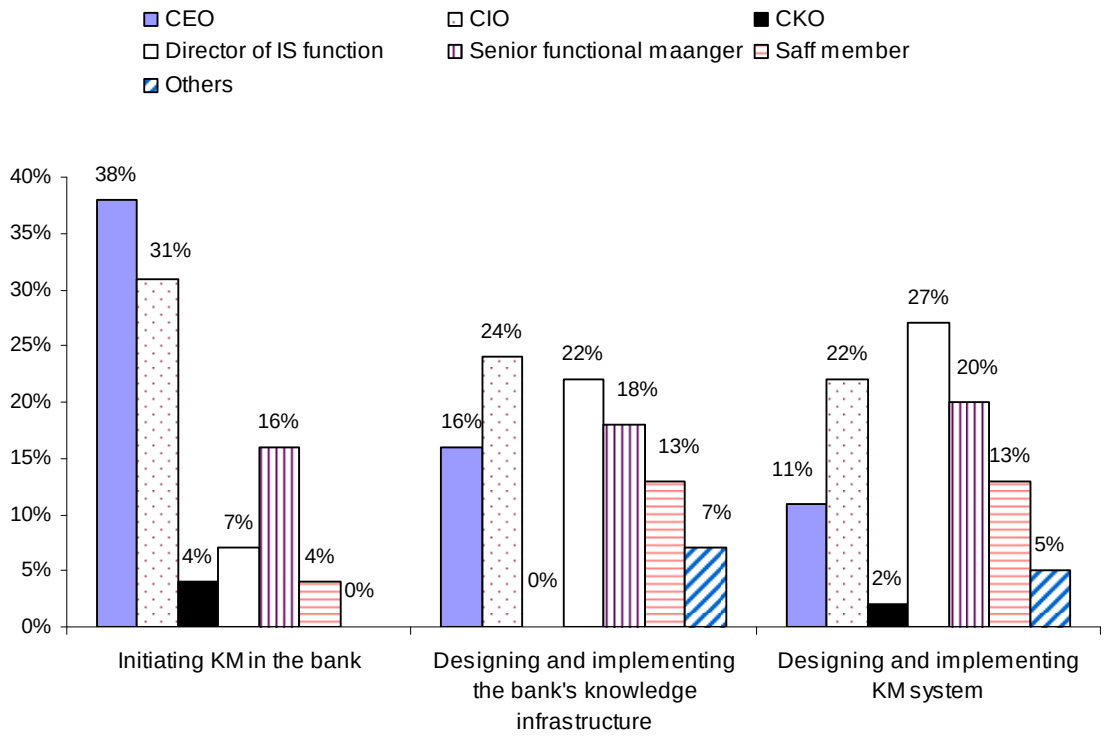


Figure 6.1: Business managers' perception of the responsibility for developing and managing KM in the GCC banks

On the other hand, the results show that IT managers (CIOs, and director of IS function) are playing an important role in initiating KM in the banks as well as undertaking technical activities related to KM. The results show that 31% of the respondents believe that the CIOs are responsible for initiating the KM in the banks and 7% believe that it is the responsibility of Director of the IS function. CIOs are also believed by 24% of the respondents to be responsible for designing and implementing the bank's knowledge infrastructure and by 22% of the respondents for designing and implementing the KM system in the bank. However, the directors of the IS function are believed by 22% to have the responsibility of designing and implementing the bank's knowledge infrastructure and

27% of the respondents believed that the directors of the IS function are responsible for designing and implementing KM system.

In contrast, the results in Figure (6.1) revealed that 38% of the business manager believed that the CEO has the responsibility of initiating KM in the bank. However the results show that the CEOs had little responsibility for technical activities. CEOs are believed by 16% of the respondents to be responsible for designing and implementing KM infrastructure and by only 11% of the respondents to be responsible for designing and implementing KM system.

6.3.2. The roles of the business managers in relation to KM

The results in section 6.3.1 revealed that the CEOs have the responsibility for initiating KM in the participating banks and that their responsibility for the technical activities related to KM was low. To further enhance the above findings, the business managers were asked about the importance of their involvement in five strategic activities related to the initiation and controlling of KM and knowledge strategy in the GCC banks. These activities necessitate the cooperation between business and KM people, for example, providing the SWOT and K-SWOT analysis and identifying the knowledge and strategic gaps which are essential in planning knowledge strategy.

The results illustrated in Table (6.4) show that more than half of the respondents (60%) believe that business managers have a very important involvement in identifying and

providing the SWOT analysis of the bank in terms of K-SWOT. While both strategic and knowledge gaps are important in driving business strategy and knowledge strategy toward achieving the bank's objectives and goals (Zack, 2002a, b), the results indicated that business managers have an important involvement in identifying just the strategic gaps.

Table 6.4: Roles of the organization's management board in relation to KM in GCC banks

Items	Not important	Quite important	Very important
	%	%	%
Provide the direction to choose, implement and overcome resistance to the knowledge strategy	42%	11%	47%
Measuring the value of knowledge and KM practices to the bank	33%	31%	36%
Analyze the Strength, Weakness, Opportunities, and Threats of the organization (SWOT) in term of knowledge resources (KSWOT)	20%	20%	60%
Derive the difference between what the organization knows and what it must know in order to achieve what it wants (knowledge-gap)	33%	24%	42%
Derive the difference between what the organization can do and what it wants to do (strategic gap)	13%	24%	62%

While 62% of the GCC business managers have an important involvement in identifying the strategic gaps, only 42% of them believed that it is important for them to be involved in identifying the knowledge gap. Nevertheless, the results indicate that a high percentage of the business managers (47%) believed that they have an important involvement in providing the direction to choose, implement, and overcome resistance to the knowledge strategy. However, only a third (36%) of the GCC managers acknowledged that they have an important involvement in measuring the value of knowledge and KM practices in the bank.

6.3.3. The roles of the IT managers in relation to KM

The IT managers (CIO, IT directors or Head of IT) were asked to identify to what extent their involvement in five technical activities related to the initiation and controlling of KM and knowledge strategy, is important. These activities are related to providing strategic and technical knowledge architecture, infrastructure, resources, capabilities and skills in the bank. Thus, these activities necessitate the cooperation between the IT and KM people.

The results exhibited in Table (6.5) revealed that the involvement of the IT manager in the technical activities is important. A large number (47 % and 48%) of the IT managers in the GCC countries believed that they have an important involvement in finding out the best way (tools, software, and hardware) to transfer and disseminate knowledge to the bank's groups and individuals, and in identifying the characteristics of the existing technologies that could influence the adoption of KM, respectively.

Table 6.5: The roles of IT managers in relation to KM in GCC banks

Item	Not Important	Quite Important	Very Important
	%	%	%
Finds out the best way to transfer and disseminate knowledge to the bank's groups and individuals	36	17	47
Provides a strategic framework (technology infrastructure, architecture and tools) for KM in the bank	45	23	32
Tailors the IT usage to the needs of the business to support KM	50	18	32
Leads the KM project with a profound vision about the banks technical and strategic resources	45	11	43
Identifies the characteristics of the existing technologies that could influence the adoption of KM	33	20	48

However, the results show that around half of the respondents believed that the involvement of the IT managers in the strategic activities related to KM is not important. For example, 45% of the respondents believed that their involvement in providing a strategic framework for KM in the bank is unimportant. Moreover, 50% and 45% of the respondents indicated that their involvement in tailoring IT usage to the needs of the business strategy to support KM and in leading the KM project with a profound vision about the bank's technical and strategic resources, respectively, is unimportant.

6.3.4. Bank objectives in linking business strategy and knowledge strategy

The business managers were asked about the degree to which they agreed that the following objectives: *forecasting the strategic knowledge resource, capabilities and skills needed to support the business strategy, sustaining the bank's competitive advantage,*

enhancing the effectiveness of the bank's operations, optimizing the planning and *design of the bank's future*, were set by the banks in the GCC countries for the alignment between knowledge strategy and business strategy. The results are depicted in Table (6.6).

Table 6.6: The banks' objectives in linking business strategy and knowledge strategies

Items	Disagree (%)	Neutral (%)	Agree (%)
Forecasting the strategic knowledge resource, capabilities and skills needed to support the business strategy	15	19	66
Sustaining the bank's competitive advantage	36	23	51
Enhancing the effectiveness of the bank's operations	13	23	53
Optimizing the planning and design of the bank's future	26	23	58

Unexpectedly, the majority of the business managers in the GCC banks agreed that all the above objectives have been set for the KMBS-SA in their banks. Thus, 66% were agreed that "*forecasting the strategic knowledge resources, capabilities and skills needed to support the bank's business strategy*" is one of the objectives set by the bank for KMBS-SA. Moreover, 58% of the participants agreed that "*optimize the planning and design of the bank's future*" is also one of their objectives in KMBS-SA. In addition, around half of the participants (51% and 53%) believed that sustaining the bank's competitive advantage and enhancing the effectiveness of the bank's operations are among the objectives set by the bank for KMBS-SA.

6.3.5. Bank assumptions regarding the role of IT and IS strategy in KM and KMIS-SA

The IT managers were asked about the degree to which they agreed with the three assumptions set regarding the importance of IT and IS strategy in KM and KMIS-SA. These assumptions include: *IT is a powerful tool for creating, transferring, and sharing knowledge*; *IS strategy forms the design of the bank KM systems*, and *IS strategy provides the technical capabilities and skills needed by the knowledge strategy.*

Table 6.7: Bank's assumption regarding the role of IT and IS strategy in KMIS-SA

Items	Disagree (%)	Neutral (%)	Agree (%)
IT is a powerful tool for creating, transferring, and sharing knowledge	44	19	37
IS Strategy forms the design of the bank's KM systems	39	24	37
IT provides technical resources, capabilities and skills needed by the knowledge strategy	43	11	45

The results in Table (6.7) show that the IT managers have certain technical perception or views of the roles of IT and IS strategy in KM and KMIS-SA. Thus, the IT managers believe that the IT and IS strategy mostly play a role in the technical activities related to the KM and KMIS-SA. This perception is indicated by the disagreement of 39% of the GCC IT managers with the assumption that "*IS strategy form the design of the bank's KM system*". Moreover, while the results in Section 6.4.3 revealed that the IT managers have an important role in finding the best way to transfer and disseminate knowledge to the bank's groups and individuals, just 37% of the IT manager believed that "*IT is a*

powerful tool in creating, transferring and sharing knowledge". In contrast, the results show that 45% of the IT managers were agreed that *"IT provides technical resources, capabilities and skills needed by the knowledge strategy"*.

6.3.6. The relationship between KM managers and business managers in the GCC banks

As none of the respondents were in a position of CKO or KM manager (see Section 6.2), in this section the IT managers (CIOs, Directors of IT, or Heads of IT) were considered as the KM managers. Thus, business managers answered this part of questionnaire based on their relationship with the IT managers undertaking the responsibility of KM in the bank. Table (6.8) shows that most of the business managers agreed that there were strong relationships between the business managers and the KM managers. Hence, the respondents are agreed that KM managers have a good understanding of the business strategy (48%), that business managers have a good understanding of KM (46%), and that both business managers and KM managers are satisfied with their ability to communicate and negotiate with each other (50%). Most important, 50% of the GCC managers are agreed that they share a vision of how KM could support the bank's business strategy. Moreover, 47% of them are agreed that the business managers and KM managers are at the same senior executive position in their banks.

On the other hand, 44% of the business managers are agreed that they are involved in formulating the knowledge strategy at departmental level. Nevertheless, only 33% of the

respondents are agreed that KM managers are involved in formulating the business strategy in the bank.

Table 6.8: Perceptions regarding the relationship between KM managers and business managers in GCC banks

Items	Disagree (%)	Neutral (%)	Agree (%)
Business managers have a good understanding of KM	27	26	46
KM managers have a good understanding of the business strategy	20	31	48
Business managers are involved in formulating knowledge strategy at departmental level	23	33	44
KM managers are involved in formulating business strategy at departmental level	30	36	33
KM and business managers share a vision of how KM will support the business strategy	16	34	50
KM and business managers are satisfied with their ability to communicate and negotiate with each other	29	21	50
The bank places responsibility for business manager and KM manager within the same senior executive position	28	24	47

6.3.7. The relationship between KM Managers and IT managers

The IT managers were asked about the relationship between the KM manager and the IT manager. With the absence of CKOs or KM managers in the participating banks, it was noticed that the IT managers responded to some items in this part while left some other items blank. Also, it was noticed that the IT managers responded to the items in this part as if they were responsible for KM in the bank. That is, they responded as if they are both IT managers and KM managers. Hence not all the questions were answered by the

respondents as some were inappropriate to their situation. Item 5 and item 7, for example; were left unanswered by the respondents as these items are related to both KM and IT managers: "*KM and IT managers share a vision of how IT will support the KM in the bank*" and "*KM and IT managers are satisfied with their ability to communicate and negotiate with each other*". Moreover, the respondents responded to either item 1 or item 2 but not both of them. Therefore, the results of item 1 "*IT managers have a good understanding of the KM and knowledge strategy*" and item 2 "*KM managers have a good understanding of the IT and IS strategy in the bank*" were summed into one result point "*IT managers have a good understanding of the KM, knowledge strategy, IT and IS strategy in the bank*" as shown in Table (6.9). Moreover, the results of items 3 "*IT managers are involved in formulating KM strategy at departmental level*" and item 4 "*KM managers are involved in formulating IS strategy at departmental level*" were also summed in one result for" *IT manager are involved in formulating both IS strategy and KM strategy at a departmental le*vel". Table (6.10) shows the results of the perception of the IT manager regarding the relationship between KM manager and IT manager in the GCC banking sector.

The results in Table (6.9) demonstrate that most of the respondents were agreed that there are strong relationships between the role of the IT managers and the responsibilities of the KM managers. The results showed that 52% of the IT managers agreed that they have a good understanding of KM and knowledge strategy. Moreover, 45% of the IT managers agreed that at their banks all large KM development project have the IT manager's active

sponsorship in the bank. Nevertheless, 44% of the respondents disagreed that IT managers are involved in formulating the knowledge strategy at departmental level.

Table 6.9: Perception regarding the relationship between KM Manager and IT manager in GCC banks

Items #	***Items***	Disagree	Neutral	Agree
		(%)	(%)	(%)
1	IT managers have a good understanding of the KM and knowledge strategy	25	10	40
2	KM managers have a good understanding of the IT and IS strategy in the bank	10	3	12
	IT managers have a good understanding of the KM, knowledge strategy, IT and IS strategy in the bank	**35**	**13**	**52**
3	IT managers are involved in formulating knowledge strategy at departmental level	28	7	30
4	KM managers are involved in formulating IS strategy at departmental level	26	8	11
	IT manager are involved in formulating both IS strategy and knowledge strategy at a departmental level	**44**	**15**	**41**
5	KM and IT managers share a vision of how IT will support the KM in the bank	-	-	-
6	All large KM development projects have IT managers' active sponsorship and leadership	**44**	**11**	**45**
7	KM and IT managers are satisfied with their ability to communicate and negotiate with each other	**-**	**-**	**-**

6.3.8. The alignment between business strategy and knowledge strategy in the banks

Based on the previous results in sections 6.3.1, 6.3.2, 6.3.4, 6.3.6 and 6.3.7, it was expected that the business strategy and knowledge strategy would be aligned in most of the banks in the GCC countries. However, the results in Table (6.10) demonstrate that just 40% of the respondents believed that their business strategy is aligned with the knowledge strategy pursued by their bank. Nevertheless, around half of the respondents believed that both business strategy and knowledge strategy are equally important in their banks.

Most importantly, the results show that 76% of the respondents were agreed on the vital importance of the KMBS-SA for the long-term survival of their banks. Despite the consideration of the strategic importance of the KM, 49% of the respondents revealed that they had prepared the business strategy first and then they prepared knowledge strategy to reflect the objectives of the business strategy.

Table 6.10: Relationship between business strategy and KM strategy

Items	Disagree	Neutral	Agree
	%	%	%
Business strategy and knowledge strategy are aligned in my bank	27%	33%	40%
Business strategy and knowledge strategy are equally important	16%	33%	51%
knowledge strategy and Business strategy are prepared at the same time	49%	31%	20%
Business strategy and bank context is considered to be critical to the success of a KM initiative	29%	31%	40%
The business strategy of the bank outlines the processes, tools and infrastructure required for knowledge to flow effectively	29%	31%	40%
The alignment of business strategy and knowledge strategy is vital for long-term survival of the bank	16%	9%	76%

6.3.9. The alignment between IS strategy and knowledge strategy in the bank

The IT managers in the GCC banks were asked about the relationship between the knowledge strategy and IS strategy pursued by their banks. The results in Table (6.11) show that there is a misconception about the difference between IS strategy and knowledge strategy among the IT managers in the GCC banking sector. This is indicated by the 48% agreement among the IT managers on considering IS strategy and knowledge strategy as one strategy. However, more than half (54%) of the respondents revealed that their IS strategy is aligned with knowledge strategy and that both of them are equally important in their bank (48%). Moreover, 37% of the respondents were agreed that knowledge strategy and IS strategy are prepared at the same time.

Table 6.11: Relationship between IS strategy and knowledge strategy

Items	Disagree (%)	Neutral (%)	Agree (%)
IS strategy and knowledge strategy are aligned in my bank	26	20	54
IS strategy and knowledge strategy are the same	34	17	48
IS strategy and knowledge strategy are equally important	37	14	48
Knowledge strategy and IS strategy are prepared at the same time	33	30	37

6.4. Investigating the relationships between knowledge strategy, business strategy, IS strategy and the organizational performance

Prior to investigating KMSA and testing the hypotheses regarding KMBS-SA and KMIS-SA, the author believes that it is very important to check the relationship between knowledge strategy and business strategy and the relationship between knowledge strategy and IS strategy. In addition, the impact of knowledge strategy and business strategy and IS strategy on organizational performance also needs to be examined. The result of this investigation can provide some evidence about the KMSA both the KMBS-SA and KMIS-SA. Although, the existence of a relationship between knowledge strategy and business strategy does not mean that there is a strategic alignment between them, it is a good indication of the existence of an alignment between them. However, if there is a lack of relationship between knowledge strategy and business strategy, then the possibility of the existence of strategic alignment is weak.

To test the relationship between knowledge strategy and business strategy and the relationship between knowledge strategy and IS strategy, the data collected based on the first model conceptualization, which is targeted to investigate the KMBS-SA and KMIS-SA, was used. This is done because investigating the alignment between knowledge strategy and business strategy can give an indication of the alignment between certain types of knowledge strategy and certain typology of business strategy. Multiple regressions were conducted to determine the best linear combination of business strategy and IS strategy for predicting knowledge strategy and the results are presented in Table (6.12). Another multiple regressions were conducted to determine the linear combination of business strategy, knowledge strategy and IS strategy for predicting organizational performance and the result is presented in Table (6.13).

Table 6.12: Results of multiple regression analysis for business strategy and IS strategy vs. knowledge strategy

Independent variable (s)	Dependent variable Knowledge strategy
	R^2 = 0.292 ***F= 15.256 ******
Business strategy	**β= 0.560** **t= 5.446 *** **
IS strategy	**β= -0.004** **t= -0.038**

*** $p < 0.001$

The relationship between knowledge strategy and business strategy and that between IS strategy and knowledge strategy were assessed and the results are shown in Table (6.13). Knowledge strategy was in this case considered as the dependent variable, and business

strategy and IS strategy were entered as independent variables. The results in Table (6.13), have demonstrated that business strategy positively and significantly ($p < 0.001$) affected knowledge strategy ($\beta = 0.560$), and that IS strategy has no significant effect on the knowledge strategy ($\beta = -0.004$). The adjust *R* squared value was 0.292 which indicates that business strategy explain 29.2% of the total variance of knowledge strategy.

Table 6.13: Result of multiple regression analysis for knowledge strategy, business strategy, and IS strategy vs. the organizational performance

Independent variable (s)	Dependent variable Performance
	R^2 =0 .524 ***F=26.352 ****
Knowledge strategy	**β= 0.420** **t= 4.193 *****
Business strategy	**β= 0..409** **t= 4.040*****
IS strategy	**β= 0.035** **t= 0.411**

*** $p < 0.001$

Table (6.14) shows that business strategy and knowledge strategy contribute positively ($p < 0.001$, $p < 0.001$) to performance and explain 52.4 % of its total variance (adjusted $R^2 = 0.524$). According to Cohen (1988), this is a large effect. The beta weights, presented in Table (6.14), suggest that knowledge strategy contributes most to predicting organizational performance (0.420), and that business strategy also contributes to this prediction (0.409). However, IS strategy as indicated by the result ($\beta = 0.035$) has no

contribution to the organizational performance in the GCC banking sector. From the above discussion it can be concluded that business and knowledge strategy positively and significantly affect the organizational performance and that IS strategy does not affect the performance.

6.5. Hypotheses regarding KMBS-SA and KMIS-SA and their contribution to the organizational performance

The first two hypotheses were proposed to investigate the KMBS-SA and KMIS-SA and their impact on the organizational performance as discussed in Section 3.3.1 and Section 3.3.2:

H1: Alignment between business strategy and knowledge strategy in the banking sector of GCC countries is associated with better performance

H2: Alignment between IS strategy and knowledge strategy in the banking sector of GCC countries is associated with better performance

Hypothesis H_1 states that if there is an alignment or fit between the knowledge strategy pursued by banks in the GCC countries and their business strategy, then this alignment makes a contribution to the organizational performance. Hypothesis H_2 states that if there is an alignment or fit between the knowledge strategy pursued by the banks in the GCC countries and their IS strategy, this alignment makes a contribution to the organizational performance.

It was mentioned previously in section (4.7), each perspective of alignment calls for a particular type of data analysis. Thus the set of data was analyzed in different ways depending on the alignment approached adopted as shown in the following sections. Some approaches were assessed by computing zero-order and partial product-moment correlation coefficients for the business strategy, IS strategy, knowledge strategy and the organizational performance constructs. Others were obtained by forming sub-samples based on medians (subgroup analysis) and using regression.

6.5.1. Assessment of the moderation effect of knowledge strategy on the contribution of business strategy and IS strategy to the organizational performance

The first analysis was done to investigate the moderation effect of knowledge strategy on the contribution of business strategy and IS strategy to the organizational performance. The aim of evaluating the moderation effect is to assess if knowledge strategy changes the business strategy to the organizational performance causal relationship or the IS strategy to the organizational performance causal relationship. However, if the business strategy to the organizational performance causal effect or the IS strategy to the organizational performance causal effect, reached zero when knowledge strategy took on a particular value, then knowledge strategy will have a complete moderation effect. Otherwise, knowledge strategy will have a partial moderation effect.

The moderation effect of knowledge strategy was investigated from two perspectives: *the strength of moderation* and *the form of moderation*, as discussed in section 4.6. Section 6.5.1.1 and section 6.5.1.2 present the results for these two perspectives of moderation.

6.5.1.1. Moderation effect of knowledge strategy (strength perspective)

The strength perspective of moderation approach of alignment hypothesizes that the contribution of business strategy or IS strategy to the organizational performance differs across different levels of knowledge strategy (Venkatraman, 1989a). Thus, it investigates if the strength of the relationship between business strategy or IS strategy and the organizational performance varies across different levels of the moderator (knowledge strategy). This was done by calculating the correlation of business strategy and IS strategy with the organizational performance for two sub-samples based on the median of knowledge strategy score (High-knowledge strategy banks and Low-knowledge strategy banks) as discussed in section 4.2.1.1.

Table 6.14: Moderation effect of knowledge strategy (strength perspective)

Strategy	**Correlation with Performance**	
	High levels of knowledge strategy	**Low levels of knowledge strategy**
	n = 33	*n = 37*
IS strategy	**0.087 (0.629)**	**0.354***
Business strategy	**0.743*****	**0.151 (0.374)**

Note: High and Low knowledge strategy: based on median knowledge strategy score
* *Correlation is significant at the 0.05 level*
*** *Correlation is significant at the 0.001 level*

As shown in Table (6.14), while business strategy is positively associated with the organizational performance in the High-knowledge strategy banks (r=0.743, p=0.000), this relationship is not significant in the Low-knowledge strategy banks (r=0.151, p=0.374). This indicated that the impact of business strategy on the organizational performance varies with different levels of knowledge strategy. On the other hand, IS strategy is positively associated with performance in the Low-knowledge strategy group of banks (r=0.354, p=0.032). However, IS strategy has no impact on the organizational performance in the High-knowledge strategy banks (r=0.087, p=0.629). These results indicate that knowledge strategy has a moderation effect on business strategy and IS strategy.

6.5.1.2. Moderation effect of knowledge strategy (form perspective)

The form of moderation approach hypothesizes that the organizational performance outcome is jointly determined by the interaction of the business strategy or IS strategy and knowledge strategy. The moderator approach proposed by Bergeron et al.(1999) and Venkatraman (1989a) was applied to measure the form perspective of moderation alignment. According to this method, moderation can be tested by computing the correlation between (knowledge strategy * business strategy) or (knowledge strategy * IS strategy) and the organizational performance after partialing out the linear and quadratic effects of their two components (knowledge strategy, business strategy, knowledge strategy^2 and business strategy^2) or (knowledge strategy, IS strategy, knowledge strategy^2 and IS strategy^2) to establish the presence or absence of multiplicative effects and

multiplicative evidence (see section 4.7.1.2). The product of (knowledge strategy * business strategy) or that of (knowledge strategy * IS strategy) should have an effect on the organizational performance, if knowledge strategy is aligned with business strategy or IS strategy, respectively.

The results presented in Table (6.15) demonstrate that the interaction of knowledge strategy and business strategy (knowledge strategy*business strategy) and the interaction between knowledge strategy and IS strategy (knowledge strategy*IS strategy) has an impact on the organizational performance. Business strategy itself has a strong influence on performance ($r=0.652$, $P<0.01$). However, business strategy can contribute more to the organizational performance in conjunction with knowledge strategy. The results show that the interaction of knowledge strategy and business strategy (knowledge strategy * business strategy) has a strong influence on the organizational performance ($r=0.748$, $P<0.001$). IS strategy on the other hand, by itself has no effect on performance ($r=0.145$), however in conjunction with knowledge strategy this effect is significant ($r=0.535$, $p< 0.001$).

The results in this section confirm the moderation effect of knowledge strategy on the contributions of business strategy and IS strategy towards the organizational performance. The results also reveal that KMBS-SA and KMIS-SA affected organizational performance. The effect of KMBS-SA and KMIS-SA on the organizational performance has been revealed from both the strength and form perspectives of the moderation approach of alignment.

Table 6.15: Moderation effect of knowledge strategy (form perspective)

Strategy	**Correlation with performance**	
Knowledge strategy	0.652**	
Business strategy	0.650**	
IS strategy	0.145 (0.364)	
Knowledge strategy fit variables	**Correlation of knowledge strategy fit variables with performance**	
	Zero order	**Partial**
Knowledge strategy * Business strategy	0.748***	0.020 (0.874)
Knowledge strategy * IS strategy	0.535***	-0.213 (0.086)

Note: Controlling for linear (for knowledge strategy, business strategy, or IS strategy) and quadratic (knowledge strategy ^{2}, business strategy^2 or IS strategy^2) effects of the fit variable's original components

** *Correlation is significant at the 0.01 level*

*** *Correlation is significant at the 0.001 level*

6.5.2. Assessment of the mediation effect of knowledge strategy on the business strategy and IS strategy contribution to the organizational performance

To measure the alignment using the mediation approach of alignment, knowledge strategy is viewed as intervening between a predictor (business strategy or IS strategy) and the organizational performance. The mediation approach of alignment tests whether business strategy and/or IS strategy play the key roles in catalyzing knowledge strategy opportunities toward the attainment of organizational objectives or if it is knowledge strategy that plays that role (Section 4.7.2). One way to assess knowledge strategy's

intervening effect is by calculating the partial correlations of business strategy or IS strategy with the organizational performance, using knowledge strategy as a control variable. The results of the partial correlation are then compared with the zero-order coefficient of the correlations between the business or IS strategy and the organizational performance. In other words, comparing the indirect effects of business strategy or IS strategy on the organizational performance (via knowledge strategy) versus the total effects of these variables on the performance (section 4.7.2).

The results in Table (6.16) indicate that business strategy has a significant direct relationship with performance ($r=0.650$, $p<0.001$) and knowledge strategy has a significant direct relationship with performance ($r=0.652$, $p<0.001$), but IS strategy is not significantly related to performance ($r=0.145$, $p<0.219$). The results however, show that the strong correlation between business strategy and performance decreases but remains high and significant ($r=0.454$; $p<0.001$) when the intervening effect of knowledge strategy is considered. Business strategy thus, has both a direct and indirect effect, through knowledge strategy, on a bank's performance. The results moreover, show that effect of business strategy on the organizational performance has been decreases but remain high and significant ($r=0.445$, $p<0.001$), when the intervening effect of both knowledge strategy and business strategy is considered (following Bergeron, et al., 1999). Thus, the impact of business strategy on performance when adding the intervening of both knowledge strategy and IS strategy as a controlling variables is less by small fraction ($0.454 - 0.445 = 0.09$) than the impact of business strategy on the organizational performance when adding the intervening of just knowledge strategy. Hence, the

mediation effect on the impact of business strategy on the organizational performance is explained by knowledge strategy and not IS strategy.

Table 6.16: The mediation effect of knowledge strategy on organizational performance

Strategy	**Correlation with Performance**			
	Indirect effect (Controlling for)			**Direct effect**
	Knowledge strategy	**Both knowledge strategy and business strategy**	**Both knowledge strategy and IS strategy**	
	n = 70			
IS strategy	**0.121 (0.361)**	**0.050 (0.683)**		**0.145 (0.230)**
Business strategy	**0.454****	**-**	**0.445***	**0.650****
Knowledge strategy	**-**	**-**	**-**	**0.652****

* *Correlation is significant at the 0.05 level*
** *Correlation is significant at the 0.01 level*

On the contrary, IS strategy as indicated by the results is uncorrelated with performance, and controlling the correlation for knowledge strategy does not change this result ($r=0.121$, $p=0.361$). In other words, there is neither a direct nor indirect (through knowledge strategy) effect of IS strategy on the organizational performance. Thus, knowledge strategy mediates the effect of business strategy on the organizational performance but it does not mediate the effect of IS strategy on the organizational performance.

The mediation effect of knowledge strategy was also calculated using Baron and Kenny's (1986) method (see Section 4.7.2). Accordingly, three regression equations have been applied to investigate the role of knowledge strategy as a mediator. The first regression equation involves regressing knowledge strategy on the business strategy or IS strategy. The second equation involves the regression of the organizational performance and business strategy or IS strategy, while the third equation involves the regression of the organizational performance and both business strategy or IS strategy, and, knowledge strategy. The business strategy or IS strategy must be shown to affect the knowledge strategy in the first equation, and they must be shown to affect the organizational performance in the second equation. Knowledge strategy, moreover, must affect the organizational performance in the third equation. The mediation effect of knowledge strategy on the impact of business strategy or IS strategy on the organizational performance is considered when the effect of business strategy or IS strategy on the performance is shown to be less in the third equation than in the second equation. The results of this approach are presented in Table (6.17) and Table (6.18), respectively.

The results in Table (6.17) can be explained based on the three regression equations mentioned previously in this section. The beta weights, presented in Table (6.17), suggest that business strategy contributes to predicting knowledge strategy (β=0.650, t=7.057) in first regression equation, and that business strategy contributes to predicting organizational performance (β=0.652, t=7.094) in the second regression equation. Moreover, the results in Table (6.18), have demonstrated that business strategy positively and significantly ($p < 0.001$) affected organizational performance in the third equation

(β=0.415; t=4.172). The contribution of business strategy in the third equation is less than the contribution of business strategy on the organizational performance in the second equation (β=0.415 < β=0.652). Since the effect of business strategy on performance in the third equation is decreased but it was not zero, then knowledge strategy can be considered having a partial meditation effect on the business strategy performance relationship.

Table 6.17: Baron and Kenny (1986) approach for investigating the mediation effect of knowledge strategy on the business strategy-performance relationship

Moderation Path	**Independent variables**	**Dependent variables**	
		Knowledge strategy	**Performance**
Regression equation 1	Business strategy	R^2 =0.423 F = 49.796*** β = 0.650 *** t = 7.057	
Regression equation 2	Business strategy		R^2 = 0.425 F= 50.325 *** β= 0.**652** *** t = 7.094
Regression equation 3	Knowledge strategy		R^2 = 0.530 F= 39.939 ***
			β = 0.420 *** t = 4.218
	Business strategy		β= 0.**415** *** t = 4.172

*** p < .001

Table 6.18: Baron and Kenny (1986) approach for investigating the mediation effect of knowledge strategy on the IS strategy-performance relationship

Moderation Path	**Independent variables**	**Dependent variables**	
		Knowledge strategy	**Performance**
Regression equation 1	IS strategy	R^2 =-0.006 F = 0.602 β = 0.094 t = 0.776	
Regression equation 2	IS strategy		R^2 = 0.007 F= 1.467 β= 0.145 t = 1.211
Regression equation 3			R^2 = 0.416 F= 25.527 ***
	Knowledge strategy		β = 0.644 *** t = 6.969
	IS strategy		β= 0.085 t = 0.919

*** p<0.001

On the other hand, the beta weights, presented in Table (6.19), suggest that IS strategy does not contribute to either knowledge strategy (β=0.094, t=0.776) or organizational performance (β=0.145, t=1.211). Since the conditions in equation one and equation two were not satisfied, the mediation effect of knowledge strategy of the IS strategy does not exist. Thus, there is neither a direct effect nor an indirect effect (through knowledge strategy) of IS strategy on performance.

The results in section 6.5.1 and section 6.5.2 indicate that KMBS-SA, affects the organizational performance no matter what approach of alignment (moderation or mediation) is used. Thus, it can be said that knowledge strategy plays the role of

moderation and mediation on the contribution of business strategy on the organizational performance. However, knowledge strategy plays just the moderation role on the contribution of IS strategy on the organizational performance. Using mediation approach of alignment did not show any indication that an alignment between knowledge strategy and IS strategy has any implication for the organizational performance. Thus, the results indicate that the moderation approach is more suitable for implying the organizational performance due to KMIS-SA.

The results indicate that the alignment between the knowledge strategy pursued by the GCC banking sector and their business strategy have made a contribution to performance. Moreover, the results show that the alignment between the knowledge strategy pursued by the GCC banking sector and their IS strategy makes a contribution to performance. Thus, hypotheses H_1 and H_2 have been accepted.

6.6. The alignment between the AKS and CKS profiles of knowledge strategy and the different types of business strategy and IS strategic orientations

To get detailed information about KMSA-performance relationships, additional analyses were carried out in order to examine the effects on organizational performance due to strategic alignment between different profiles of knowledge strategy and specific business strategy types. In addition, the effects of strategic alignment on the organizational performance due to different profiles of knowledge strategy and IS strategic orientations have also been investigated. The following hypotheses were tested

using the same analyses that were adopted for testing hypotheses H_1 and H_2 (section Chapter 6.5):

H3: The alignment between the prospector strategic type and AKS profile of knowledge strategy in the Banking sector at the GCC countries is associated with better performance

H4: The alignment between the analyzer strategic type and CKS or AKS profiles of knowledge strategy in the banking sector at the GCC countries is associated with better performance

H5: The alignment between the defenders strategic type and CKS profile of knowledge strategy in the banking sector at the GCC countries is associated with better performance

H6: The alignment between the AKS profile of knowledge strategy and the IS support for a bank's proactive-ness, IS support for analysis or IS support for aggressiveness in the banking sector at the GCC countries is associated with better performance

H7: The alignment between the CKS profile of knowledge strategy and IS support for a bank's defensiveness, IS support for futurity or IS support for risk aversion in the banking sector at the GCC countries is associated with better performance

6.6.1. Assessment of the moderation approach (strength perspective)

The results in Table (6.19) show that the AKS profile of knowledge strategy has a moderation effect on the impact of both the prospector and analyzer strategic types on the organizational performance. However, the results show that the moderation effect of AKS profile of knowledge strategy on the contribution of the defender strategic type on performance does not exist. While prospector is not associated with performance in the High-AKS banks (r=0.008, p=0.799), this relationship became high significant in the Low-AKS banks (r=0.430, p=0.011). In contrast to prospector, the results show that analyzer is strongly associated with performance (r=0.432, p=0.008) in the High-AKS banks. This relationship is not significant in Low-AKS banks group (r=0.209, p=0.172).

Furthermore, the results reveal that CKS profile of knowledge strategy has a moderation effect on the impact of the prospector and analyzer strategic types on performance. The prospector and analyzer strategic types of business strategy are not associated with performance in the High-CKS banks (r=0.251, p=0.193 and r=0.135, p=0.219), respectively. However, the results show that prospector and analyzer strategic types of business strategy associations became strong and significant in the Low-CKS banks (r=0.453, p=0.006 and r=0.470, p=0.004) respectively. The results thus indicate that the impact of prospector and analyzer on performance varies with different level of AKS and CKS profiles of knowledge strategy. These results confirm the moderation effect of AKS and CKS on the strategic types of prospector and analyzer.

Table 6.19: The moderation effect of AKS and CKS profiles of knowledge strategy (strength perspective)

Strategy	**Correlation with performance**			
	Levels of AKS		**Levels of CKS**	
	For high AKS n = 36	For low AKS n = 34	For high CKS n = 35	For low AKS n = 35
Business strategy				
Prospector	**0.008** (0.799)	**0.430**** (.011)	**0.251** (0.193)	**0.453**** (.006)
Defender	**0.279** (0.132)	**0.162** (0.231)	**0.116** (0.256)	**0.132** (0.213)
Analyzer	**0.432**** (.008)	**0.209** (0.172)	**0.135** (0.219)	**0.470**** (.004)
IS strategy				
ISPRO	**0.007** (0.921)	**0.220** (0.198)	**0.066** (0.633)	**0.277** (0.141)
ISAGG	**-0.159** (0.287)	**0.009** (0.899)	**-0.033** (0.790)	**0.148** (0.101)
ISDEF	**0.076** (0.565)	**-0.077** (0.570)	**-0.155** (0.198)	**0.238** (0.241)
ISFUT	**0.078** (0.567)	**0.037** (0.780)	**-0.082** (0.492)	**0.209** (0.213)
ISRSKA	**0.194** (0.187)	**0.041** (0.700)	**0.080** (0.498)	**0.126** (0.234)
ISANL	**0.006** (0.955)	**0.172** (0.230)	**0.040** (0.675)	**0.018** (0.897)

Note: Should be below table High and Low AKS and CKS profiles of knowledge strategy based on median AKS and CKS scores

* *Correlation is significant at the 0.05 level*
** *Correlation is significant at the 0.01 level*

ISPRO - IS support for bank's proactiveness
ISAGG - IS support for bank's Aggressiveness
ISDEF - IS support for bank's defensiveness
ISANL - IS support for bank's analysis
ISFUT - IS support for bank's futurity
ISRSKA - IS support for bank's risk aversion

On the other hand, the results in Table (6.19) revealed that the AKS and CKS profiles of knowledge strategy have no moderation effect on the impact of any of the six IS strategic orientations on the organizational performance. IS support for bank's prospector, IS support for bank's aggressiveness, IS support for bank's defensiveness, IS support for bank's futurity, IS support for bank's risk aversion and IS support for bank's analysis were not associated with organizational performance in the High-AKS banks, Low-AKS banks, High-CKS banks, or Low-CKS banks.

6.6.2. Assessment of the moderation approach (form perspective)

The results in Table (6.20) show that AKS, prospector, and analyzer all have strong correlations with the performance (r=0.388, p=0.001; r=0.260, p=0.03; r=0.269, p<0.24), and that CKS and defender have no effect on performance. Moreover, the results demonstrate that the impacts of prospector, defender, and analyzer on performance are increased when in conjunction with AKS – (AKS * prospector, AKS * analyzer, and AKS * defender). The interaction between AKS and analyzer (AKS * analyzer) has the strongest impact on performance (r=0.558, p=000) followed by the interaction between AKS and defender (AKS * defender) and the interaction between AKS and prospector (AKS * prospector) (r=0.464, p=0.009; r=0.345, p=0.003). Moreover, the results in Table (6.21) show that the product of (CKS * prospector) showed a strong effect on performance (r=0.426, p=000). The results show also that while analyzer by itself has a strong correlation with performance, when considered in conjunction with the CKS

profile of knowledge strategy, analyzer does not have a significant effect on performance (r=0.146).

Table 6.20: The moderation effect of AKS and CKS profiles of knowledge strategy on the contribution of the business strategic types on the organizational performance (form perspective)

Strategy	**Correlation with performance**	
AKS	**0.388**** (0.001)	
CKS	**0.115** (0.343)	
Defender	**0.140** (0.247)	
Prospector	**0.260*** (0.03)	
Analyzer	**0.269*** (0.024)	
Knowledge strategy fit variables	**Correlation of knowledge strategy fit variables with performance**	
	Zero order	**Partial**
Business strategy typology		
AKS * Prospector	**0.345**** (0.003)	**-0.352**** (0.004)
AKS * Analyzer	**0.558***** (0.000)	**0.275*** (0.026)
AKS * Defender	**0.464**** (0.009)	**0.287*** (0.020)
CKS * Prospector	**0.426***** (0.000)	**-0.107** (0.394)
CKS * Analyzer	**0.083** (0.492)	**0.039** (0.754)
CKS * Defender	**0.146** (0.228)	**-0.077** (0.540)

Note: Controlling for linear (for AKS, CKS, PROBS, DEFBS, and ANLBD) and quadratic (AKS2, CKS^2, $PROBS^2$, $DEFBS^2$ and $ANLBD^2$) effects of the fit variable's original components

* *Correlation is significant at the 0.05 level*

** *Correlation is significant at the 0.01 level*

*** *Correlation is significant at the 0.001 level*

Table 6.21: The moderation effect of AKS and CKS profiles of knowledge strategy on the contribution of IS strategic orientations on the organizational performance (form perspective)

Strategy	**Correlation with performance**	
ISPRO	**0.123** (0.312)	
ISANL	**0.029** (0.813)	
ISDEF	**0.029** (0.815)	
ISAGG	**0.000** (0.998)	
ISFUT	**0.048** (0.692)	
ISRSKA	**0.100** (0.408)	
Knowledge strategy fit variables	**Correlation of knowledge strategy fit variable with performance**	
	Zero order	**Partial**
IS strategic orientations		
AKS * ISPRO	**0.311**** (0.009)	**0.040** (0.750)
AKS * ISANL	**0.251*** (0.036)	**-0.006** (0.961)
AKS * ISDEF	**0.343**** (0.004)	**0.138** (0.269)
AKS * ISAGG	**0.248*** (0.039)	**-0.218** (0.078)
AKS * ISFUT	**0.299*** (0.012)	**-0.003** (0.979)
AKS * ISRSKA	**0.372**** (0.002)	**0.184** (0.139)
CKS * ISPRO	**0.168** (0.166)	**-0.063** (0.615)
CKS * ISANL	**0.083** (0.492)	**0.039** (0.754)
CKS * ISDEF	**0.090** (0.466)	**-0.108** (0.389)
CKS * ISAGG	**0.088** (0.468)	**0.030** (0.809)
CKS * ISFUT	**0.085** (0.483)	**-0.110** (0.377)
CKS * ISRSKA	**0.145** (0.232)	**-0.003** (0.980)

Controlling for linear (for AKS, CKS, AGGIS, PROIS, ANLIS, DEFIS, FUTIS and RSKAIS) and quadratic (AKS^2, CKS^2, $AGGIS^2$, $PROIS^2$, $ANLIS^2$, $DEFIS^2$, $FUTIS^2$ and $RSKAIS^2$) effects of the fit variable's original components

* *Correlation is significant at the 0.05 level*
** *Correlation is significant at the 0.01 level*

ISPRO - IS support for bank's proactiveness
ISAGG - IS support for bank's Aggressiveness
ISDEF - IS support for bank's defensiveness
ISANL - IS support for bank's analysis
ISFUT - IS support for bank's futurity
ISRSKA - IS support for bank's risk aversion

The results in Table (6.21) demonstrate that the IS strategic orientations of IS support for bank's defensiveness, IS support for bank's futurity, IS support for bank's risk aversion and IS support for bank's analysis have no impact on performance. However, in conjunction with AKS, all IS strategic orientations have a strong impact on the organizational performance. As shown in the table, (AKS * IS support for bank's risk aversion) has the strongest impact on organizational performance (0.372, p= 0.002), followed by (AKS * IS support for bank's defensiveness) and (AKS * IS support for bank's proactiveness) which show a correlation of 0.343 (p =0.004) and 0.311 (p=0.009), respectively.

The results in this section confirm the moderation effect of the AKS profile of knowledge strategy on the contributions of IS support for bank's prospector, IS support for bank's aggressiveness, IS support for bank's defensiveness, IS support for bank's futurity, IS support for bank's risk aversion and IS support for bank's analysis to organizational performance. The results also show that alignment between the AKS profiles of knowledge strategy and the prospector, analyzer types of business strategy and the IS strategic orientations IS support for bank's prospector, IS support for bank's aggressiveness, IS support for bank's defensiveness, IS support for bank's futurity, IS support for bank's risk aversion and IS support for bank's analysis affected organizational performance. This was indicated by both the assessment of strength (section 6-6.1) and form (section 6-6.2) of moderation. The results also confirmed the moderation effect of the CKS profile of knowledge strategy on the contribution of the prospector and analyzer types of business strategy to organizational performance.

However, a moderation effect of CKS on the contribution of the IS strategic orientations to organizational performance was not observed. The moderation effect of CKS on the relationship between prospector and performance was indicated by the assessment of both the strength and form perceptions of moderation. The moderation effect of the CKS profile of knowledge strategy on the relationship between analyzer and performance was also indicated by the assessment of the strength perception of the moderation.

6.6.3. Assessment of the mediation effect

The results in Table (6.22) indicate that just AKS (r=0.388, p=.0001), PROBS (r=0.260, p=0.03) and ANLBS (r=0.269, p=0.024) have a direct effect on performance and that AKS has the greatest effect on performance. The results also show that the IS strategic orientations of IS support for bank's prospector, IS support for bank's aggressiveness, IS support for bank's defensiveness, IS support for bank's futurity, IS support for bank's risk aversion and IS support for bank's analysis do not have an effect on performance. Unexpectedly, the results show that the strong correlation between prospector and performance is increased (r=0.418, p=0.000) when the intervening effect of CKS is considered. However, the effect of prospector on performance is decreased and not significant (r=0.077, p=0.528) if the intervening effect of AKS is considered. Defender on the other hand, does not have a significant effect on performance whether or not the intervening effect of CKS is considered. However, the results show that defender has a significant effect on performance (r=0.262, p=0.03) when considering the intervening effect of AKS. In contrast, the significant effect of analyzer on performance is increased

(r=0.406, p=0.001) by adding the intervening effect of AKS. The results also show the effect of analyzer on performance is decreased (r=0.261, p=0.031) by adding the intervening effect of CKS. On the other hand, the results revealed that adding the intervening effect of AKS or CKS has no effect on any of the IS strategic orientations.

The results in sections 6-6.1, 6-6.2 and 6-6.3 indicated that the alignment of the AKS profile of knowledge strategy with the prospector and analyzer strategic type of business strategy affected organizational performance. The contribution of the alignment between AKS profile of knowledge strategy and prospector and analyzer on the performance is revealed by applying both the moderation and mediation approach of alignment. The results however, demonstrated that alignment between the AKS profile of knowledge strategy and the IS strategic orientations of IS support for bank's prospector, IS support for bank's aggressiveness, IS support for bank's defensiveness, IS support for bank's futurity, IS support for bank's risk aversion and IS support for bank's analysis affected organizational performance when using the moderation approach of alignment and not when using the mediation approach. The results also show that alignment between the CKS profile of knowledge strategy and prospector and analyzer, whatever the approach of alignment (moderation or mediation), affected organizational performance.

Table 6.22: The mediation effect of AKS and CKS profiles of knowledge strategy on the different types of business strategy and IS strategy

Strategy	**Correlation with performance**		
	Direct effect	**Indirect effect (controlling by)**	
	(n=70)	Partial control for AKS (n = 70)	Partial control for CKS (n =70)
Knowledge strategy			
AKS	0.388** (0.001)	-	-
CKS	0.115 (0.343)	-	-
Business strategy			
PROBS	.260* (.030)	0.077 (0.528)	0.418*** (.000)
DEFBS	.140 (0.247)	.262* (.030)	0.099 (0.599)
ANLBS	.269* (.024)	.406*** (.001)	0.261* (.031)
IS Strategy			
ISPRO	0.123 (0.312)	0.079 (0.579)	0.136 (0.267)
ISAGG	0.000 (0.998)	-0.062 (0.611)	0.019 (0.878)
ISDEF	0.029 (0.813)	0.050 (0.686)	0.029 (0.815)
ISFUT	0.048 (0.692)	0.069 (0.576)	0.035 (0.773)
ISRSKA	0.100 (0.408)	0.133 (0.276)	0.039 (0.448)
ISANL	0.029 (0.815)	0.059 (0.633)	0.023 (0.852)

* *Correlation is significant at the 0.05 level*
** *Correlation is significant at the 0.01 level*
*** *Correlation is significant at the 0.001 level*

ISPRO - IS support for bank's proactiveness
ISAGG - IS support for bank's Aggressiveness
ISDEF - IS support for bank's defensiveness
ISANL - IS support for bank's analysis
ISFUT - IS support for bank's futurity
ISRSKA - IS support for bank's risk aversion

Hence, the results indicated that the alignment between the AKS and CKS profiles of knowledge strategy followed by the GCC banking sector and their business strategic types of prospector and analyzer makes a contribution to the performance. Thus Hypotheses H3 and H4 have been accepted. Moreover, the results revealed that the alignment between the AKS profile of knowledge strategy pursued by the GCC banking sector and their IS strategic orientations of IS support for bank's prospector, IS support for bank's aggressiveness, IS support for bank's analysis makes a contribution to the performance. Thus Hypotheses H6 has been accepted. On the other hand, the results show that the alignment between CKS profile of knowledge strategy followed by the GCC banking sector and the business strategic type of defender has no effect on the organizational performance. Thus, hypotheses H5 has been rejected. Finally, the results revealed that the alignment between the CKS profile of knowledge strategy pursued by the GCC banking sector and their IS strategic orientations of IS support for bank's defensiveness IS support for bank's futurity, and IS support for bank's risk aversion makes no contribution to performance. Thus, hypothesis H7 has been rejected.

6.7. Summary

This chapter focused on the analysis of the research data and the results. The chapter first presented and discussed the descriptive results about the current situation in GCC banks regarding the KMBS-SA and KMIS-SA. The main focus of this chapter was to discuss the results of testing the research hypotheses. Two approaches were adopted to test KMBS-SA and KMIS-SA. Both the form and strength perspectives of the moderation approach were adopted to examine this approach. Moreover, two methods were used to assess the mediation approach. The moderation and mediation effect of knowledge strategy on the contribution of business strategy on the organizational performance was confirmed. However, only the moderation effect of knowledge strategy on the contribution of IS strategy on the organizational performance was confirmed. The same assessment methods were used to examine the strategic alignment between AKS and CKS profiles of knowledge strategy and the strategic types of defender, prospector, and analyzer, and the strategic alignment between AKS and CKS profiles of knowledge strategy and six IS strategic orientations.

Chapter Seven
Discussions and Conclusion

7.1. Introduction

The purpose of this study was to examine Knowledge Management Strategic Alignment (KMSA) from the Knowledge Management Business Strategy – Strategic Alignment (KMBS-SA) and Knowledge Management Information Systems – Strategic Alignment (KMIS-SA) perspectives. This study also investigated the impact of both KMBS-SA and KMIS-SA on organizational performance. A KMSA model was developed and has been used to investigate KMBS-SA and KMIS-SA in the banking sector in the Gulf Cooperation Council (GCC) countries.

The study and research model have been based on established concepts from the literature on alignment and KM. Based on the extensive literature review, seven hypotheses with regard to the proposed models of KMBS-SA and KMIS-SA were developed. The results of the analysis of the hypotheses are discussed in detail in this chapter.

This chapter discusses and concludes the results and contributions of this study from the academic and managerial perspectives. The limitations of this study and proposal for future research are also considered. The next section presents a discussion on the research results and this is followed by a discussion on the limitations of the study and suggestions for future research. The chapter then concludes with a summary of the theoretical contributions and managerial implications of this study.

7.2. Discussions

In this section, the results of the analyses are discussed in depth. Possible explanations and implications are considered. The discussion is based on the hypotheses related to KMSA from the KMBS-SA and KMIS-SA perspectives. As noted in Chapter Six and with respect to the proposed model, the result supported four hypotheses while other three hypotheses are not supported. In addition, the study found the existence of a significant link between knowledge strategy and business strategy and that this link has a contribution to organizational performance. It is imperative to point out that all the research objectives stated in Chapter One have been achieved. It is believed that the study findings should be useful for both practitioners in the industry and researchers in the academic sectors. However, it is recognized that the study has shown that there is no common model of KMSA, or, KMBS-SA and KMIS-SA that can be applied to all circumstances. It is accepted that the effectiveness of KM initiatives in practice is mainly context dependent. The results of this study indicate that this model could be considered as a general guide to what might occur in practice, and that local contextual factors must be taken into account when applying the framework. In summary, the framework is useful in general, but the particular application is dependent on the context of the organization.

This section consists of two subsections discussing the descriptive statistical results and the data analysis results.

7.2.1 The descriptive statistical results

7.2.1.1 Perception of the responsibilities for the development and management of KM

The descriptive statistical results raised an important issue regarding the position of CKO or KM manager in the banking sector at GCC countries. Result in sections 6.2, 6.3, 6.4 and 6.5 implicitly revealed that the CKO is an unknown position in the participating banks. It was also found that the responsibilities of CKO or KM manager are mainly assigned to the CIO, IT director or the Head of the IT department. It can be understood from the results that the participating managers have little awareness about the roles played by the CKOs and how these roles are different than the roles of the CIOs. The results in sections 6.3 and 6.4 indicated that the percentage of IT managers involved in formulating knowledge strategy and IS strategy is 45%. These officers are also active in providing sponsorships and leaderships for all large KM development projects. Hence, it could be considered that IT managers in the GCC banks believe that they are accountable for KM as they are capable for taking on the responsibilities of a CKO or KM manager. It seems that there is a misconception on the understanding of KM concept and Information System Management among the IT managers in the participating banks. One of the executive managers in GCC banks stated that "*although there are many KM projects have been implemented in the GCC banks intended to create and disseminate knowledge in the bank; they are still considered as an advanced MIS."* (Al-Ammry and Fung, 2007).

7.2.1.2 Descriptive results on KMBS-SA

The descriptive results have revealed the existence of strategic alignment between knowledge strategy and business strategy – KMBS-SA in the banking sector of the GCC countries. First, the results illustrated that the business managers in the participant banks are playing very important roles in the strategic activities related to the KM initiatives than the technical activities. As such, the business managers provide the direction to make decisions, implement and take steps to overcome resistance to the knowledge strategy. They are also involved in identifying the strategic and knowledge gap. In addition, they have a critical involvement in determining their organization's knowledge strengths, weaknesses, opportunities and threats in term of K-SWOT analysis. Many executive managers in the GCC countries revealed that both strategic and knowledge gaps are very important and they have to be identified before planning the organization's business or knowledge strategies. One executive manager asserted that "*Knowledge gap is derived from the strategic gap and needs to be identified before planning the bank strategy*" (AlAmmary and Fung, 2007). Nevertheless, some managers were not fully aware of the importance of the identification of the knowledge gap or conducting a K-SWOT analysis although they did consider knowledge as a strategic resource and recognize that it has to be identified and mapped with respect to the planning of their strategies.

Second, the results show that more than 50% of the business managers agreed that by aligning business strategy and knowledge strategy, they can identify the strategic knowledge resources needed in order to support their organizations. They believe that the

KMBS-SA can enhance the effectiveness of the bank's operations. Regardless of the consideration of the strategic importance of KM, 49% of the business managers revealed that they are preparing the business strategy first, prior to the preparation of the knowledge strategy in order to reflect the objectives of the business strategy. Planning business strategy in this sequential fashion is inappropriate as an iterative approach helps the business strategy to be informed by the strategic possibilities available (Smith and McKeen, 2003). Prior research indicates that the mutual alignment between business strategy and knowledge strategy is important and more effective (Ribbens, 1997). There are many KM functions that are mapped on various core areas of business such as customer needs and customer relationship, personnel training and technology upgrading, and, products and services. Therefore, the business and KM managers must think and plan ahead to clarify the key achievements to be accomplished in each of these areas so as to leverage the maximum use of the knowledge in their organizations (Hamid, 2003).

Third, the results revealed that there is a strong relationship between business managers and KM managers (that is, the IT manager or the person responsible for KM) in the banks. The results showed that the business managers and KM managers are satisfied with their ability to communicate and negotiate with each other as they have a common vision on how KM will support the business strategy. Business managers have also a good understanding of KM in their banks and the KM managers have a good understanding of the business operations as both of them are placed at the same executive level in the banks. Liebowitz, (2002) stated that in order for KM to succeed; the KM managers should be placed in a position that commands authority and responsibility in

the upper level of management. The relationship between business manager and KM manager is considered by some GCC banks managers to be "*a cooperative interaction that facilitates successful achievement and bridges the gaps in business requirements*" (Al-Ammary and Fung, 2007). Despite the strong relationship between business manager and KM manager, only one third (33%) of the business managers believe that the involvement of KM mangers is important in formulating the business strategy at the departmental level. Moreover, just 44% of them believe that the involvement of business mangers is important in formulating the knowledge strategy at the departmental level. This result appears to be contradictory with the other results. Although the association between KM manager and business managers at senior management levels is considered important, management in GCC banks are still unaware about the real roles of the KM manager. The senior management are less attentive to some of the important aspects of the alignment between knowledge strategy and their business strategy. The involvement of the KM manager in formulating business strategy is important. Such experts should be able to identify specific directions for knowledge strategy development based on the analysis and assumptions during the development of the business strategy (Smith and McKeeen, 2003). On the other hand, a business manager's involvement in planning knowledge strategy is also important. They have to make sure that a knowledge initiative is developed appropriately and that the KM plans are coordinated with the organization's overall strategic plan (Smith and McKeen, 2003). Thus, the critical role of business managers and KM manager and their involvement in the strategic management of KM activities bestow the KM a solid strategic position in the GCC banks. Through their

involvement, they could ensure that the organizational knowledge is mapped to the strategic and core process of the bank.

7.2.1.3 Descriptive results on KMIS-SA

Based on literature concerned with IT/IS-business strategic alignment, the IS strategies should be shaped around the organizational goals and objectives and be a function of the business strategy (Croteau et al., 2001). This could lead to the assumption that IS strategy should support the knowledge strategy and be aligned with it to support the business strategy and the overall organizational objectives as it was discussed in section 2.8. The results regarding the alignment between knowledge strategy and business strategy show that more than 50% of the IT managers agreed that there is an alignment between the knowledge strategy and IS strategy pursued by their banks. However, all the other results revealed that no alignment exists between the knowledge strategy and IS strategy.

The results gave an impression that the IT managers perceived the IS strategy and knowledge strategy as one strategy or two parts in one strategy. Most importantly, IT managers believe that the IS strategy has just a technical role in KM and knowledge strategy. As such, 45% of them believe that IT provides technical resources, capabilities and skills needed by the knowledge strategy. The importance of IS strategy as strategic factor in forming and designing the KM system or in the planning of the knowledge strategy is not considered by most of the IT managers at the GCC countries.

In addition to the lack of CKO or KM manager positions in the GCC banks, the results revealed that in most banks, the IT managers do not have a strategic role in planning KM or in identifying the characteristics of the existing technologies that could influence the adoption of KM. Although the results revealed that IT managers play a vital role in assessing and providing the technical architecture, infrastructure, resources, capabilities and skills required by the knowledge strategy, more than half of the managers stated that they are not involved in formulating the knowledge strategy nor play any role in the strategic actions related to KM. Thus, the IT managers focus mostly on identifying and managing the bank's physical and tangible assets. Without the special competencies and skills of the CKO and KM manager, they are not able to leverage the intangible and knowledge assets in the forms of data and information. They need to have skills and capabilities that allow them to be involved in functions such as aligning, benchmarking, planning, leveraging, designing and implementing of the strategic plans. These results indicated that since the IT managers are not involved in the strategic activities and planning of knowledge strategy, there is an indication of a misalignment between IS strategy and business strategy.

7.2.2 Discussion on the research hypotheses

The first overall conclusion to be drawn is the existence of a strong association between knowledge strategy and business strategy, and the alignment between knowledge strategy and business strategy has clearly influenced the organizational performance. This interpretation is based on the significant moderation and mediation exhibited by the alignment of business strategy and knowledge strategy with respect to the organizational

performance. Therefore, the knowledge strategy and business strategic alignment is critical to the organizational effectiveness of the GCC banks. The results are consistent with the argument that KM must be ingrained in the context of the organization's strategy (Rumizen, 2002). Moreover, Sunassee and Sewry, (2002) stated that knowledge strategies should be shaped around the organizational goals and objectives and be a function of the business strategy, or else, the KM initiatives will fail to achieve their goals. This is similar to what was pointed out by Aidemark and Sterner (2003) that knowledge strategy must be considered as an enabler to achieve strategic business objectives and that it must evolve from business strategy and contribute to the achievement of business results. The business strategy must outline the process, tools and infrastructure required to enable the knowledge to flow effectively.

Furthermore, the results illustrated that knowledge strategy demonstrates a partial mediation in the sense that the indirect effect of business strategy on organizational performance via knowledge strategy (β=0.415) is less than the direct effect of business strategy on the performance (β=0.652). This means that in the GCC banking sector, neither the knowledge strategy can predict or determine the business strategy, nor the business strategy can predict or determine the knowledge strategy. Thus, business strategy and knowledge strategy must capitalize on each other. In other words, *the business strategy should capitalize on knowledge concerning relative opportunities; and the knowledge strategy should capitalize on the strategic decisions related opportunities and translates them into organizational performance.* This result is consistent with what have been revealed by the literature that knowledge and business strategy need to work

together. As such, K-SWOT and SWOT need to be analyzed together and the strategic and knowledge gaps need to be identified before planning the business strategy as explained in Chapter Two. Business strategy and knowledge strategy should thus feed upon each other while working interdependently. The new form of intellectual capital (knowledge assets) is meaningless without the old-fashioned (strategic) objectives of serving customers and beating competitors. If the strategic objectives and ideas do not have their fundamentals in place, the new organizational learning and knowledge could be considered as external expenses and burdens on the banks. On the contrary, business strategy should treat the knowledge component of business activities as an explicit concern of business reflected in strategy activities. The banks thus, should make a direct connection between organization knowledge assets and positive business result, identifying how knowledge strategy will support the bank's business strategy and identifying which specific knowledge domain the organization will focus on.

Consider that a bank plans to launch new services or products such as new types of credit card or online services. With strong integration and support of the bank's knowledge leveraged by knowledge strategy, such a bank should develop its operational and strategic plans for the new products in close concert with specific knowledge plans. Such plans are necessary for creating and supporting the KM system necessary to realize the strategic requirements of the new products or services. With strong knowledge strategy and strategic alignment, such a bank could identify its core strategic drives such as the frequent creation and introduction of innovative financial products. Consequently the knowledge strategy function within the bank could direct significant resources toward

building the capability needed for supporting their strategic drives. This will enable the bank to develop knowledge capabilities and competencies that are consistent with, and link to, the central strategic directions of the organization.

The second overall result of this research shows that in the context of GCC countries and based on the survey results from this study, the alignment between knowledge strategy and IS strategy has a positive impact on an organizational performance. This interpretation is based on the significant moderation exhibited by each knowledge strategy and IS strategy with respect to the performance. The study has shown that IS strategy has no direct effects on the organizational performance, but when the knowledge strategy was taken as a moderation role on the IS strategy impact on the performance, the effect on the performance became positive. This means that the bank's IT investments and IS strategy are not enough to make the GCC banks more efficient or competitive. As such, the result is in accordance with what has been stated by the IS literature that IT should no longer be considered as business resources; it is in fact, the business environment (Browning, 1990). Thus, IT needs to be in correspondence with the business strategy, organizational structure, architecture, process, people, organizational culture and KM. Although, the GCC banks' inability to realize sufficient value from their IT (investment, strategy) could be due to the absence of strategic alignment with the business strategy, organizational structure, people or culture, the investigation of these issues is beyond the scope of the current study. Hence, the GCC banks' inability to realize sufficient value from their IT is attributed to the absence of IT-strategic alignment with KM.

The results demonstrated that the knowledge strategy received stronger support as moderator of the IS congruence association with performance. Thus the alignment between IS strategy and knowledge strategy is the primary determinant of the organizational performance and not the IS strategy. By orienting the banks technology and information system towards capturing, preserving and defining the banks' knowledge, the banks will perceive some IT implication on the organizational performance. The results indicate that KM in the GCC countries can leverage their IT resources. As such, the use of the banks' technology to accumulate and disseminate knowledge can provide the GCC banks with a competitive edge in its markets. Moreover, the result revealed that the promise of IT effectiveness should aim at KM strategic alignment. Accordingly; the GCC banks' IT decision needs to be KM driven. Thus, when the knowledge gap has been identified, the appropriate IT solution needs to be implemented to close this gap. Moreover, any IS strategy changes should correspond to knowledge work and not information processing. As such, KM must lead to fundamental changes in the design, development and deployment of the organization's information system. KM practices could benefit from the skills already held by the information professionals. These skills include their ability of identifying the knowledge needs and in helping to distinguish between information and knowledge; which could facilitate a broader and more inclusive KM initiative.

IT managers in the GCC countries must realize that although IT is important and is a critical success factor in the development of an effective KM programs, it can certainly support some aspects of knowledge management which could lead to enhancing the

organizational performance. Notwithstanding, the importance of IT in KM does not begin and end with IT as described in Chapter Two. The effectiveness of IT comes from existing technologies that partially address KM problems but they do not provide support for unifying all the bank's knowledge. Thus, if the bank's IT is not designed to capture the complexity of the context and the richness of the bank's knowledge, the bank needs to reconsider its approach to designing and developing information systems.

The third overall result was regarding the strategic alignment between two knowledge profiles of *Aggressive Knowledge Strategy (AKS)* and *Conservative Knowledge Strategy (CKS)*, and the three specific strategic activities (of *defender*, *prospector* and *analyzer)*; and, the strategic alignment between the knowledge strategy profiles of *AKS* and *CKS* with the six IS strategic orientations proposed by Chan, et al. (1997). The results have shown that the alignments between: *AKS* profile of knowledge strategy and the strategic type of *prospector*, *AKS* profile of knowledge strategy and the strategic type of *analyzer*, and, *CKS* profile of knowledge strategy and strategic type of *analyzer* have a positive effect on the organizational performance. Moreover, the results showed that only the alignment between *AKS profile of knowledge strategy* and IS support for *proactiveness*, *aggressiveness* and *analysis*, has a positive effect on the performance. With respect to the proposed model, the results supported and accepted hypotheses H3, H4 and H6 (see section 3.3.3.1, 3.3.3.2 and 3.3.3.4) while hypotheses H5 and H7 (see section 3.3.3.3 and 3.3.3.5) have been rejected.

The results revealed that the alignment between *AKS* profile of knowledge strategy and business strategic type of *prospector* has clearly influenced the organizational performance. This interpretation is based on the significant moderation and mediation exhibited by each of *AKS* and strategic type of *prospector* with respect to the organizational performance. Thus, the corresponding prospector's strategic activities such as knowledge exploration, acquiring external knowledge and human focus can improve the organizational performance. Consequently, banks involved in *prospector* strategic activities tend to develop and maintain their capacity to find and exploit new products and market opportunities within a board and a continuous state of development domain. As such, the banks should emphasize constructing new knowledge and exploring the external environment for new opportunities that can be used to develop new products and services. However, banks involved in *prospector* strategic activities must also exploit and reuse some of their existing knowledge within their boundaries. A study by Truch and Bridger (2002) showed that *prospector* have the highest score for the reuse of knowledge while Hansen et al. (1999) model suggests that *defender* should have the highest score as they are more efficiency focused. Therefore, emphasizing just exploring the external knowledge without paying any attention to utilizing this knowledge will not help the banks involved in *prospector* strategic activities to succeed or get any improvement in the organizational performance.

On the other hand, the result showed that in the context of the GCC countries, the alignment between the *CKS* profile of knowledge strategy and the *defender* strategic activities has no effect on improving the organizational performance. The association

between the successes of organizations pursuing a particular strategic type of *defender* depends on their ability to maintain aggressively their distinction within the chosen market segment. In such organizations, where efficiency and cost reduction are crucial, utilizing and enhancing existing knowledge is essential. Organizations adopting a successful *defender* type of business strategy should draw information and knowledge from a broad range of sources to enable them to provide secure and solid foundations for their business. They also need to share directories of experts and create networks of experts. Combining this with the above indicates that they should be good 'processors' of knowledge, so they will be able to use knowledge effectively within the boundaries of the formal processes of the organization. Otherwise this will raise questions concerning the ability of the organization with *defender* strategic type on how to exploit all sources of knowledge successfully. The findings in this study suggest that for those banks that involve *defender* strategic activities, an emphasis on the alignment with *CKS* profile of knowledge strategy without the ability to utilize the gathered knowledge may not improve strategy execution and business success.

Moreover, the results demonstrated that the alignment between the *AKS* or *CKS* profiles of knowledge strategy and *analyzer* strategic type has shown a strong influence on the organizational performance. Actually, organizations that involve *analyzers* strategic activities operate in a relatively stable as well as changing product-market domain. Consequently, these organizations must identify and pursue new product-market opportunities while simultaneously maintaining a presence in existing domains. The pursuit of effectiveness in both areas necessitates the adoption of a moderate combination

of *CKS* and *AKS* profiles of knowledge strategy. Thus, a balanced profile of knowledge strategy where the benefits of acquisition and exploitation, external and internal sources, human and system focus should help any organization involving the strategic activities of *analyzers*. However, the results of the current study showed that the alignment between the strategic type of *analyzer* and *AKS* profile of knowledge strategy or *CKS* profile of knowledge strategy can improve the organizational performance. Thus, in the context of GCC countries, adopting knowledge strategies such as exploitation of internal knowledge with a system focus, or exploring an external knowledge with a human focus, can enhance the impact of the *analyzer* strategic type on the organizational performance.

Finally the result revealed that the alignment between *AKS profile of knowledge strategy* and the IS support for *aggressiveness, proactiveness* and *analysis* has a positive effect on the organizational performance. This interpretation is based on the significant moderation exhibited by each *AKS* profile of knowledge and IS support for *aggressiveness, proactiveness* and *analysis* with respect to the performance. IS support for *aggressiveness* and *proactiveness* helps the banks in the market by monitoring the outside changes, allowing the banks to keep track of their competitors, and provides them with information they need to grasp the opportunities coming their way as described in Chapter Two. Such IS strategies could assist the *AKS* profile of knowledge strategy in exploiting the external knowledge and facilitating the communication between the individual and groups in the banks. However, the *CKS* profile of knowledge strategy does not have any moderation or moderating effect on the impact of IS support for the bank's *defensiveness*, IS support for bank's *futurity*, and IS support for bank's *risk aversion* on the organizational

performance. Thus, based on the results from the GCC banks, the knowledge strategic choice regarding exploiting the internal knowledge and technical focus in planning their KM with the aforementioned IS support for strategic orientation did not improve the organizational performance. Notwithstanding the proposed hypotheses, the results revealed that the alignment between *AKS* profile of knowledge strategy and IS support for bank's *defensiveness*, *futurity*, and *risk aversion* improved the organizational performance. Therefore, GCC banks need to seek different profiles for knowledge strategy with different combinations of knowledge strategic choices. Finally, by aligning different profiles of knowledge strategy with their IS strategies, the GCC banks may attain the desirable effectiveness of their IT investment and improve their organizations' performance.

7.3. Limitations of the study

It can be considered that the research study findings have contributed towards the answers for the research questions. Most of the research objectives have also been achieved. However, the results have to be considered in light of the research study's inherent limitations.

One such limitation could be due to the research methodology adopted. This study was based on surveys. This approach has shortcomings as it captures a situation or an event at a point of time. For example, the organizational impact of KM may not have been fully realized unless the KM had been implemented well before the study. Also, the alignment

between knowledge strategy and IS strategy could have been made more explicit and they could have made a bigger contribution to the organizations' performance, if there are distinctive roles for the CIOs and the CKOs. Further research could employ a more qualitative approach, such as case study method or longitudinal study. This would enable more in depth understanding of the operation and the rationale of the decision making processes and the operation procedures in the GCC banks.

Another limitation of this study is the sample size. While all the GCC banks meeting the selection criteria have been approached, the small sample size could lead to statistical analysis problems throughout the study. The small number also inhibited the use of more powerful statistical analysis methods associated with large samples such as the Structural Equation Modeling (SEM) technique. As a result of having a small sample size, the data analysis was based mostly on correlation and regression analysis. Conclusions based on these limited types of analysis may cause problems. For example, it is noted that the existence of correlation does not necessarily justify a casual link between the variables.

Since the study was conducted in the banking sector of the GCC countries, the proposed framework should consider other factors such as the organizational, technological, cultural and environmental factors that may differentiate these countries from other parts of the world. Hence, the last limitation of this study could be the absence of investigation on such factors and this may affect the study findings.

7.4. Directions for future research

This study has led to the realization of the needs for further research on KM in the context of the GCC and the neighboring Arabic countries. In particular, more work is required to further investigate the following questions:

- Apart from the banking sector, why there is no such position as CKO or KM manager in the all organizations in the GCC countries?
- What are the effects on the effectiveness of KM, and knowledge strategy due to the lack of such positions?
- What are the effects of the organizational strategic planning on the effectiveness of the KM strategic alignment in such countries?
- What are the critical success factors for the KMSA in such countries?

This study has provided support for previous empirical research work in the fields of KM and strategic alignment. Further efforts are still needed to strengthen the theoretical framework and to assess it by empirical validation. Other research perspectives could include an investigation of the contingency factors such as management style, knowledge domain, knowledge style, cultural, and technical issues. Moreover, qualitative-based research is needed as the quantitative results may not be sufficient.

7.5. Conclusion

This research aimed to achieve the following objectives:

- To investigate the KMSA from the KMBS-SA and KMIS-SA perspectives and to examine their contribution to the organizational performance.
- To examine the perceived contribution of various profiles and types of strategic alignment between knowledge strategy and business strategy; and, between knowledge strategy and IS strategic orientations, on the organizational performance.

The discussions presented in the pervious sections have shown that the thesis has made several contributions to the KM discipline. The following sections discuss these contributions from the theoretical and managerial research perspectives.

7.5.1 Theoretical research academic implications

This study has contributed to the KM discipline through an investigation of issues related to the concept of alignment. This research has looked into the different perspectives of KMSA alignment. In addition, the study examined different models and types of KM alignment, and their effects on the organizational performance. This study also aimed to answer many important unanswered questions regarding the strategic alignment in KM as stated in Chapter Three.

The first theoretical research contribution of this study derives from the development of a comprehensive model that deciphers KM strategic alignment implication on the organizational performance. Specifically, the study contributes to the discipline by the proposal of a theoretical and empirical investigation for the strategic alignment between KM and IS strategy. The model is comprehensive and complex and it has two underlying sub-models: KMBS-SA and KMIS-SA. The model was tested empirically to confirm the relationship between the strategic alignment between knowledge strategy and business strategy, and the subsequent organizational performance. Similarly, the relationship between knowledge strategy and IS strategy, and, the organizational performance was also tested. The relationships between the three constructs are conceptualized in one complete model for the first time in this study. This is considered as a significant contribution of this study. Moreover, the research model provided a means of conceptualization to exhibit the strategic alignment between three types of business strategy (*prospector, analyzer,* and *defender*), two profiles for knowledge strategy (*AKS* and *CKS*), and six IS strategic orientations. This can be considered as a new contribution to the field of KM strategic alignment. The empirical results from this research thus provided a theoretical foundation for the study of KM strategic alignment at a system and bivariate level.

The second contribution of this study derived from being one of the few research studies conducted to investigate KM in the GCC countries. It is believed that this study could be the first that encompasses the concept of the ‘KM’ and ‘alignment’ in the empirical IS research applied in such countries. Few research studies in the field of KM have targeted

the Arab world and especially the Gulf countries. It is hoped that this study will encourage other researchers to initiate further work in this region and to investigate other important factors that may help to bridge the gap and to build a generic model which could apply to different cultures and contexts.

The third academic contribution of this study is of the proposal and examination of the two different approaches of alignment. Most of the previous studies conducted to investigate the strategic alignment have attempted to adopt one aspect of the alignment or have been based on descriptive analysis only. This study has applied two different approaches of alignment and investigated the different roles played by knowledge strategy in contributing to business strategy and IS strategy. Moreover, the study provides results and recommendations on which of these approaches of alignment is more appropriate for examining the KM strategic alignment.

The fourth contribution for this study is the empirical work based on the proposed hypotheses drawn from the literature review. The hypotheses represent the relationships among the concepts included in the comprehensive framework being studied. The empirical support for the hypotheses predicts contribution of KMBS-SA and KMIS-SA towards organizational performance.

The final contribution is the development of a new instrument to measure knowledge strategy. Knowledge strategy and KM strategies have been discussed intensively in the literature, however, there are few studies which have attempted to investigate knowledge

strategy in an empirical approach. Migdadi (2005) stated that part of the deficiency in the conduct of knowledge management research is the lack of agreeable scales or measurement for benchmarking. The construct of knowledge strategy was developed by utilizing literature from the KM discipline. This construct can serve as a basis for more in depth and rigorous studies and future research.

7.5.2 Managerial research implication

This study provides some insights for senior management and IT managers in improving the success of their KM and organizational performance. The study allows the organizations to understand the different strategic aspects of the organization, such as knowledge strategies, business strategies, IT dimensions, and the organization performance. It demonstrated that alignments between knowledge strategy and business strategy are clearly linked to organizational performance. The research results support previous research findings. The implication requires the owner-manager or CEOs to take an active role in seeking KM alignment. They should take the strategic alignment challenge as seriously as possible and they need to consider the alignment implication before moving ahead to implement the strategic plans. Thus, in order for the GCC banks to perform successfully, strategic knowledge resources should be communicated throughout the organizations.

Moreover, the study shed light on the strong relationship between IS strategy and knowledge strategy and the impact of this relationship on the organizational performance. There are many studies claimed the importance of knowledge strategies to improve the

effectiveness of IT in an organization. However, most of them revealed explicitly and implicitly that IT strategy may not have a direct impact on the performance. The results from the study advocate that managers in the GCC banks should focus more on the moderation role played by knowledge strategy. This suggests that the IT infrastructure, architecture, resources and skills all should support and be supported by the knowledge resources. For example, if a bank is pursuing a codification knowledge strategy or exploitation strategic profile for knowledge strategy, the managers should make sure that the IS strategy and IT environment are highly aligned with the appropriate knowledge strategic choices.

The study has raised an important point regarding the lack of appointments of CKO or KM managers. It is recommended that the banking and other organizations in the GCC countries should pay attention to this issue. There should be different job specifications for the CKO and CIO. The IT manager, Head of IT or even the CIO may not be able to undertake or assume the responsibilities of the CKO. The lack of such position may affect the effectiveness of the adopted KM in the organizations.

The study also uncovered some issues regarding the planning of the knowledge strategy, business strategy and the IS strategy. First, the managers should focus more on the sequence in which they plan their strategies. Both knowledge strategy and business strategy should be planned and prepared at the same time. IS strategy and knowledge strategy however, should be considered as different strategies and not different parts in one strategy. Each of them is serving different purposes and any attempt to consider them

for different goals will affect their effectiveness and subsequently the organizational performance.

Finally, the managers in the GCC countries should pay attention to the importance of the different strategic knowledge choices and the different profiles of knowledge strategy that can be adopted in their banks. The result suggested that the banks should consider the six knowledge strategic choices in their decisions and should not ignore any of them. Even in the case where the bank registers very low on one or more strategic dimensions, a minimal level of knowledge strategic choice support for IS strategic orientation and business strategic activities is still better than no support at all. The knowledge strategy support exhibits a kind of "doorsill effect" (Chan, et al., 1997). The organizations should aware that the support should not fall below the minimum threshold and the support should be organized to align with the firm's strategic and IT profile. The GCC banks should establish a baseline of knowledge strategy support, and then add more supports to those dimensions that are most important. The banks moreover, need to determine different profiles of their organization's strategy that matter the most, and then direct the knowledge strategy resources to support this profile. If the banks in the GCC countries plan to implement KM, they should grabble with business strategy, technology, organizational culture and human resources in order to have an effective KM that could sustain their competitive advantage.

Ultimately, it is recognized that a single study like this on a specific type of organization (banking sector) and in the nominated specific region (GCC countries) may not result in a

universally comprehensive model. Further studies of similar groups in other industries, countries and regions should be considered and the results compared with this study. Nevertheless, it is believed that this study will raise the awareness of the GCC banks of the importance of knowledge management and they will adopt a systematic approach to address the alignment issue thereby improving their performance and bring benefits to the community on the whole. It is also believed that the academic contributions made by this study have provided insights and challenges to continue the quest for knowledge and understanding on this important discipline.

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Appendices

Appendix A

Table A-1 Summary of Classifications of Knowledge strategy and KM Strategies

Classification dimensions	Type of strategy	Reference	Term
Origin of knowledge	Aggressive knowledge strategy, Conservative knowledge strategy	Zack (1999b, 2002b)	**Knowledge strategy**
	Knowing what you know, Faster and better innovation strategy	Skyrme (1999)	**Knowledge strategy**
	Explorer, Exploiter, Loner, Innovator	Bierly and Chakrabarti (1996)	**Knowledge strategy**
	Explorer, Exploiter, bimodal learner, maintainer	Bierly and Daly (2002)	**Knowledge strategy**
	Exploration and exploitation	Tiwana (2002)	**KM strategy**
	Exploitation/codification, Exploitation/personnalisation, Exploration/personnalisation, Exploration/codification	Canzano and Grimaldi (2004)	**KM strategy**
	Discovers, Discretions, external Learner, inter-exploiters, overall creationist	Pai (2005)	**Knowledge strategy**
	Eastern-view or generalist perspective, Western view specialist-perspective	Turner, Bettis, and Burton (2002)	**Knowledge strategy**
Knowledge domain and knowledge process	Leveraging strategy, Expanding strategy, Appropriating strategy, Probing strategy	Krongh, et al., (2001)	**KM strategy**
Knowledge process	Knowledge creation strategy, Knowledge transfer strategy, Knowledge protection strategy	Bloodgood and Salisbury (2001)	**KM strategy**
	Knowledge creation, Knowledge application	Droge, Claycomb and Germain, (2003)	**Knowledge strategy**
	Knowledge scope, Knowledge systemic competencies, Knowledge governance	Abou-Zeid (2003)	**Knowledge strategy**
	Knowledge creation and innovation (KM as an innovation strategy)	(Forcadell and Guadamillas, 2002)	**Knowledge strategy**

Process of capturing, networking and using of knowledge	Codification, Personalization	Jennex, Olfman and Addo (2003)	**KM strategy**
		Rollo (2002)	**KM strategy**
		Hansen; Nohria and Tierney (1999)	**Knowledge strategy**
		(McMahon, Lowe, Culley, 2004)	**Knowledge strategy**
		(Mentzas, 2004)	**KM Strategy**
	Tacit oriented, Explicit oriented	Keskin, et al.(2005)	**KM strategy**
		Jordan and Jones (1997)	**Knowledge strategy**
	Pure expertise, Pure procedure, Codification, Experience accumulation	Bohn (1997)	**KM strategy**
		Singh and Zollo (1998)	**Knowledge strategy**
	Explicit System strategy, Tacit system strategy, Explicit Human strategy, Tacit human strategy	Choi and Lee (2002)	**KM strategy**
	KM Strategy support business strategy as capability, KM strategy support business strategy as position in the market place	Smith and McKeen, (2003)	**KM strategy**
Different nature and strength of organization	Knowledge creation strategy (Innovation and knowledge creation), Knowledge transfer strategy (Transfer knowledge and best practices), Personal asset responsibility strategy, Intellectual asset management strategy, Knowledge strategy as business strategy, Customer focus knowledge	Wiig (1997)	**KM strategy**
		American Productivity and Quality Center APQC (1996)	**KM strategy**
	Developing and Transferring Best Practices, Creating a new industry from embedded knowledge, Shaping Corporate Strategy around knowledge, Fostering and Commercialising Innovation, Creating a standard by releasing proprietary knowledge	Day and Wendler, (1998)	**KM strategy**

Table A-2: The basis for Ideal Business Strategy Profiles (Adopted from Sabherwal and Chan (2001))

	Segev et al. (1989)	Doty et al. (1993)	Sabherwal and Chan (2001)
Defensiveness	**Investment in production**		
Defenders Prospectors Analyzers	High Low Medium	-- -- --	High Low Medium
Risk aversion	**Level of risk:**		
Defenders Prospectors Analyzers	Low High Low	-- -- --	High Low High
Aggressiveness	**Rate of growth:**	**Product/market development:**	
Defenders Prospectors Analyzers	Low High medium	Medium High medium	Medium High medium
Proactiveness	**Proactive managerial**		
Defenders Prospectors Analyzers	Low High medium	-- -- --	Low High medium
Analysis			
Defenders Prospectors Analyzers	Internal: high External: low Internal: low External: high Internal: high External: high	Internal: high External: high Internal: high External: low Internal: low External: high	Medium Medium high
Futurity			
Defenders Prospectors Analyzers	-- -- --	High Medium medium	High Medium medium

Appendix B

Appendix B-1

3 March 2006

Jaflah AlAmmary
Office no: 618-93606072
Mobile: 614-39497034/ 973-39611193
School of Information Technology
Division of Arts
University of Murdoch

Project Title: ***KM strategic alignment in the banking sector in the Gulf Cooperation Council GCC countries***

Dear
I am a PhD student at Murdoch University investigating the co-alignment between the KM strategy, IS/IT strategy and business strategy in the GCC countries under the Supervision of *Associate Professor Lance Fung*. The purpose of this study is to find out how the co-alignment between KM strategy, IS/IT strategy and business strategy affects the banking performance in the GCC countries. In addition, it will investigate the influence of some context factors on the KM model.

We have written to your bank and received its approval to seek your consent in participating in this study. We will appreciate your assistance in the study. However, if you consider that you are not in a position to participate, we would appreciate your recommendation of an appropriate colleague who would be able to assist us.

You can help in this study by consenting to complete a survey and you may also be invited for an interview based on the results of the questionnaires. First, the questionnaire will be posted to your bank using the bank mailing address available in its website. It is anticipated that the time to complete the survey will be no more than 15-30 minutes. Based on the results of the survey you may be asked to participate in an interview. It will be held in your bank at a time convenient to you. It is anticipated that the interview will take no more than 30-45 minutes. Contained in the survey are questions about type of the business strategy pursued by the bank. Structured interview questions will be used and each interview will be recorded using a tape recorder. These questions for the interview will be designed and created based on the results of the survey.

Participants can decide to withdraw their consent at any time. All information given during the survey and the interview is confidential and no names or other information that might identify you will be used in any publication arising from the research. Feedback on a summary of the study will be provided to participants by email if requested.

If you are willing to participate in this study, could you please complete the following form. If you have any questions about this project please feel free to contact either myself, on 618-93321063, Email jaflah@itc.uob.bh; or my supervisor, *Associate Professor Lance Fung*, on 618-93607507 or email L.fung@murdoch.edu.au. This consent form can be returned by e-mail to jaflah@itc.uob.bh, by fax: 973-17534446, or by mail to No 579, Road 221 Muharrage 202, Kingdom of Bahrain. The questionnaires will either be collected by me or can be returned by fax: 973-17534446, or by mail to No 579, Road 221 Muharrage 202, Kingdom of Bahrain.

My supervisor and I are happy to discuss with you any concerns you may have on how this study will be been conducted, or alternatively you can contact Murdoch University's Human Research Ethics Committee on 618-9360 6677 or by email ethics@murdoch.edu.au

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I _____(the participant) have read the information above. Any questions I have asked have been answered to my satisfaction.

I agree to answer the questionnaires and take part in the Interview (Please circle).
I am fully aware that I may change my mind and stop at any time. I understand that all information provided is treated as confidential and will not be released by the investigator unless required to do so by law.

Would you like a copy of the summary of result? YES / NO.
If yes, please provide email address:

Participant :_____ Date _____

Investigator: _____ Date: _____

Appendix B-2

3 March 2006

Jaflah AlAmmary
Office no: 618-93606072
Mobile: 614-39497034/ 973-39611193
School of Information Technology
Division of Arts
University of Murdoch

"Knowledge Strategic Alignment in the banking sector in the Gulf Cooperation Council GCC Countries"
Principle Investigator: Jaflah AlAmmary
Bank Participation consent letter

Dear sir

This research project is conducted by Miss Jaflah Al-Ammary, a graduate student currently at the School of Information Technology, Murdoch University under the supervision of Associate Professor Lance Fung.
The survey will seek your opinion about the Knowledge Management (KM) strategy, business strategy, Information System/Information Technology (IS/IT) strategy pursued by your bank. In addition, information regarding your bank culture, technology infrastructure and skills will be requested. The survey will take 15 to 30 minutes to complete. All survey responses are strictly confidential.

Purpose: the researcher is conducting a survey in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Information Technology. The research concerns the co-alignment between KM strategies, business strategy, and IS/IT strategy in the banking sector in the Gulf Cooperation (GCC) countries. Moreover, it will investigate the effect of this co-alignment on organizational performance.

Description: the survey will provide understanding of the current situation regarding the Business strategy IS/IT strategy and KM strategy employed by the banking sector in the GCC countries. It will also provide understanding of the alignment (fit) between these strategies and the impact of this alignment on their performance. The result will be valuable to your bank as it faces the challenge of the need for knowledge in the new economy.
In return for your participation in this research, you will receive a summary of the result of this study. Your help and participation are greatly appreciated.

Confidentiality: all responses will be treated in strict confidence by the School of Information Technology, Murdoch University and the researcher. Any results reported will be aggregated to protect the anonymity of the participants and the organization.

This letter is asking for an approval from your bank to participate in the research.
It would be highly appreciated if you could return the completed form by 5-6th of January 2006. This consent form can be returned by fax: 973-17534446 or by mail to House No. 579, Road 221 Muharrage 202, Kingdom of Bahrain.

☐ Our bank will participate in the research ☐ Our bank will not participate in the research

PhD. Student:----------
Email : Jaflah@itc.uob.bh

Primary Supervisor :----------
L.Fung@murdoch.edu.au

For any information contact:
Research Ethic office, University of Murdoch, WA 6150, Tel: 618-93606677/6170, e-mail: ethics@murdoch.edu.au

Appendix B-3

Date: ……..

Jaflah AlAmmary
Office no: 618-93606072
Mobile: 614-39497034/ 973-39611193
School of Information Technology
Division of Arts
University of Murdoch

Dear Sir

Thank you for agreeing to participate in our study. As It has been mentioned in the cover letter, the purpose of this study is to find out how the co-alignment between KM strategy, IS/IT strategy and business strategy affects the banking performance in the GCC countries. In addition, it will investigate the influence of some context factors on the KM model.

I have attempted to contact you on the telephone a number of times for the above survey when I was in Bahrain. I'm indeed very sorry to impose on your evidently busy schedule. But as chief executive officer or general manager, I am sure you will appreciate that I would be less than diligent if I had not extended every effort to ensure the participation of one of the most important banks in the Gulf countries. The analyses of the data will assist the GCC banking industry in determining the importance of implementing KM project that will cooperate with their strategies to achieve the bank objectives and goals. Moreover this integration will allow them to attain a sustainable competitive advantage. The study will be less than complete without the participation of your bank.

I have sent you a copy of my questionnaires as a softcopy by e-mail. One e-mail has been sent on …… while I've sent the second e-mail on …….. I am acutely aware of the type of demand you must have on the time. But I will be grateful for your participation which I consider to be crucial.

It would be highly appreciated if you could return the questionnaires to me before the …….. As I'm currently in Australia, you can send them by e-mail or by mail on (24A, Burdette Retreat, Murdoch 6150, WA, Australia). If it's hard to send the questionnaires by e-mail or mail you can send them to Fax no 973-17534446 (Bahrain) and I will mange to collect them.

If you have any questions or concerns, please don't hesitate to send me an email or call me on 614-31383069, otherwise you can send me your contact number and I will call you.

Best regards
Jaflah Al Ammary
School of Information Technology
Division of Arts
University of Murdoch

Appendix B-4

Date: ……..

Jaflah AlAmmary
Office no: 618-93606072
Mobile: 614-39497034/ 973-39611193
School of Information Technology
Division of Arts
University of Murdoch

Dear Sir

Thanks again for agreeing to participate in our study. I have sent you one fax on ……to remind you about your participation in our survey. I have already sent you a copy of my questionnaires as a softcopy by e-mail and by mail. I am appreciating that you are very busy and you may not have time for respond to our survey. But I will be grateful for your participation which I consider to be crucial.

It would be highly appreciated if you could return the questionnaires as soon as you can. As I'm currently in Australia, you can send them by e-mail or by mail on (24A, Burdette Retreat, Murdoch 6150, WA, Australia). If it's hard to send the questionnaires by e-mail or mail you can send them to Fax no 973-17534446 (Bahrain) and I will mange to collect them.

If you have any questions or concerns, please don't hesitate to send me an email or call me on 614-31383069, otherwise you can send me your contact number and I will call you.

Best regards

Jaflah Al Ammary
School of Information Technology
Division of Arts
University of Murdoch

Appendix C

Questionnaire A
The alignment between Knowledge Management strategy and Business strategy

For the purpose of this survey, respondents will be asked to apply the following definition:

Knowledge strategy: is defined as a set of strategic actions or choices made at high strategic level to identify the strategic knowledge assets, resources and capabilities, and then orientating them towards achieving the organizational goals and improving the organizational performance.

Business strategy: is defined as actions taken by an organization to reach its objectives. The business strategy can be studied at the business level to discover how firms compete effectively in their product-market segments.

Strategic alignment between knowledge strategy and business strategy: The degree to which knowledge resources and capabilities provided by the knowledge strategy, is supporting and supported by the strategic and intellectual requirements of the business strategy in order to manage the strategic and knowledge gaps.

Bank Name: ----------

Title ❍ **CEO** ❍ **CIO** ❍ **CKO**

Others (please specify) ----------

1. Please tick (√) your country name:

- ❍ Kingdom of Bahrain
- ❍ State of Qatar
- ❍ Sultanate of Oman
- ❍ Kingdom of Saudi Arabia
- ❍ State of Kuwait
- ❍ United Arab Emirates

2. Who is responsible of the following? Choose number from the second table.

1. Initiating the KM in the bank ❑
2. Designing and creating the bank's knowledge infrastructure ❑
3. Designing and implementation the KM systems ❑

Chief Executive Officer (CEO) or Chief Operating Officer (COO)	**1**
Chief Information Officer (CIO)	**2**
Chie Knowledge Officer (CKO)	**3**
Senior functional managers (e.g. Director of marketing, or operations)	**4**
Director of IS function	**5**
Staff member	**6**
Others	**7**

3. Listed below are items that describe the roles of business manager in relation to KM. Please indicate the importance given to each item in your bank.

	Not important	Some What important	Quite important	Very important	Extremely important
1. Provide the direction to choose, implement and overcome resistance to the knowledge strategy					
2. measuring the value of knowledge and KM practices to the bank					
3. Analyze the strength, weakness, opportunities, and threats of the organization (SWOT) in term of knowledge resources (K-SWOT)					
4. Derive the difference between what the organization knows and what it must know in order to achieve what it wants (knowledge-gap)					
5. Derive the difference between what the organization can do and what it wants to do (strategic gap)					

4. The following statements are related to the bank's objectives in linking business and knowledge strategy. Indicate the extent to which you agree or disagree by putting [x] in the appropriate number against each using the response scale given below:

	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
1- Forecast the strategic knowledge resource, capabilities and skills needed to support the ongoing development of business strategy					
2- Sustaining the bank's competitive advantage					
3- Enhancing the effectiveness of the bank's operations					
4- Optimizing planning and designing process of the bank's future					

5. The following statements are related to your perception regarding the relationship between KM managers and business managers in your bank. Indicate the extent to which you agree or disagree by putting [x] in the appropriate number against each using the response scale given below:

	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
1. Business managers have a good understanding of KM					
2. KM managers have a good understanding of the business strategy					
3. Business managers are involved in formulating knowledge strategy at departmental level					
4. KM managers are involved in formulating business strategy at departmental level					
5. KM and business managers share a vision of how KM will support the business strategy					
6. KM and business managers are satisfied with their ability to communicate and negotiate with each other					
7. The bank places responsibility for business strategy and knowledge strategy within the same senior executive position					

6. The following statements are related to your perception regarding the relationship between knowledge strategy and business strategy in your bank. Indicate the extent to which you agree or disagree by putting [x] in the appropriate number against each using the response scale given below:

	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
8. Business strategy and knowledge strategy are aligned in my bank					
9. Business strategy and knowledge strategy are equally important					
10. Knowledge strategy and business strategy are prepared at the same time					
11. Business strategy and bank context is considered to be critical to the success of a KM initiative					
12. The business strategy of the bank outlines the processes, tools, and infrastructure required for knowledge to flow effectively					
13. The alignment of business strategy and knowledge strategy is vital for long-term survival of the bank					

7. **Indicate the extent to which you agree with the following statements as it suits your bank, by putting [x] in the appropriate number against each using the response scale given below. Do not hesitate to consult others within the business unit to verity information if necessary.**

	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
1. Profitability is sacrificed to gain market share					
2. Prices are cut to gain market share					
3. Prices are set below competition					
4. A market share position is sought at the expense of cash flow and profitability					
5. New opportunities related to present operations are constantly sought					
6. They are the first to introduce new brands or products in the market					
7. They are constantly on the lookout for businesses that can be acquired					
8. Competitors generally pre-empt them by expanding capacity					
9. Significant modifications to the manufacturing technology were brought					
10. The use of cost control systems for monitoring performance is encouraged					
11. The use of production management techniques is encouraged					
12. Product quality is emphasized					
13. The criteria for resource allocation generally reflect short term considerations					
14. Basic research is emphasized to provide a future competitive edge					
15. Activities can generally be characterized as high-risk					
16. A rather conservative review is adopted when making major decisions					
17. Effective coordination is emphasized among different functional areas					
18. It is believed that information systems provide support for decision making					
19. Thorough analysis is developed when confronted with a major decision					
20. The use of planning techniques is encouraged					
21. The use of the output of management information and control system is encouraged					

8. With regard to your bank, how would you score your business performance, over the last year, relative to your major, direct competitors?

	Much Worse				**Much Better**
	1	2	3	4	5
Reputation among major customer segments					
Frequency of new product or service introduction					
Return on investment					
Net profit					
Technological development and/or other innovation in business operations					
Product quality					
Market share gain					
Revenue growth					

Questionnaire B
The alignment between Knowledge strategy and IS strategy

For the purpose of this survey, respondents will be asked to apply the following definition:

Knowledge strategy: is defined as a set of strategic actions or choices made at high strategic level to identify the strategic knowledge assets, resources and capabilities, and then orientating them towards achieving the organizational goals and improving the organizational performance.

IS Strategy can be defined as the approach that encompasses the identification of the information needed by the bank to support the business goals, and the implementation of a computer system to provide this information (Allen, 1995).

Strategic alignment between knowledge strategy and IS strategy: The degree to which IS or IT resources (technological infrastructure, computer system application and organization information) are influence, leverage and execute knowledge strategic choices to manage the organization knowledge gap or surpluses and permit knowledge to flow effectively.

Bank Name: ----------

Title ❍ **CEO** ❍ **CIO** ❍ **CKO**

Others (please specify) ----------

1. **Please tick (√) your country name:**

❍ Kingdom of Bahrain
❍ State of Qatar
❍ Sultanate of Oman
❍ Kingdom of Saudi Arabia
❍ State of Kuwait
❍ United Arab Emirates

2. **Listed below are items that describe the role of the IT manager in relation to KM. Please indicate the importance given to each item in your bank.**

	Not important 1	Some What Important 2	Quite Important 3	Very Important 4	Extremely important 5
1. Finds the best way to transfer and disseminate knowledge to the bank's groups and individuals					
2. Provides a strategic framework (technology infrastructure, architecture and tools) for KM in the bank					
3. Tailors the IT usage to the needs of the business to support KM					
4. Leads the KM project with a profound vision about the banks technical and strategic resources					
5. Identifies the characteristics of the existing technologies that could influence the adoption of KM					

3. Listed below are items that describe the bank's assumption regarding the role of IT and IS strategy in KM and the alignment between IS strategy and knowledge strategies. Please indicate the importance given to each item in the bank.

	Not important 1	Some What Important 2	Quite Important 3	Very Important 4	Extremely important 5
6. IT is a powerful tool for creating, transferring, and sharing knowledge					
7. IS strategy forms the design of the bank's KM systems					
8. IT provides the technical resources, capabilities and skills needed by knowledge strategy					

4. The following statements are related to your perception regarding the relationship between KM manage and IT manager in your bank. Indicate the extent to which you agree or disagree by putting [x] in the appropriate number against each using the response scale given below:

	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Disagree 5
9. IT managers have a good understanding of KM and knowledge strategy					
10. KM managers have a good understanding of the IS strategy in the bank					
11. IT managers are involved in formulating knowledge strategy at departmental level					
12. KM managers are involved in formulating IS strategy at departmental level					
13. KM and IT managers share a vision of how IT will support the KM in the bank					
14. All large KM development projects have IT managers' active sponsorship and leadership					
15. KM and IT managers are satisfied with their ability to communicate and negotiate with each other					

5. The following statements are related to your perception regarding the relationship between knowledge strategy and IS strategy in your bank. Indicate the extent to which you agree or disagree by putting [x] in the appropriate number against each using the response scale given below:

	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Disagree 5
16. IS strategy and knowledge strategy are aligned in my bank					
17. IS strategy and knowledge strategy are the same					
18. IS strategy and knowledge strategy are equally important					
19. Knowledge strategy and IS strategy are					

prepared at the same time					

6. The following statements are related to the knowledge strategy pursued by your bank. Indicate the extent to which you agree or disagree by circling the appropriate number against each, using the response scale given below:

	Strongly disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
1. Policies exist within the bank to encourage intensive co-operation and interaction between both their functional and professional specialists					
2. The bank is seeking suggestions and ideas from employees					
3. The bank actively acquires innovative financial or banking technology from external R&D sources					
4. The bank has processes for acquiring knowledge about their customers, and competitors within and outside their domain					
5. The bank encourages officers to be innovative and creative					
6. The bank has place where officers can discuss their tacit knowledge					
7. The bank encourages employees to participate in project teams with external experts					
8. The bank systematically promotes the creativity and expression of new ideas and the effective conversion of these ideas into new services					
9. The bank has processes for applying knowledge learned from mistakes and experiences and uses it to solve new problems					
10. The bank creates and enables a learning and sharing environment within and outside the bank					
11. The bank creates and enables a learning and sharing environment					
12. The bank facilitates the growth in the value of knowledge existing within the bank					
13. The bank promotes the maintenance and utilization of existing knowledge to improve the efficiency of their business processes and activities					
14. The bank has processes for organizing, storing, restructuring, and memorizing knowledge for later sharing and transfer					
15. The bank uses Internets, Intranets and Extranets to support knowledge access and exchange					

16. The IT system in the bank promotes knowledge dissemination across the functional and strategic level					
17. The bank promotes the acquiring of internal knowledge by using formal and informal research activities					

7. Indicate the extent to which you agree with the following statements as it relates to the information systems available to the business unit, by putting [x] in the appropriate number against each (as shown in the example), using the response scale given below. Only consider systems that have been in use for at least a year. Do not hesitate to consult others within the business unit to verity information if necessary. (The systems in the following questionnaire are referred to IS system and application.

	Strongly disagree 1	**Disagree 2**	**Neutral 3**	**Agree 4**	**Strongly agree 5**
1. The systems used in the business unit assist in the identification of new business opportunities					
2. The systems used in the business unit help us introduce various products and/or services in our market (or markets)					
3. The systems used in the business unit help us identify companies we may be interested in acquiring					
4. The systems used in the business unit, by allowing us to keep track of our competitors, assist us in preempting them if necessary					
5. The systems used in the business unit assist us in identifying operations (e.g. products or services) in the later stages of their life cycles which should be strategically eliminated (e.g., divested)					
6. The systems used in the business unit give us the information we need to grasp opportunities that come our way					
7. The systems used in the business provide us with information to defend our market position					
8. The systems used in the business unit support effective coordination among functions (e.g. finance and marketing)					
9. The systems used in the business unit often have been adopted in order to defend our market position					
10. The systems used in the business unit enable us to develop stronger ties with major customers					
11. The systems used in the business unit have been updated to reflect technological changes in our competitors' systems					

12. The systems used in the business unit improve the efficiency of our business operations					
13. The systems used in the business unit provide us with a considerable degree of bargaining power with respect to our customers.					
14. The systems used in the business unit help us maximize the efficiency of our business operations					
15. The systems used in the business unit help us establish strong market links in general (e.g. with customers)					
16. The systems used in the business unit help us take calculated business risks					
17. The systems used in the business unit provide sufficiently detailed information to support conservative decision making					
18. The systems used in the business unit provide us with the facts and figures we need to support our day-to-day decision making					
19. The systems used in the business unit enable us to monitor projects on a stage-by-stage basis					
20. The systems used in the business unit provide us with the data we need to steer clear of overly risky business propositions					
21. The systems used in the business unit allow us to determine with a good deal of certainty the expected rates of return on business project					
22. The systems used in the business unit give us the information we need in order to minimize business risks					
23. The systems used in the business unit help us monitor changes in our market share					
24. The systems used in the business unit help us rapidly adjust and modify our services and products					
25. The systems used in the business unit help us be (or become) one of the top banks in our market (or markets)					
26. The systems used in the business unit help us stay ahead of (or catch up with) the competition					
27. The systems used in the business unit assist us modifying our services relative to the competition					
28. The system used in the business unit help us aggressively go after market share					
29. The systems used in the business unit allow us to adjust budget allocation decisions based on short-term considerations					
30. The systems used in the business unit represent investments geared at providing us with a future competitive edge					

31. The systems used in the business unit provide more information on our short-term performance than on our long-term performance					
32. The systems used in the business unit provide us with more long-term than short-term paybacks					
33. The systems used in the business unit assist us more with long-term planning than with short-term planning					
34. The systems used in the business unit enable us to develop detailed analyses of our present business situation					
35. The systems used in the business unit enable us to carry out detailed analyses of major business decisions					

Appendix D

Table D-1: Correlation Matrix for the constructs of business strategy and IS strategy

	BSDEF1	BSDEF2	BSDEF3	BSDEF4	BSDEF5	BSDEF6	BSDEF7	BSDEF8	BSDEF9	BSPRO1
ISPRO1	-0.080	-0.062	-0.143	0.014	-0.041	-0.022	-0.077	-0.002	0.064	0.095
ISPRO2	-0.019	0.038	-0.130	0.009	0.022	0.131	-0.025	0.062	0.083	0.045
ISPRO3	-0.139	-0.018	-0.078	-0.105	-0.148	0.085	-0.069	0.109	-0.045	0.063
ISPRO4	0.023	-0.018	-0.116	0.023	0.015	0.056	-0.163	-0.002	-0.031	0.053
ISPRO5	0.058	-0.025	-0.038	0.103	0.080	0.042	0.013	-0.004	0.136	0.178
ISPRO6	0.100	0.092	-0.143	0.055	0.116	0.148	-0.177	-0.060	-0.058	0.064
ISAGG1	0.007	-0.098	0.191	0.190	0.129	0.133	0.127	0.072	-0.041	0.007
ISAGG2	0.042	-0.130	0.068	0.091	0.105	-0.031	0.041	0.127	0.021	0.182
ISAGG3	-0.032	-0.125	0.037	0.123	0.169	-0.099	-0.040	0.077	-0.065	-0.075
ISAGG4	-0.148	-0.166	-0.124	0.033	0.073	-0.039	0.083	0.074	0.175	-0.027
ISAGG5	-0.013	-0.213	0.056	0.066	0.200	-0.040	0.075	-0.074	0.049	0.055
ISAGG6	-0.018	-0.085	0.080	0.144	0.075	0.014	0.117	0.008	0.099	0.071
ISDEF1	-0.154	0.063	0.101	-0.113	0.079	0.042	-0.167	-0.323	-0.083	-0.029
ISDEF2	0.148	0.171	0.046	0.124	-0.039	-0.016	-0.031	-0.185	-0.065	-0.097
ISDEF3	0.099	0.025	-0.083	0.051	0.020	-0.001	0.010	-0.177	-0.098	0.046
ISDEF4	0.023	0.107	0.075	0.114	-0.004	0.082	0.002	-0.093	-0.130	-0.110
ISDEF5	-0.106	0.015	-0.065	0.083	0.011	0.066	-0.091	-0.100	-0.095	0.151
ISDEF6	0.032	0.129	-0.078	-0.017	-0.052	-0.062	0.006	-0.060	0.020	0.098

Table D-1: Correlation Matrix for the constructs of business strategy and IS strategy

	BSDEF1	BSDEF2	BSDEF3	BSDEF4	BSDEF5	BSDEF6	BSDEF7	BSDEF8	BSDEF9	BSPRO1
ISDEF7	-0.009	0.047	0.007	0.075	-0.101	0.024	0.053	-0.182	-0.006	-0.082
ISDEF8	0.081	0.076	-0.027	0.068	-0.024	-0.025	0.020	-0.038	0.085	0.001
ISDEF9	0.055	0.130	-0.190	-0.061	-0.018	0.019	-0.035	-0.131	-0.064	0.067
ISRSK1	0.140	-0.054	0.098	-0.031	0.072	-0.034	0.234	0.229	-0.035	-0.118
ISRSK2	0.134	0.067	0.247	-0.045	0.074	0.045	0.012	-0.012	-0.108	-0.175
ISRSK3	0.159	-0.051	0.293	0.038	-0.010	0.047	0.130	0.056	0.004	-0.058
ISRSK4	0.115	-0.061	0.224	0.070	0.232	-0.002	0.248	0.084	0.031	0.100
ISRSK5	0.071	0.098	0.306	0.071	0.045	0.162	0.070	0.024	-0.151	-0.119
ISRSK6	-0.081	-0.063	0.089	-0.146	0.111	0.006	0.007	-0.024	-0.142	-0.008
ISRSK7	-0.057	-0.147	0.116	-0.089	-0.052	0.019	-0.084	-0.202	-0.148	0.026
ISANL1	0.034	0.239	-0.061	-0.071	0.118	0.080	-0.164	-0.074	-0.206	-0.058
ISANL2	0.044	0.301	-0.019	-0.064	0.162	0.043	-0.160	-0.068	-0.106	0.024
ISFUT1	0.028	-0.003	-0.174	-0.026	0.072	-0.174	-0.040	-0.191	-0.082	0.118
ISFUT2	0.084	0.061	-0.088	0.016	0.126	-0.140	-0.005	-0.161	-0.060	0.127
ISFUT3	0.037	0.008	-0.130	0.035	0.065	-0.115	0.015	-0.179	-0.034	0.079
ISFUT4	0.091	0.010	-0.095	0.029	0.094	-0.123	-0.015	-0.177	-0.092	0.079
ISFUT5	0.135	0.021	-0.148	0.051	0.092	-0.126	-0.013	-0.179	-0.078	0.080

Table D-1: Correlation Matrix for the constructs of business strategy and IS strategy (continue)

	BSPRO2	BSPRO3	BSPRO4	BSPRO5	BSPRO6	BSPRO7	BSPRO8	BSANL1	BSANL2	BSANL3	BSANL4
ISPRO1	-0.001	0.113	-0.035	0.074	-0.048	0.028	0.001	0.022	-0.081	-0.020	-0.022
ISPRO2	-0.033	0.101	-0.097	-0.017	-0.145	-0.036	-0.132	0.122	0.041	0.069	0.026
ISPRO3	0.045	0.224	-0.135	0.135	-0.144	-0.083	-0.038	0.166	-0.059	-0.157	0.004
ISPRO4	0.009	0.187	-0.055	-0.082	-0.037	0.038	-0.093	0.030	0.048	0.111	0.067
ISPRO5	-0.057	0.123	0.073	0.032	0.063	0.190	0.011	0.122	0.028	0.147	-0.048
ISPRO6	0.101	0.093	0.106	-0.104	0.035	0.105	-0.043	0.127	-0.003	0.023	0.079
ISAGG1	0.168	0.220	-0.055	0.025	-0.107	0.029	0.133	-0.057	0.001	-0.087	-0.168
ISAGG2	0.150	0.266	-0.042	0.115	-0.034	0.008	0.132	-0.189	-0.088	-0.141	-0.124
ISAGG3	0.187	0.157	0.071	0.081	-0.006	-0.009	0.125	-0.001	-0.147	-0.019	-0.128
ISAGG4	0.036	0.141	-0.157	0.082	-0.164	-0.186	0.027	-0.044	-0.121	-0.338	-0.283
ISAGG5	0.178	0.098	-0.013	0.039	-0.085	-0.016	0.126	-0.127	-0.111	-0.109	-0.130
ISAGG6	0.017	0.111	-0.090	0.037	-0.180	-0.002	0.124	-0.090	-0.180	-0.146	-0.045
ISDEF1	0.098	0.143	0.161	-0.145	-0.021	0.134	-0.112	0.021	0.164	0.206	0.028
ISDEF2	-0.011	0.014	0.030	-0.096	-0.051	0.049	-0.190	0.107	0.027	0.123	0.022
ISDEF3	0.074	0.002	0.162	0.068	0.054	-0.057	-0.140	-0.032	0.022	0.184	0.121
ISDEF4	-0.020	-0.089	0.065	0.003	-0.130	0.032	-0.154	-0.059	-0.017	0.107	0.112

Table D-1: Correlation Matrix for the constructs of business strategy and IS strategy (continue)

	BSPRO2	BSPRO3	BSPRO4	BSPRO5	BSPRO6	BSPRO7	BSPRO8	BSANL1	BSANL2	BSANL3	BSANL4
ISDEF5	0.034	0.089	0.200	0.081	0.069	0.107	0.020	0.057	0.056	0.064	0.159
ISDEF6	0.081	0.094	-0.033	-0.015	0.051	0.101	0.031	0.124	0.122	0.039	0.171
ISDEF7	0.006	0.034	0.125	-0.060	-0.114	-0.024	-0.132	0.120	0.168	0.180	0.311
ISDEF8	0.009	0.134	0.138	0.007	0.054	0.054	-0.070	0.101	0.152	0.121	0.127
ISDEF9	0.080	-0.023	0.131	-0.059	0.216	-0.070	-0.129	-0.046	0.165	1.240	0.082
ISRSK1	0.154	0.252	-0.001	0.095	-0.080	0.141	-0.068	0.027	0.092	-0.150	-0.061
ISRSK2	0.065	0.047	0.069	-0.005	0.051	0.159	-0.124	0.115	0.083	-0.086	-0.038
ISRSK3	0.010	-0.037	-0.096	-0.011	-0.002	0.010	-0.146	0.063	-0.013	-0.254	-0.122
ISRSK4	0.052	0.099	-0.048	0.086	-0.057	0.158	-0.016	0.130	-0.037	-0.174	-0.106
ISRSK5	0.147	0.030	0.114	-0.132	-0.071	0.049	-0.149	0.093	-0.028	-0.132	0.018
ISRSK6	0.051	0.091	0.126	0.050	-0.018	0.109	-0.142	0.046	-0.019	-0.122	-0.141
ISRSK7	0.206	0.223	0.124	0.017	0.073	0.192	-0.059	0.124	0.143	-0.127	0.018
ISANL1	0.112	-0.270	0.123	-0.151	-0.034	0.006	-0.087	0.001	-0.138	0.017	0.015
ISANL2	0.100	-0.288	0.122	-0.094	0.074	0.039	-0.073	-0.048	-0.021	0.040	-0.055
ISFUT1	0.125	-0.064	0.029	-0.089	0.129	0.122	-0.118	0.125	0.058	0.035	0.089
ISFUT2	0.185	-0.050	0.125	-0.078	0.126	0.124	-0.066	0.129	0.045	0.032	0.085
ISFUT3	0.147	-0.061	0.167	-0.110	0.122	0.127	-0.120	0.195	0.049	0.129	0.123
ISFUT4	0.168	-0.043	0.121	-0.102	0.198	0.123	-0.171	0.130	0.065	0.031	0.008
ISFUT5	0.180	-0.076	0.120	-0.116	0.128	0.099	-0.158	0.126	0.042	0.129	0.003

Table D-2: Correlation Matrix for the constructs of business strategy and knowledge strategy

	AKS1	AKS2	AKS3	AKS3	AKS4	AKS5	AKS6	AKS8	AKS9
BSDEF1	-0.023	-0.250	-0.216	-0.113	-0.308	-0.364	-0.181	-0.179	-0.209
BSDEF3	-0.022	0.065	-0.134	-0.273	-0.148	-0.150	-0.256	-0.298	-0.127
BSDEF4	-0.053	0.026	-0.255	-0.262	-0.140	-0.107	-0.333	-0.265	0.000
BSDEF5	0.081	0.144	-0.197	-0.041	-0.080	-0.015	-0.169	-0.066	0.133
BSDEF6	-0.122	-0.101	-0.291	-0.218	-0.229	-0.205	-0.161	-0.276	0.022
BSDEF7	-0.072	-0.094	-0.102	-0.051	0.021	-0.033	-0.154	-0.188	-0.004
BSDEF8	-0.040	-0.118	-0.137	-0.153	-0.157	-0.162	-0.218	-0.099	-0.145
BSDEF9	0.013	0.076	0.079	0.036	-0.043	0.119	-0.108	0.007	0.062
BSPRO1	0.133	0.368	0.252	0.137	0.307	0.307	0.127	0.318	0.380
BSPRO2	0.123	0.303	0.071	0.247	0.182	0.247	0.002	0.183	0.141
BSPRO4	0.172	0.007	0.048	0.286	0.021	0.124	0.120	0.105	0.044
BSPRO5	0.037	0.185	0.241	0.317	0.248	0.256	0.081	0.229	0.264
BSPRO6	0.028	0.078	-0.009	0.018	0.079	0.067	-0.058	0.264	0.187
BSPRO7	0.120	0.279	0.178	0.203	0.283	0.286	0.076	0.259	0.363
BSPRO8	0.341	0.276	0.399	0.252	0.218	0.215	0.222	0.169	0.148
BSANL1	-0.189	-0.229	-0.200	-0.144	-0.171	-0.169	-0.280	-0.183	-0.198
BSANL2	-0.194	-0.103	-0.098	-0.030	-0.090	-0.119	-0.048	-0.043	-0.201
BSANL3	-0.048	-0.067	-0.039	0.000	0.057	0.008	-0.058	-0.113	-0.032
BSANL4	-0.287	-0.266	-0.192	-0.114	-0.153	-0.274	-0.247	-0.225	-0.295

Table D-2: Correlation Matrix for the constructs of business strategy and knowledge strategy (continue)

	AKS10	CKS1	CKS2	CKS3	CKS4	CKS5	CKS6	CKS7
BSDEF1	-0.215	0.269	0.212	0.174	0.208	0.097	0.169	0.267
BSDEF3	-0.111	0.371	0.187	0.326	0.209	0.204	0.471	0.301
BSDEF4	-0.066	0.183	0.283	0.287	0.157	0.181	0.207	0.111
BSDEF5	0.060	0.262	0.270	0.025	0.183	0.248	0.039	0.166
BSDEF6	-0.036	0.282	0.230	0.208	0.202	0.210	0.250	0.203
BSDEF7	-0.088	0.136	0.211	0.326	0.094	0.361	0.404	0.189
BSDEF8	-0.154	0.155	0.119	0.206	-0.023	0.198	0.328	0.158
BSDEF9	0.115	0.154	0.052	0.158	0.009	0.089	0.147	0.197
BSPRO1	0.349	-0.066	-0.191	-0.247	-0.357	-0.491	-0.408	-0.371
BSPRO2	0.135	-0.138	-0.171	-0.261	-0.202	-0.228	-0.327	-0.262
BSPRO4	0.322	-0.227	-0.072	-0.219	-0.123	-0.186	-0.404	-0.131
BSPRO5	0.209	-0.248	-0.366	-0.112	-0.526	-0.213	-0.210	-0.373
BSPRO6	0.313	-0.250	-0.185	-0.256	-0.213	-0.308	-0.372	-0.237
BSPRO7	0.334	-0.156	-0.215	-0.240	-0.210	-0.265	-0.428	-0.308
BSPRO8	0.149	-0.207	-0.287	-0.350	-0.408	-0.250	-0.252	-0.244
BSANL1	-0.162	0.014	0.072	-0.014	0.223	0.056	0.005	-0.066
BSANL2	0.010	0.018	0.129	0.127	0.127	0.093	-0.084	-0.075
BSANL3	0.085	-0.006	0.099	0.103	0.159	0.138	0.029	0.118
BSANL4	-0.046	0.016	-0.029	0.108	0.168	0.091	0.002	-0.019

Table D-3: Correlation Matrix for the constructs of IS strategy and performance

	ISPRO1	ISPRO2	ISPRO3	ISPRO4	ISPRO5	ISPRO6	ISAGG1	ISAGG2	ISAGG3	ISAGG4	ISAGG5	ISAGG6
PERF1	0.114	-0.047	0.112	0.166	0.109	0.075	-0.044	0.128	0.083	0.111	0.084	-0.007
PERF2	-0.050	-0.175	-0.178	-0.046	0.005	-0.140	-0.074	-0.095	-0.032	-0.056	-0.095	-0.144
PERF3	0.130	-0.052	0.061	0.124	0.163	0.050	-0.041	0.029	0.082	-0.023	0.057	-0.081
PERF4	0.181	0.058	0.122	0.158	0.233	0.141	0.046	0.000	0.007	-0.035	0.027	-0.090
PERF5	0.100	-0.071	-0.031	0.039	0.105	0.062	-0.039	-0.071	0.012	-0.051	0.010	-0.198
PERF6	0.119	-0.088	0.024	0.020	0.039	0.027	-0.098	0.025	-0.002	0.010	-0.050	-0.191
PERF7	0.082	-0.063	0.029	0.051	0.062	0.086	-0.133	-0.021	-0.098	-0.092	-0.130	-0.252
PERF8	0.001	-0.124	-0.064	-0.078	0.037	-0.076	-0.034	0.031	0.045	-0.040	0.020	-0.079

Table D-3: Correlation Matrix for the constructs of IS strategy and performance (continue)

	ISDEF1	ISDEF2	ISDEF3	ISDEF4	ISDEF5	ISDEF6	ISDEF7	ISDEF8	ISDEF9	ISRSK1	ISRSK2	ISRSK3
PERF1	0.076	0.011	0.035	-0.091	0.128	0.081	0.015	-0.048	-0.051	-0.132	-0.039	-0.037
PERF2	0.070	0.187	0.172	-0.010	0.229	0.190	0.154	0.175	0.161	-0.106	-0.127	-0.149
PERF3	0.123	0.120	0.084	-0.038	0.207	0.139	0.139	0.099	0.130	-0.073	-0.052	-0.080
PERF4	0.180	0.151	0.162	0.061	0.280	0.136	0.186	0.138	0.177	0.018	0.063	-0.003
PERF5	0.149	0.179	0.178	0.024	0.264	0.105	0.250	0.221	0.121	-0.121	-0.091	-0.128
PERF6	-0.002	0.085	0.143	-0.097	0.277	0.223	0.143	0.208	0.093	-0.141	-0.074	-0.094
PERF7	0.111	-0.016	0.122	-0.067	0.215	0.238	0.061	0.071	0.109	-0.009	-0.025	-0.031
PERF8	0.026	0.180	0.184	-0.012	0.281	0.216	0.191	0.171	0.156	-0.043	-0.011	-0.064

Table D-3: Correlation Matrix for the constructs of IS strategy and performance (continue)

	ISRSK4	ISRSK5	ISRSK6	ISRSK7	ISANL1	ISANL2	ISFUT1	ISFUT2	ISFUT3	ISFUT4	ISFUT5
PERF1	-0.058	-0.104	-0.088	0.124	-0.069	-0.155	0.287	0.226	0.238	0.260	0.287
PERF2	-0.112	-0.219	-0.116	0.070	-0.169	-0.205	0.219	0.122	0.116	0.176	0.156
PERF3	-0.108	-0.174	-0.096	0.138	-0.046	-0.075	0.261	0.194	0.170	0.245	0.242
PERF4	0.012	-0.045	0.034	0.192	-0.034	-0.118	0.058	0.005	-0.014	0.064	0.065
PERF5	-0.063	-0.142	-0.107	0.116	-0.071	-0.138	0.234	0.163	0.195	0.265	0.190
PERF6	-0.136	-0.190	-0.117	0.066	-0.120	-0.150	0.124	0.040	0.067	0.108	0.101
PERF7	-0.006	-0.133	0.013	0.191	-0.044	-0.090	0.178	0.089	0.044	0.100	0.136
PERF8	-0.099	-0.164	-0.064	0.213	-0.236	-0.283	0.133	0.119	0.107	0.121	0.124

Table D-4: Correlation Matrix for the constructs of knowledge strategy and performance

	AKS1	AKS2	AKS3	AKS4	AKS5	AKS6	AKS7	AKS8	AKS9	AKS10	CKS1	CKS2
PERF1	0.086	0.086	0.141	-0.078	0.131	0.142	-0.014	0.135	0.027	0.066	-0.181	-0.039
PERF2	0.118	0.015	0.138	0.045	0.149	0.035	0.097	0.255	0.125	0.068	-0.049	-0.021
PERF3	0.150	0.154	0.149	-0.034	0.071	0.190	-0.012	0.304	0.091	0.209	-0.089	-0.081
PERF4	0.152	0.130	0.119	0.027	0.077	0.149	-0.009	0.218	0.029	0.062	-0.165	-0.124
PERF5	0.051	-0.041	0.034	-0.103	0.002	0.083	-0.047	0.061	-0.055	-0.017	-0.180	-0.174
PERF6	0.117	0.066	0.190	0.061	0.181	0.142	0.092	0.231	0.121	0.098	-0.088	-0.092
PERF7	0.125	-0.035	0.182	0.119	0.145	0.111	0.113	0.282	0.044	0.121	-0.048	-0.127
PERF8	0.165	0.096	0.256	0.168	0.172	0.184	0.071	0.209	0.117	0.101	-0.049	-0.028

Table D-4: Correlation Matrix for the constructs of knowledge strategy and performance (continue)

	CKS3	CKS4	CKS5	CKS6	CKS7
PERF1	-0.125	-0.055	-0.128	-0.025	-0.029
PERF2	-0.132	-0.102	-0.027	-0.129	-0.177
PERF3	-0.028	-0.083	-0.042	-0.035	-0.157
PERF4	-0.126	0.042	-0.030	-0.025	-0.025
PERF5	-0.122	0.030	-0.124	-0.128	-0.195
PERF6	-0.029	-0.105	-0.036	-0.032	-0.079
PERF7	-0.042	-0.053	-0.137	-0.131	-0.162
PERF8	-0.137	-0.122	-0.128	-0.033	-0.027

Table D-5: Correlation Matrix for the constructs of business strategy and performance

	BSDEF1	BSDEF2	BSDEF3	BSDEF4	BSDEF5	BSDEF6	BSDEF7	BSDEF8	BSDEF9	BSPRO1	BSPRO2	BSPRO3
PERF1	-0.159	-0.035	-0.035	-0.023	-0.169	-0.097	-0.118	-0.241	-0.186	0.191	0.078	0.027
PERF2	-0.114	-0.108	-0.148	-0.116	-0.135	-0.123	-0.1320	-0.149	-0.135	0.153	0.064	0.140
PERF3	-0.198	-0.116	-0.042	-0.148	-0.188	-0.125	-0.144	-0.133	-0.198	0.186	0.209	0.159
PERF4	-0.154	-0.042	-0.136	-0.125	-0.106	-0.034	-0.054	-0.160	-0.140	0.140	0.139	0.157
PERF5	-0.189	-0.153	-0.038	-0.144	-0.164	-0.135	-0.136	-0.172	-0.066	0.108	0.096	0.173
PERF6	-0.124	-0.112	-0.152	-0.089	-0.089	-0.032	-0.040	-0.137	-0.062	0.177	0.157	0.176
PERF7	-0.065	-0.125	-0.044	-0.182	-0.165	-0.144	-0.138	-0.138	-0.142	0.133	0.096	0.144
PERF8	-0.044	-0.132	-0.021	-0.134	-0.176	-0.134	-.154	-0.112	-0.150	0.122	0.018	0.155

Table D-5: Correlation Matrix for the constructs of business strategy and performance (continue)

	BSPRO4	BSPRO5	BSPRO6	BSPRO7	BSPRO8	BSANL1	BSANL2	BSANL3	BSANL4
PERF1	0.030	0.024	0.122	0.194	0.149	0.181	0.172	0.076	0.085
PERF2	0.161	-0.016	0.190	0.019	0.081	0.186	0.101	0.006	0.139
PERF3	0.015	0.074	0.059	0.184	0.063	0.037	0.200	0.165	0.024
PERF4	0.194	-0.042	0.154	0.142	0.050	0.038	0.026	0.120	0.136
PERF5	0.157	-0.054	0.152	0.149	-0.016	0.132	0.096	0.129	0.024
PERF6	0.106	0.099	0.188	0.091	0.164	0.116	0.025	0.059	0.127
PERF7	0.152	-0.044	0.126	0.188	0.149	0.157	0.023	0.111	0.075
PERF8	0.102	-.067	0.113	0.176	0.132	0.141	0.034	0.114	0.089