INVESTIGATING THE RELATIONSHIP BETWEEN KNOWLEDGE MANAGEMENT, INTELLECTUAL CAPITAL AND BUSINESS PERFORMANCE OF INDUSTRIES IN IRAQ

By

ABBAS MEZAEL MUSHRAF —S9700

Thesis Submitted to
Othman Yeop Abdullah Graduate School of Business,
Universiti Utara Malaysia,
in Fulfillment of the Requirement for the Degree of Doctor of Philosophy

Kolej Perniagaan
(College of Business)
Universiti Utara Malaysia

PERAKUAN KERJA TESIS / DISERTASI
(Certification of thesis / dissertation)

Kami, yang bertandatangan, memperakukan bahawa
(We, the undersigned, certify that)

ABBAS MEZAEL MUSHRAF

calon untuk Ijazah   **DOCTOR OF PHILOSOPHY**
(candidate for the degree of)

telah mengemukakan tesis / disertasi yang bertajuk:
(has presented his/her thesis / dissertation of the following title):

INVESTIGATING THE RELATIONSHIP BETWEEN KNOWLEDGE MANAGEMENT, INTELLECTUAL CAPITAL AND BUSINESS PERFORMANCE OF INDUSTRIES IN IRAQ

seperti yang tercatat di muka surat tajuk dan kulit tesis / disertasi.
(as it appears on the title page and front cover of the thesis / dissertation).

Bahawa tesis/disertasi tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan, sebagaimana yang ditunjukkan oleh calon dalam ujian lisan yang diadakan pada :
20 November 2011.

That the said thesis/dissertation is acceptable in form and content and displays a satisfactory knowledge of the field of study as demonstrated by the candidate through an oral examination held on:
20 November 2011.

Pengerusi Viva *(Chairman for Viva)*	:	**Prof. Dr. Abdul Razak bin Chik**	Tandatangan *(Signature)*
Pemeriksa Luar *(External Examiner)*	:	**Prof. Dr. Zainal Abidin bin Mohamed**	Tandatangan *(Signature)*
Pemeriksa *Dalam* *(Internal Examiner)*	:	**Assoc. Prof. Dr. Zulkifli bin Mohamed Udin**	Tandatangan *(Signature)*

Tarikh: **20 November 2011**
(Date)

Nama Pelajar
(Name of Student)

:   Abbas Mezael Mushraf

Tajuk Tesis
(Title of the Thesis)

:   **Investigating the Relationship between Knowledge Management, Intellectual Capital and Business Performance of Industries in Iraq**

Program Pengajian
(Programme of Study)

:   Doctor of Philosophy

Nama Penyelia/Penyelia-penyelia
(Name of Supervisor/Supervisors)

:   Dr. Sa'ari bin Ahmad

Tandatangan
(Signature)

PERMISSION TO USE

In presenting this thesis in fulfillment of the requirements for a postgraduate degree from Universiti Utara Malaysia, I agree that the University Library make a freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purpose may be granted by my supervisor Dr. Sa'ari Bin Ahmad or, in his absence by the Dean of Othman Yeop Abdullah Graduate School of Business. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my thesis.

Request for permission to copy or make other use of materials in this thesis, in whole or in part should be addressed to:

Dean of Othman Yeop Abdullah Graduate School of Business

Universiti Utara Malaysia

06010 UUM Sintok

Kedah Darul Aman

ABSTRACT

The current research attempts to clarify the intertwined properties between intellectual capital and knowledge management and also between technology and culture, at the same time, established an integrated framework for the fields. With very little information about knowledge management practices in Iraq, this research investigated knowledge management process perspective and its relationship to intellectual capital. The focus is to examine the effects of knowledge management and intellectual capital on business performance, using technology and culture as moderators for firm's effectiveness. One hundred and ninety one usable questionnaires were collected. Respondents to the questionnaire were from middle to top managers who worked in companies that held patents in various industries. The discriminate validity, convergent validity, and reliability were established. Five research hypotheses were supported by the results as follows; there is a positive relationship between knowledge management process and business performance, there is a positive relationship between knowledge management content and business performance, there is a positive relationship between intellectual capital and business performance, culture act as a moderator for the relationship between knowledge management process, knowledge management content, intellectual capital and business performance, and technology act as a moderator for the relationship between knowledge management process, knowledge management content, intellectual capital and business performance. Several contributions of this research project were realized. First, an integrated model of knowledge management and intellectual capital was empirically tested. Second, emergent Knowledge management processes and its contents were established as enablers of business performance and the relationship with other intellectual capital components, including human capita, relation capital, structure capital and customer capital and should examine other factors that may affect the sophistication of business performance such as culture and technology. A revised model was presented that may lead to future research in this area.

Keywords: Knowledge Management, Intellectual Capital, Business Performance, and Iraqi Industry.

ABSTRAK

Kajian ini bertujuan untuk menerangkan hubung kait di antara modal intelek dan pengurusan pengetahuan, di samping hubung kait teknologi dan budaya , dan untuk mengenal pasti rangka kerja di dalam bidang tersebut. Maklumat yang diperolehi sebelum kajian amat terhad. Kajian ini melihat pengurusan pengetahuan dari sudut proses dan hubung kaitnya dengan modal intelek. Tumpuannya ialah untuk meneliti kesan pengurusan pengetahuan dan modal intelek terhadap prestasi usaha, mengambil kira teknologi dan budaya sebagai penyumbang kepada kecekapan firma. Sebanyak satu ratus sembilan puluh satu soal selidik yang lengkap telah dapat di kumpulkan. Responden dalam kajian terdiri dari peringkat pertengahan sehinggalah ke peringkat pengurusan atasan yang bekerja di dalam syarikat yang mempunyai tanda dagangan di dalam beberapa perusahaan di Iraq. Pengesahan diskriminan, kesahihan konvergen, dan ujian keboleh percayaan telah dapat dibuktikan. Lima hipotesis kajian yang disokong oleh dapatan tinjauan adalah seperti berikut; terdapat hubungan positif antara proses pengetahuan pengurusan dan prestasi usaha, terdapat hubungan positif antara kandungan pengetahuan pengurusan dan prestasi usaha, terdapat hubungan positif antara modal intelektual dan prestasi usaha, budaya sebagai moderator terhadap proses pengurusan pengetahuan, kandungan pengurusan pengetahuan, dan modal intelektual dan prestasi usaha, teknologi sebagai moderator kepada hubungan antara proses pengurusan pengetahuan, dan kandungan pengurusan pengetahuan dan modal intelektual dan prestasi perniagaan. Dapatan dari penyelidikan telah direalisasikan dalam bentuk; Pertama satu model bersepadu pengurusan pengetahuan dan modal intelek telah diuji secara empirik. Kedua, kewujudan proses pengurusan pengetahuan dan isinya sebagai pemangkin kepada prestasi perniagaan dan hubungan dengan komponen modal intelek lain, termasuk modal insan , modal hubungan, struktur modal dan modal pelanggan-pelanggan . Satu model baru telah dapat dibentuk untuk kajian di masa hadapan di dalam bidang ini.

Kata kunci: Pengurusan Pengetahuan, Modal Intelek, Prestasi Perniagaan, dan Industri Iraq.

PUBLICATIONS DERIVED FROM THIS THESIS

1. Mushraf, A. M., & Ahmad, S. (2011). *The Relationship between Knowledge Management and Business Performance: An empirical study in Iraqi industry.* Paper accepted at the Harveard Journal of Management, Published By: World Business Institute, Australia, ISSN: 1836-070X, http://ww.wbiaus.org/wjm.htm.
2. Mushraf, A. M., & Ahmad, S. (2010). *A Conceptual Framework of the Relationship between Intellectual capital and Business Performance.* Proceedings of the first UCT1 Business & Management Conference, Towards Global Ready Business – Issues and Challenges, 25-26October, 2010, Kuala Lumpur.
3. Mushraf, A. M., & Ahmad, S. (2011). *The Relationship between Knowledge Management and Business Performance: An empirical study in Iraqi industry.* ISBN: ISBN : 978-0-9804557-5-5. Proceedings of the International Asia-Pacific Business Research Conference http://www.wbiconpro.com/, 21-22 February, 2011, Kuala Lumpur. This paper published online.
4. Mushraf, A. M., & Ahmad, S. (2011). *A Conceptual Framework of the Knowledge Management And Business Performance.* Proceedings of the International Conference on Economics, Business and Marketing Management– CEBMM 2011, 11-13 March, 2011, Shanghai, China.
5. Mushraf, A. M., & Ahmad, S. (2011). *The Relationship between Intellectual capital and Business Performance: An empirical study in Iraqi industry.*Proceedings of the International Conference on Management and Artificial Intelligence, ICMAI 2011, 1-3 April, 2011, Bali, Indonesia.
6. Mushraf, A. M., & Ahmad, S. (2011). *The Relationship between Knowledge management, Intellectual capital and Business Performance: An empirical study in Iraqi* industry, (Accepted for Publication in GCA Conference in Kuala Lumpur).

ACKNOWLEDGMENTS

I am grateful to the Almighty Allah for bestowing me the great opportunity to complete my PhD thesis a little effort towards the greatest knowledge of Baghdad, Iraq. May peace and blessing of Allah be upon His beloved Prophet Muhammad (SAW), his family and his companions!

I live in a well-known city in the history of Islam, Najaf Iraq, an area rich with intelligent people. My path to a Ph.D. was blessed by these people along the way. It is said that it takes the city to raise a child; it is for sure that this Ph.D. wouldn't be achieved without a "local" of academics who contribute their intelligence, knowledge, and constructive advice at numerous occasions whenever I have doubts or questions. As Dr. Sa'ari Bin Ahmad once and always said, we, Ph.D. students, are more like a light bulb in an oven that will grow brighter overtime if we keep advancing ourselves. Of course, this oven light bulb can't grow brighter without the guidance and efforts from a whole "Najaf".

This long-processed project would not have completed without the support of Dr. Sa'ari Bin Ahmad. It is not an easy project to develop and there is so much to do with it. I am grateful Dr. Sa'ari Bin Ahmad as my chair to shed the light in the darkness of the process of completing this dissertation. His intelligence, modesty and research integrity will carry me over a long way in my academic career -- more than I may ever realize.

I also want to thank Dr. Moayed Al-Fathal, who provided numerous advices and essential mentoring since the very start of my doctoral program. I've learned so much from his classes and they laid a great deal of the foundation for many research projects to come. I would also like to thank my companions in this journey, PhD candidate Laith Al-Hakim, who was there for me throughout this project I believe that this journey without him is

DEDICATION

This thesis is dedicated to my family who has supported me through the entire process.

To my loving and supportive wife Samira

You carried the burden of this dissertation during all these years while managing to make us a dream family with happy kids.

To Amir, Mohammed, Mustafa, Murtatha and daughter Eiman for their love and support

Nothing in the entire world makes me happier than the smile on your faces. I wish you a life filled with a passion for learning, a desire to acquire knowledge, happiness, and success.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIO

ANOVA	Analysis of Variance
KM	Knowledge Management
KC	Knowledge Creation
KS	Knowledge Sharing
KU	Knowledge Utilization
TK	Tacit Knowledge
EK	Explicit Knowledge
IC	Intellectual Capital
HC	Human Capital
CC	Customer Capital
RC	Relation Capital
SC	Structural Capital
C	Culture
T	Technology
IP	Innovation Performance
RPD	Rate of New Product Development
CS	Customer Satisfaction
CR&OC	Customer Retention and Operating Cost
IT	Information Technology
UN	United Nation
USA	United States Of America
SPSS	Statistical Package For Social Science
AMOS	Analysis of Moment Structure
OCAI	Organization Culture Assessment Instrument
IC's	Intellectual Capital Stocks
OCP	Organization Conceptual Program
EVA	Economic value Added
BSC	The Balanced Scorecard

CHAPTER ONE

INTRODUCTION

1.1   BACKGROUND

In the past decades, production processes have changed. The traditional factors of production such as, natural resources, labor, and capital have lost their significance (Stam, 2007). Intangible inputs, like information and knowledge, have risen in importance and knowledge becomes the main challenge (Drucker, 1993). Nowadays, business environment is experiencing a shift from being labor-based to knowledge-based, whereby the sustainable competitive advantage of organization is based on its ability to utilize and manage knowledge. Knowledge management is described as a systematic exercise of building, renewing and applying knowledge to maximize the effective performance of an organization (Wiig, 1997). Thereby, the knowledge management has progressed from an emerging concept to an increasingly common function within a business (Zack et al., 2009; Michelle et al., 2003). Furthermore, Zack et al. (2009) indicates that Knowledge Management (KM) practices are positively associated with business performance, which includes innovation, rate of new product development, customer's satisfaction and customer's retention. Indeed, it "represents competition based on understanding, satisfying and retaining customers".

Over the past 15 years, utilization and management of knowledge have been shown to lead the creation of Intellectual Capital (IC), which is considered an actual resource. Intellectual capital is an intangible source of an organization. Therefore, investigating the relationship between knowledge management and intellectual capital has become a major issue in contemporary organizations. Organizations realize that they can attain

I

competitive edge by managing knowledge in order to create intellectual capital from their employees (Liebowits, 1999; Stam, 2007). According to Hsu (2006), the major issue between knowledge management and intellectual capital is the loss of knowledge workers when they leave the organization. However, most organizations do not find this problem compelling enough if failure of performance does not incur high costs to the business. This is because new knowledge workers are hired to replace the loss; other measures might also be possible to avoid serious disruption of business activities. The problem becomes a matter of concern when the loss involves an expert, which may pose serious threats to the business. If recurring problems are not addressed, the costs of managing this problem become astounding.

Scholars have noted that, despite the importance of knowledge and intellectual capital for the organizations to achieve sustainable competitive advantage, such a relationship did not receive much attention (Nonaka & Takeuchi, 1995). Accordingly, the present study tries to shed light on the nature of the relationship between knowledge management and intellectual capital and the effect of this relationship on business performance in Iraqi companies. It will also investigate what helps organization increase the business performance through knowledge management dimension in terms of knowledge process and knowledge contents. On the other hand, the dimension of intellectual capital which comprises the customer, human, structural and relationship capital will also be discussed. It is also important to identify business performance measurement which includes Innovation, rate of new product development, Customer's satisfaction and Customer's retention. The other important thing is to identify business performance measurement

2

which includes innovation, rate of new product development, customer's satisfaction and customer's retention.

1.2 PROBLEM STATEMENT

In the knowledge-based economy era, the field of business performance measurement has evolved rapidly in the last few years due to technological development, fierce competition and globalization (Coelho, 2005; O'Reilly et al., 2000; Wang & Chang, 2005; Zack et al., 2009). Knowledge assets hence are regarded as a critical key to improve business performance. To help companies sustain their competitive advantage, a knowledge asset should be maintained and managed whence conventional assets are depreciated or replaced. In this course, knowledge management and intellectual capital pose a strategic issue for companies (Curado, 2008; Pikes & Roos, 2002; Stam, 2007; Warnar & Witzed, 2004). Even though the scholars have proposed that knowledge management in general is imperative for businesses performance in contemporary organizations, little is known as to what extent knowledge management components specifically affect performance (Curado, 2008).

Thus, this study seeks to find out the factors contributing to this relationship. In other words, previous studies have dealt with KM too broadly without considering the specific aspects of KM; this will limit our understanding, to some extent, of the effect KM has on business performance, given that KM as a concept is complex in nature (Carlucci et al., 2004; Firestone & McElroy, 2003; Massa & Testa, 2009; Marr & Schiuma, 2001). This study is intended to fill a gap due to the small number of studies that have been attempted

to disentangle the complexities in the relationship between KM and business performance (Carlucci et al., 2004; Zack et al., 2009).

On the other hand, the several empirical studies that have tried to identify a relation between intellectual capital and business performance encountered problems linked mainly to the measurement of intellectual capital (Puntillo, 2009). However, numerous previous studies show the lack of empirical evidence about the relationships among knowledge management, intellectual capital and business performance. This is ascribed to the absence of these studies, which have helped in determining the significant factors that have been affecting such relationships as those between culture and technology (Kaplan & Norton, 2001; Zack et al., 2009).

In fact, the most previous research on knowledge management and intellectual capital has been mainly conducted in the West and little has been carried out in other countries such as Iraq (Shan, 2009). Many problems in Iraqi organizations are associated with poor knowledge and lack of attention to intellectual capital which directly affects business performance, United Nations Report (2009). It further argues that weak production in Iraq is due to the US-led war against Iraq in 2003, which in turn led to poor infrastructure. In addition, owing to technological limitations, many business organizations do not conduct training programs which will result in loss of knowledge.

Moreover, according to Shan (2009), the Report of the Iraqi Ministry of Industry and Minerals shows the weak and poor production in Iraqi companies due to three wars in

Iraq imposed by U.S.A. since 1980 to 2003. So, Iraq industry has become isolated from the world because of: (1) the first Gulf War since 1980 until 1988, (2) the economical sanctions imposed on Iraq since 1990 until 2003, and (3) the U.S. occupation of Iraq in 2003. Because of these wars, Iraq became isolated from the world and this has hindered substantial developments in their industry. In the context of business organizations, the isolation has dampened knowledge management, and this ultimately has led to poor performance of employees who are not used to new technology (Shan, 2009). So, knowledge is considered the basis for performance and intellectual capital in any organization (Coakes, 2003; Wiig, 1993).

Al-'Ani (2004) stated that there is a lack of knowledge management in Iraqi industry. Most of the managers do not know well about knowledge management and its associated functions. Furthermore, most factories do not investigate the implementation of knowledge management. Knowledge management processes and knowledge management content in factories may be limited if these factories do not follow appropriate knowledge management approaches (Al-Ani, 2004). According to AL-Mayali (2009), the intellectual capital concept is relatively new in Iraqi business environment. There has been no studies made about it, nor any application of concept tried in the industry.

Overall, the problem statement of this study is to fill up the unexplored research gap by exploring the fundamental issue of how knowledge management and intellectual capital could affect business performance in Iraqi industry. There may have been a little research or none carried out in the field of Iraqi industry which would focus on the processes and

5

content of knowledge management and intellectual capital, including human capital, customer capital, relation capital and structure capital, to improve the business performance.

Hence, the contribution of this study is to identify the cultural and technological factors of Iraqi industry as moderator variables between the relationships among knowledge management, intellectual capital and business performance. This study will examine the effect of knowledge management, intellectual capital, moderator technology and culture influencing business performance. It will also investigate what helps organizations to increase business performance over the knowledge management dimension such as knowledge process and knowledge content. On the other hand, the dimension of intellectual capital, i.e. such as customer, human, structural and relationship capital will also be discussed. The other important thing is to identify those factors that could influence business performance which includes Innovation, Rate of new product development, Customer's satisfaction and Customer's retention. In order to get sustainable competitive advantage, organizational learning capabilities need improving through technological advancement. As discussed by Jennex (2007), this kind of contexts is where tacit transmission plays a differentiation role in knowledge management. The nature of work performed in businesses within higher knowledge-intensity sectors required higher level of use of information technology as well as larger implementation of practices that improve learning at the organizational level. Additionally, individual learning in small businesses has shown a high positive impact on organizational performance (even higher than the one produced by organizational learning). However,

6

Bontis (2002), produces different results.

Kotter and Heskett (1992) and Schein (1990, 1992) make arguments for organizations to be more adaptive to the changing workplace and assert the need for effective leadership to lead the change. In general, literature supports the notion that culture and performance are connected but presents a weak case about the leadership which is able to affect a cultural shift (organizational change) to drive towards the goal. Yet, researchers do note that culture can remain linked with performance only if they are capable of adapting to the changing environment (Ogbonna & Harris, 2000). Strategic management researchers postulate organizational behaviour (flexibility and speed) which is a reflection of this environmental change (Eisenhardt & Brown, 1998; Lamberg, Tikkanen, Nokelainen, & Suur-Inkeroinen, 2009), and fully adaptive firms will mimic its pace.

1.3 RESEARCH QUESTIONS

The present study attempts to answer the following main research questions:

1. Is there any relationship between knowledge management process (creation, sharing, and utilization) and business performance?

2. Is there any relationship between knowledge management content (tacit and explicit knowledge) and business performance?

3. Is there any relationship between intellectual capital (customer capital, human capital, structural capital, and relational capital) and business performance?

4. Does culture moderate the relationship between knowledge management processes, knowledge management content, intellectual capital and business

performance?

5. Does technology moderate the relationship between knowledge management processes, knowledge management content, intellectual capital and business performance?

1.4 RESEARCH OBJECTIVES

The questions are translated into the following main research objectives:

1. To investigate the relationship between knowledge management processes (creation, sharing, and utilization) and business performance.

2. To investigate the relationship between knowledge management content (tacit and explicit knowledge) and business performance.

3. To investigate the relationship between intellectual capital (customer capital, human capital, structural capital, and relational capital) and business performance.

4. To determine the moderating effect of culture on the relationship between knowledge management process, knowledge management content, intellectual capital and business performance.

5. To determine the moderating effect of technology on the relationship between knowledge management processes, knowledge management content, intellectual capital and business performance.

8

1.5 KEY DEFINITIONS AND CONCEPTS

In the questions and objectives presented in this research, there are several key concepts,

defined in Table 1.1 below:

Table 1.1
Key Definitions and Concepts

Concepts	Definitions	Key dimensions
Knowledge management (KM)	It is the process of continually managing knowledge of all kinds to meet existing and emerging need to identify and exploit and to develope new opportunities (Quintas et al., 1997).	KM processes: - Creation & acquisition - Sharing & disseminations - Utilization & application KM content: - Tacit - Explicit
Intellectual capital (IC)	Asset of intangibles (resource capabilities and competence) that drive organizational performance and value creation (Bontis et al., 2000).	- Human capital - Structural capital - Relational capital - Customer capital
Business performance	The degree to which an organization realizes its strategic goals and objectives (Daft & Marcic, 2001; Johanson et al., 2001).	- Innovation. - Rte of New Product Development. - Customers Satisfaction. - Customers Retention.

1.6 JUSTIFICATIONS OF THE STUDY

To justify the present study, one may consider the following reasons:

1. This study will try to enlighten the importance of relationship between knowledge

   Management and intellectual capabilities to improve business performance.

2. The study is important to help Iraqi business organizations to be dynamic and

   competitive through the strategic implication of the dynamic integration between

   knowledge management and intellectual capital.

3. The present study offers a comprehensive perspective to the strategic implications

   of the dynamic integration between KM and IC.

1.7 SIGNIFICANCE OF THE STUDY

Within today's high competitive and challenging environment, Iraqi industrial organizations must be competitive, dynamic and robust. One of the most critical factors of success in achieving this aspiration is the effective utilization of knowledge and intellectual capabilities, where know-how and intellectual capital stand as "the only source of long-term competitive advantage" (Davenport & Prusak, 1998). Indeed, as societies move towards an era when knowledge is recognized as one of the most important assets, organizations realize that their competitive edge is mostly the brainpower or intellectual capital of their employees (Liebowitzs, 1999).

According to Al-Ani (2004), there is a dearth of literature on the subject in the so-called developing countries whereby very few studies have been conducted about knowledge management and intellectual capital practices or initiatives in these countries. That is one of the reasons for conducting this study, namely to investigate knowledge management and intellectual capital practices in Iraqi industrial organizations on how they can effectively manage and leverage its contribution to business performance. Finally, the true value of the Iraqi industrial organization can only be achieved by developing its knowledge & intellectual capabilities.

1.8 SCOPE AND LIMITATIONS OF THE STUDY

One of the important aspects of the research project is to understand the limitations and boundaries of the work.

1. In this research a quantitative approach is used to offer a comprehensive

understanding of the subject matter under study.

2. The major field of this study is to investigate the relationship between knowledge management, intellectual capital and business performance.

3. This work has been done on organizations working in Iraqi industrial area.

4. The research focuses on developing a comprehensive model that supports industrial organizations to leverage their knowledge and intellectual capital capabilities to enhance business performance.

5. The respondents of this study are the company managers in Iraqi industry because they are knowledgeable workers interested in creating knowledge and intellectual capital (Hung et al., 2005; Kaplan, 2001; Zack, 2009). In other words, managers have a strong impact on knowledge creation, transmission and distribution among individuals in their organizations.

1.9 ORGANIZATION OF THESIS

The research is designed as presented in Figure 1.1 it is divided into five chapters. Chapter 1 contains problem statement, research objectives, research contents, significance, scope and limitations of the study. Chapter 2 highlights literature review, knowledge management, intellectual capital, business performance, culture and technology. Chapter 3 contains the theoretical framework, research methodology, data collection and techniques of data analysis. Chapter 4 contains the data analysis, findings and discussions. Finally, chapter 5 contains conclusions and recommendations.
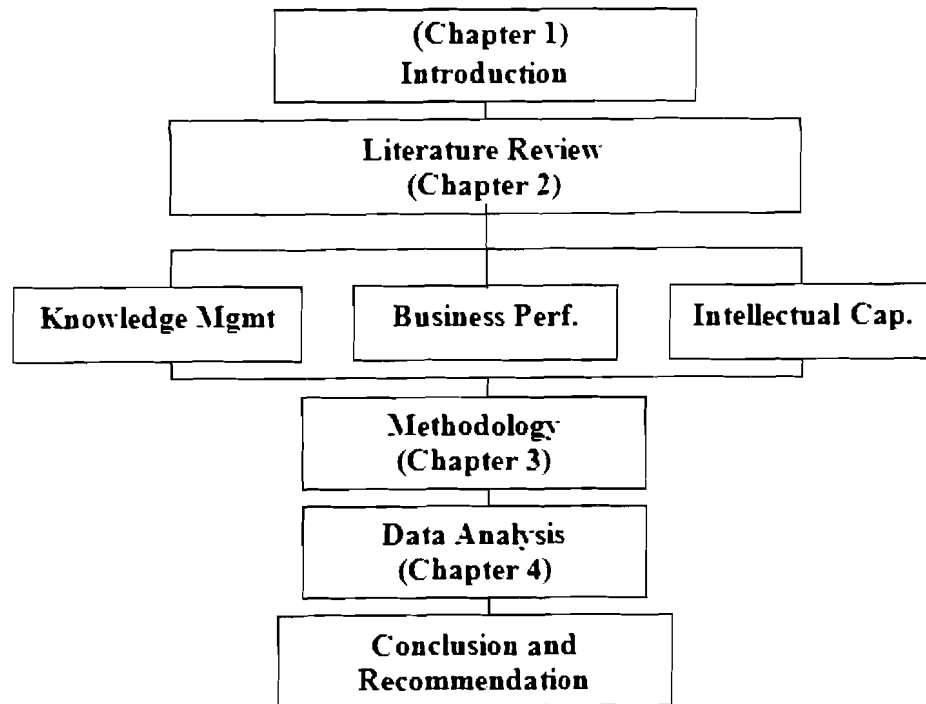
Figure 1.1
Organization of the Thesis

1.10 SUMMARY

This chapter presents an overview of the research which contains problem statement, research objectives, research questions, significance, scope and limitations of the study. The main justification of the study is to investigate the relationship between Knowledge management, Intellectual capital and Business performance of industry in Iraq. The aims and questions of this study have already been presented in the Introduction.

CHAPTER TWO
LITERATURE REVIEW

2.1 INTRODUCTION

Economists frequently describe the basic resources necessary for an industrial enterprise in terms of the three classic kinds of assets – land, labor and financial or other economic assets (Sullivan, 1998). During the last two decades, the business environment has progressively moved into a knowledge-based fast-changing, technology-intensive organization in which investments in human resource, information technology and research and development have become essential in order to strengthen the firm's competitive position and ensure its future viability (Canibano, 2000).

Accordingly new concepts, frameworks, models and theories are required in order to increase our understanding of the principles of the creation and use of knowledge and information as a strategic resource. These theories will find support in the resource and knowledge-based views of enterprise (Barney, 1991; Grant, 1996; Spender, 1996; Daft, 2001). This development both in theory and practice is evident because, contrary to the traditional factors of production, knowledge and intellectual capitals are partly intangible in nature. It is, therefore, vital to provide a holistic view of contextual factors which have an impact on the creation, processing, storage, maintenance and use of knowledge and intellectual capital as valuable resource (Holsapple & Joshi, 2004).

2.1.1 Knowledge

The starting point of this research is that our economy (Druker, 1993; Stam, 2007) and the sustainable competitive advantage of organizations are based on the ability to exploit knowledge recourse. Knowledge is not a new production factor but the relative importance of knowledge, related to land, labor, and capital has been substantially increased during the past few decades (Stam, 2007).

In fact, KM allows organizations to start thinking about how to improve their performance and processes. In this regard, knowledge has become a key source for organizations to enhance the competitive advantage and that it has a direct contribution and significance for the organization's performance. In addition, KM has become embedded in the policy, strategy and implementation processes of worldwide corporations, governments, and institutions (Malhotra, 2000).

All organizations today are putting much emphasis on the adoption of KM. The objective of KM is not to manage all knowledge, but to manage the knowledge which is most essential to the development and improvement of organizations. As a result, KM can help grow to such a stage where it can improve and expand the innovation process (Parikh, 2001). The Gartner Group, for the information technology industry in the United States, elaborates contended that "KM as a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving and sharing enterprise information" (Seubert, Balaji, and Makhija, 2001). In a recent research by InformationWeek (Forley, 2001), 94 percent of companies took KM strategies to their business or information

technology (IT) processes. Most of those companies were in the early stages of their KM usage. The difference between information and knowledge is that information is a flow of messages, while knowledge is created and organized by the very flow of information, anchored on the commitment and beliefs of its holder (Nonaka, 2002). Enhanced technologies, the global arena, and efforts to achieve competitive advantage make KM a prominent discipline in the MIS literature.

The effective KM strategy should include the creation, transfer, and utilization of all types of organizational knowledge (Alavi, 2000), while using less time to process the information and reuse the knowledge. On the one hand corporations consider knowledge as a critical resource, but on the other hand, they also try to manage organizational knowledge effectively. However, there are many factors influencing these activities such as: (1) the way knowledge content is translated into "historically dependent" capitals (Barney, 1986, 1997, 2002), (2) the users who are involved in knowledge creation processes and committed to use, assimilate, internalize, and to externalize the knowledge Nonoka, (1994, 2002) and, (3) the further developments for sustaining a firm's competitive advantage. "Historically dependent" capitals are concerned with a firm's assets or knowledge over time that is most likely found in organizational routines, policies, or culture. They are invisible, invaluable, and immobile all at the same time. In other words, the historically dependent capitals are used over time for task fulfillments in the firm. "Immobility," intertwined with historically dependent capitals, can be difficult or costly to move from one firm to another. Therefore, the competitive advantage is created by the more immobility of a firm's capital.

2.1.2 Intellectual Capital

For most IC researchers (Stewart, 1997; Bontis, 2001; Van Buren, 1999) and Barney's (1991, 1997, and 2002), the Intellectual capital will include all processes and assets which are not normally shown on the balance sheet, as well as all the intangible assets which modern accounting methods consider (mainly trademarks, patents, brands). While knowledge is a part of IC, IC is much more than knowledge. Brands and trademarks as well as the management of relations with external parties (trade distributors, allies, customers, local communities, stakeholders in general and the like) are all dimensions of value creation.

According to Stewart (1997), human capital is "the place where all the ladders start: the wellspring of innovation, the home page of insight" (p. 86). Bontis, Crossan and Hulland (2002) state that human capital shows the individual knowledge stock of an organization represented by its employees. Bontis (1999) describes human capital as the firm's collective expertise to extract the best solutions from the knowledge of its individuals. Bontis (1999) also argues that human capital is important since it is the source of innovation for organizations.

Human capital is a main IC content that has consistently been presented in different IC models (Bontis, 1996, 2001, 2002a, 2002b; Van Buren, 1999; Pike et al., 2002). Human capital constitutes both the broader human resource considerations of the business workforce (known in the literature as the labor market) and the more specific requirements of individual competence in the form of knowledge, skills and attributes of

employees (McGregor, Tweed, & Pech, 2004). Although organizations invest in human capital, human capital is movable and does not belong to the organization. Employees are considered to be the owners of human capital, not the organization (Roos et al., 1997).

Innovation capital is the second of IC contents rarely mentioned in any IC model. A research by Van Buren (1999) seems to be an exception. Innovation capital focuses on explicit knowledge that facilitates the innovation and creation of new products and services (Van Buren 1998). Explicit knowledge is transmissible, such as archives or database. This capital is important in this research for the following reasons:

1. Since Drucker's (1993) new economy concept created a greater emphasis on assets, the relation capability increasingly receives more attention.

2. A company's competitiveness facilitated by innovation capital ties in with research and development (R&D).

3. Innovation capital is capability of responding to and changing with the market place with ease and flexibility. Like human capital, relation capital is a part of knowledge assets in KM research (Bontis, 2001, 2002; Van Buren 1999; Pike et al., 2002).

In previous studies, the third component of IC is the structural capital. It is the knowledge that stays in the firm when employees go home for the night (Ordonez de Pablos, 2004; Roos et al., 1998). Therefore, organizations usually have residual claim on it. Employees provide structural capital for the company and the company is the residual owner of it. However, structural capital comprises all kinds of "knowledge deposits" which are not

17

supported by employees such as organizational routines, strategies, process handbooks and databases (Boisot, 2002; Ordonez de Pablos, 2004; Walsh & Ungson, 1991).

2.2 KNOWLEDGE-BASED THEORY OF ORGANIZATION

Within the organization science, distinctions can be made between different theories of the organization: the industry-based theory (or view), the resource-based theory and the knowledge-based theory, (Stam, 2007). The main differences between the different theories of the organization are in their so-called strategic reference point. Whereas the industry-based theory uses the external factors (competitors, suppliers, and customers) as strategy points for strategy formulations and development, the resource-based theory uses the internal capabilities and competences, (Stam, 2007). The knowledge is the most important strategic resource; this awareness about knowledge being the most important strategic resource resulted in a so-called knowledge-based theory of the organization (Grant, 1996; Zack. 1999).

So, the knowledge-based theory can be seen as a further specification of the resource-based theory (Grant et al., 1996; Stam, 2007) to the extent that it focuses upon knowledge as the most important of the firm's resources strategically. In the last decade, more and more authors have claimed that knowledge is the most important strategic resource. This awareness about knowledge being the most important strategic resource resulted in a so-called knowledge based theory of the organization (Grant et al., 1996; Sveiby, 2000; Zack, 1999).

Like knowledge, the concept of intellectual capital is added to resource-based theory (Roos & Roos, 1997). A difference, however, is that intellectual capital management employs a wider strategic focus of knowledge management, whereas (KM) focuses on knowledge resources (information and knowledge). In particular, intellectual capital management takes all intangible resources (human capital, structural capital and relational capital) into account. The management of intellectual capital is broader than the management of knowledge because it supports all activations that contribute to enhancing competitive advantage. In this sense, intellectual capital management could be positioned somewhere in between the concept of core competences and the concept of knowledge management, (Roos & Roos, 1997).

Knowledge and the capacity for generating knowledge and use is the most important source to achieve sustainable competitive advantage of the organization (Warnar & Witzed, 2004). According to Hung et al. (2007), chief knowledge manager is responsible to manage assets and intellectual capital by providing the relevant infrastructure. The chief knowledge manager, in essence, performs three key roles and they are:

(1) To develop knowledge management programs,

(2) Implement knowledge programs,

(3) Manage assets and adopt the organization culture which focuses on Learning and growth to achive sustainable competitive advantage.

Within the organization science, distinctions can be made among different theories of organization: the industry-based theory, resource-based theory and the knowledge-based

theory (Stam, 2007). The main differences between the different theories of the organization are in their so-called strategic reference point. Whereas the industry-based theory uses the external factors (competitors, suppliers, and customers) as strategy points for strategy formulations and development, the resource-based theory uses the internal capabilities and competences, (Stam, 2007). The structure and behavior of business enterprises are explained and predicted by the conceptualizations and models of the theories of firm. Although economists use the term 'theory of the firm' in its singular form, there is no single, multipurpose theory of the firm. Every theory of the firm is designed to address a particular set of its characteristics and behaviors of the real-world business enterprise (Machlup, 1967).

Primarily, the behavior of firms in external markets is predicted by the economic theories of the firm. In particular, the firm's purchase decisions in input markets and supply decisions in output markets are made by predicting based on the neoclassical theory of the firm. The aspects of the firm which was ignored by neoclassical economics are addressed by the organizational theory. Organization theory analyzes the internal structure of the firm and the relationships between its constituent units and departments by disposing of the notion of the firm as a singular decision taker and recognizing the firm as a complex organization encompassing multiple individuals (Hung et al., 2007).

The resource-based view of the firm is less a theory of firm structure and behavior as an attempt to earn superior returns by explaining and predicting why some firms are able to establish positions of sustainable competitive advantage (Machlup, 1967). The primary

task of management is to maximize value through the optimal deployment of existing resources and capabilities; thereupon, the resource-based view perceives the firm as a unique bundle of idiosyncratic resources and capabilities, while developing the firm's resource base for the future. According to Grant (1996), the economics and organization theory has given birth to strategic management while its area of interest is different from both.

The primary goals of strategic management are to explain firm performance and the determinants of strategic choice. The result has been new contributions to the theory of the firm. The resource-based view of the firm is based on the theory of firm structure and behavior. The attempt is to earn superior returns by explaining and predicting why some firms are able to establish positions of sustainable competitive advantage. The primary task of management is to maximize value through the optimal deployment of existing resources and capabilities; thereupon, the resource-based view perceives the firm as a unique bundle of idiosyncratic resources and capabilities, while developing the firm's resource base for the future (Roos at el., 1997).

The emerging 'knowledge-based view' can be considered as a theory of the firm. With several streams of newer thinking about the firm represents a confluence of long established interests in uncertainty and information. It focuses upon knowledge as the most strategically important of the firm's resources; it is an outgrowth of the resource-based view (Grant, 1996).

21

2.3 KNOWLEDGE MANAGEMENT

2.3.1 Defining Knowledge and Knowledge Management

2.3.1.1 What is Knowledge

The most common definition of knowledge is based on the idea, explained by Jennex (2007), that knowledge is "the practice of selectively applying knowledge from previous experiences of decision making to current and future decision-making activities with the express purpose of improving the organization's effectiveness." (Nikolaos et al., 2008, p. 3). On the other hand, according to Holsapple and Joshi (2004, p.153), knowledge is defined as "an entity's systematic and deliberate efforts to expend, cultivate, and apply available knowledge in ways that add value to the entity in the sense of positive results in accomplishing its objectives or fulfilling its purpose". Additionally, knowledge management has two aspects that treat the knowledge components of business activities as an explicit concern of business that is reflected in strategy, policy, and practice at all the stages of the organization; and make a direct connection between an organization's intellectual assets, explicitly and tactically (Barclay & Murray, 1997; Nikolaos, Dimitrios & Georgios, 2008).

However, Peter (2002) definition is more comprehensive when he says that "knowledge is an individual 's total understanding of itself and the world around it at any given point in time incorporating (sub) conscious memory, thinking and cognition, as well as emotional and "intuitive properties"(P30-34). Furthermore, Peter (2002) uses knowledge and information interchangeably. However, he does not distinguish between them though

22

he acknowledges that they should be done so. His use amounts to treating them as identical. (Myers, 2004), calls organizational knowledge "processed information" while Davenport and his colleagues (1998) defines knowledge as information combined with experience, context, interpretation and reflection, and a high-value form of information that is ready to apply to decisions and actions (Peter, 2002). Myers (2004) sees that knowledge means groups of facts, beliefs and viewpoints, concepts, rules, methods, and know-how that complement cumulative relations, said knowledge leads to action or activity and this can be illustrated by the following formula:

Knowledge = Information + tasks = best practices

Based on the formula above, knowledge is the result of information and skills of individuals that will lead to best practice.

2.3.1.2 Knowledge Economy

Knowledge economy is defined by OECD as "the economics which is directly based on the production, distribution and use of knowledge and information. It is reflected in the trend towards high-technology investments, high-technology industries, more highly skilled labor and also is associated with productivity gains" (OECD, 2006). It recognizes the important role of knowledge and technology in economic growth. There are some features that can be ascribed to Knowledge economy; they are as follows:

(1) The enormous increase in knowledge codification will lead to its increasing commoditization, and will lead to organization and production structure change (Houghton & Sheehan, 2000).

(2) Information and communication technologies favor information diffusion and reduce

the investment required for a given quantum of knowledge (Houghton & Sheehan, 2000).

(3) Knowledge stock is positive for economic growth, and knowledge is not necessary exhausted in consumption (Houghton & Sheehan, 2000).

(4) Learning involves education, learning by doing, interacting, and using. It becomes important to both personnel and organizations (Houghton & Sheehan, 2000).

2.3.1.3 Data Information Knowledge

Empson (1999), describes knowledge as: It is perhaps easiest to understand knowledge in terms of what it is not; it is not data, nor is it information. Data are objective facts, presented without any judgment or context. Data become information when they are categorized, analyzed, summarized, and placed in context. Knowledge can therefore, be seen as information that comes laden with experience, judgment, intuition and values (p. 40).

Davenport & Prusak (1998), point out the differences between data, information, and knowledge. They define data as "a set of discrete, objective facts about events" (p. 2). Information refers to "a message, usually in the form of a document or an audible or visible communication" (p. 3). It is meant to change the receiver's way to perceive, and to change the receiver's judgment and behavior. Knowledge is a 'fluid' mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates, and is applied, in the minds of knower's. In organizations, knowledge often becomes embedded not only in the documents or repositories but also in the organizational routines,

processes, practices, and norms (p. 5).

There are four methods to transform data to information: contextualization, categorization, calculation, correction, and condensation; and four processes to derive knowledge from information: comparison, consequences, connections, conversation (Davenport & Prusak, 1998). Knowledge can be viewed from different perspectives: (1) a state of mind, i.e. Knowledge is defined as a state of fact of "understanding gained through experience or study; the sum of range of what has been perceived, discovered, or learned" (Seubert, et al., 2001); (2) an object, i.e. Knowledge is a thing that can be stored and manipulated (Carlsson, El Sawy, Eriksson, & Raven, 1996; McQueen, 1998; Zack, 1998a); (3) a process, i.e. alternatively, knowledge can be viewed as a process of simultaneously knowing and acting (Carlsson et al., 1996; McQueen, 1998; Zack, 1998) (4) a condition of having access to information (Seubert, et al., 2001); (5) capability (McQueen, 1998).

Watson (1999) posits that knowledge is the capacity for the use of information, learning and experience to interpret information and ability to ascertain what information is necessary in decision making (Alavi & Leidner, 2001).OECD (2006), categorizes knowledge in terms of four types: (1) 'know-what' refers to the facts; (2) 'know-why' refers to the principles and natures of the facts; (3) 'know-how' refers to the capability and knowledge to do something, and (4) 'know–who' refers to know what and how to do it.

2.3.2 Defining Knowledge Management (KM)

In order to understand the meaning and the content of knowledge management, it is particularly important to analyze the different interpretations of KM (Carlucci et al., 2004). Table 2.1 presents a summary of the main (KM) definitions.

Table 2.1

Presents a Summary of the Main (KM) Definitions

Author (s)	Definitions of KM
Wiig, 1997	It is hands on to understand, focus and manage systematic, explicit, and deliberate knowledge building renewal and application. Effective knowledge process (...) it is asset of distinct and well defined approaches and process. The purpose of KM is to maximize the enterprise knowledge related effectiveness and returns from its knowledge assets and to renew them constantly.
Quintas et al. 1997	It is the process of continually managing knowledge of all kind meet existing and emerging needs, to identify and exploit and acquire knowledge assets and to development new opportunities.
Dvenport and Prusak, 1998	It consists of processes to capture, distribute, and effectively use knowledge.
Lee and Yang, 2000	It is emerging set of organizational design and operational principle, processes, organizational structure and applications that helps knowledge and worker dramatically leverage their creativity and ability to deliver business value.
Sveiby, 2000 & 2001	It is dynamic approach to optimally manage critical business knowledge aim to generate value. The KM is art of creating value from organizations intangible assets.
Horwitch and Armacost, 2002	Knowledge management refers to "creation, extraction, transformation, and storage of the correct knowledge and information in order to design better policy, modify action and deliver results.
Holm, 2001	Getting the right information to the right people at the right time, helping people create knowledge and sharing and acting on information.
Alavi and Leidner, 2001	Specified process for acquiring, organizing, sustaining, applying, sharing and renewing both the tacit and explicit knowledge of employees to enhance organizational performance and create value.
Edwards, 1994	Knowledge management is defines as an introductory step it is useful to distinguish between raw information and knowledge.

Reviewing all definitions presented so far, one can take knowledge management to mean (systematic strategic integration to explore and investment the knowledge to competition suitable achievement).

2.3.2.1. Knowledge Management in Organizations

As an extension of Polanyi's categorization of knowledge as either "tacit" or "explicit"

26

Byounggu Choi and Heeseok Lee (Choi and Lee, 2003) conducted research regarding the styles associated with knowledge. Four styles are recognized, namely dynamic, systems oriented, human oriented and passive. The authors postulated that performance within organizations differ according to which of the four styles are practiced within the organization. A 2 by 2 matrix created by Choi and Lee showing the 4 styles can be mapped in two vectors (low to high) in the explicit and tacit orientations.

Choi and Lee distribute survey questionnaires among middle managers from 100 of the largest firms listed in the "Annual Corporation Reports by Maeil Business Newspaper" to gather the data necessary to validate their hypotheses (Lee & Choi, 2003) which tracks the largest firms listed on the Korean stock exchange. Analysis shows that organizations practicing a dynamic knowledge management style yield the greatest performance, while system (explicit orientation) and human-oriented (tacit orientation) KM styles come a long way behind. The passive KM style yield the lowest performance effectiveness overall as is hypothesized. These findings support the organizational use of knowledge in an integrated fashion.

In a second article within Korean Firms by Lee and Choi (Lee & Choi, 2003), the authors continue their study of the practices of KM. The focus of this research is to develop and validate a model that demonstrates the link(s) between knowledge management factors (i.e. knowledge creation enablers, work processes, etc.) and performance outcomes.

A survey instrument was designed and sent out to firms in the Korean stock exchange

27

listed in the "Annual Corporation Reports by Maeil Business Newspaper" (Lee & Choi, 2003). Significant relationships were found to exist between 3 of the 7 proposed knowledge management enablers and the knowledge-creation process; and between the Knowledge Creation Process and the variable Organizational Creativity.

There is also a significant relationship noted between the variables, Organizational Creativity and Organizational Performance, as is hypothesized, thereby validating the high level construct of the model despite the fact that certain elements of the high level elements do not yield such significant results. Although this study has been conducted using mid-level management personnel, it does provide a validated model which will be very useful in studying the effects of knowledge management initiatives at the work-unit level to foster innovation, creation, and increased performance.

It is the responsibility of an organization's executive leadership to ensure that a culture, supportive of knowledge creation, is fostered within the organization down to the work-unit level, that the IT systems are well designed, and that the underlying databases are collecting the right data to enable the formulation of the information necessary to support knowledge-generation and decision-making by knowledge workers at all levels, but most importantly at the work-unit level where the potential for knowledge generation is the highest due to the nature of the individuals and their associated responsibilities or tasks. This supportive and integrated relationship can be achieved via careful planning so as to begin the organizational-system design at a top down perspective following good system modeling practices. This would be accomplished by collecting organizational

requirements, setting specifications for the organizational system, and then flowing those requirements down to form the specifications for the design of all lower level work-units.

Once knowledge is created and explicated, it can then be employed and shared within the organization to promote new knowledge development and becomes part of its intellectual capital. I would characterize this cycle of knowledge to new knowledge, to a deeper new knowledge as the elemental functions of an intelligent work-unit as it innovates and evolves a wider collaborative intelligence that afford it the capacity for avoiding extinction or early demise as an entity.

2.3.3 Dimensions of Knowledge

It is important to distinguish between data, information, and knowledge. The primary distinction among the three lies in the degree to which they are organized and useful. Data are raw stimuli with little organization or ready utility (Avali & Leidner, 2001). Data become information when they are processed and organized in a systematic way. Information becomes knowledge when it is ready to be used to orient action. According to Davenport, Long and Beers (1998), knowledge is "a high value form of information that is ready to apply to decisions and actions" (p. 43). Nonaka (1994) defines knowledge as a "justified true belief" (p. 15) that increases an entity's capacity for effective actions, such as using information, learning, and experiencing from interpretation of information (Alavi & Leidner, 2001). He also affirms that knowledge is created and organized by the flow of information, anchored on the commitment and beliefs of its holder (Nonaka,

2002). Alavi and Leidner (2001), stress the view of knowledge as a capability centered on building core competencies, understanding of know-how, and creating intellectual capital. Similarly, Van Buren (1999) defined knowledge as skills, abilities, and competencies that represented employees' capabilities of carrying out the work at hand.

An important type of knowledge is tacit knowledge, which is difficult to codify, transmit, and convey, even though it is useful (Schön, 1983). Tacit knowledge contains data that are processed, organized and useful, but the underlying logic of its organization is frequently implicit and ambiguous, such as the relational learning between an apprentice and a mentor (Nonaka, 1994). Tacit knowledge is important to the solution of problems that are intractable, complex, extremely variable or all of the above. In this respect, Nonaka, (1994), states that tacit knowledge is "deeply rooted in actions, movement and involvements in a specific context" (p.16).

As phenomena become better understood and more routine, the necessary knowledge becomes more explicit, and solution procedures become more codified. According to Nonaka (1994), explicit knowledge is "discrete and digital" (p. 17), and it is transmittable in formal and systematic fashions. Explicit knowledge is nothing but records from the past, i.e. a library, archives, and database (Nonaka, 1994). Therefore, producing knowledge from data and/or information becomes simpler and more routine. In other words, the tacit knowledge becomes "externalized" (Nonaka, 1994). Understanding the continuum from tacit to explicit knowledge, social network strength and configuration may enhance current thinking and practice in knowledge creation, dissemination and/or

30

transfer. Social networks -- the sets of relations that link individuals and collectives -- have implications for the speed and effectiveness with which knowledge is created and disseminated in organizations (Nelson, 2001).

There are two fundamental dimensions of social networks: transactional content and configuration (Nelson, 2001). These, in turn, have both direct and indirect interactions on each other and on knowledge creation, dissemination, and/or transfer. Generating knowledge, either tacit or explicit, is a complex task. Nonaka (1994) identifies four interrelated processes leading to knowledge creation: socialization, internalization, externalization, and combination. Their definitions are as follows:

(1) Socialization: tacit knowledge created from tacit knowledge;

(2) Combination: explicit knowledge created from explicit knowledge;

(3) Externalization: explicit knowledge created from tacit knowledge;

(4) Internalization: tacit knowledge created from explicit knowledge.

When knowledge is at the tacit stage, it transfers through very rich channels requiring frequent face-to-face interaction, i.e., observation, imitation, and mentoring. This refers to Nonaka's (1994) "socialization." When physical artifacts such as documents or databases are involved, the artifact or physical setting must simultaneously be available to all parties. This demands both strong ties and a dense network configuration, which can be quite expensive to develop in terms of time and resources. Both externalization and internalization knowledge creation processes require knowledge transformation from tacit to explicit or vice versa. Also, these two approaches are influenced by the nature and

31

distribution of individual and collective networks. However, different from the socialization and combination approaches, internalization and externalization demand weak ties and a low density in network configuration that allows knowledge transformation to take place, (Nonaka, 1994).

In general, the stronger the tie is, the easier it is for one actor to influence and convey complex and multifaceted information. Strong ties also promote commitment and solidarity, between actors, that are necessary for communication and coordination of large projects which require intensive knowledge sharing (Fukayama, 1995). At the same time, strong ties tend to be resistant to change.

Team agility is another issue that is important to Nonaka's four modes of knowledge creation. While developing different types of knowledge involving individuals, project teams, and departments, IBM emphasizes "agility" in a team. Team agility refers to a cohesive team that is composed of a highly communicative group of people called "knowledge communities" (Huang, 1998). The more diversity a team has, the more agile is the team. Team agility leads to the generation of valuable tacit knowledge and an innovative learning environment. However, a knowledge community can't produce knowledge effectively without a shared mission and/or clearly identified goals. The "sweet spot" was a knowledge community as a group or team that could share both tacit and explicit knowledge at IBM (Huang, 1998).

The sweet spot was a typology created with two dimensions (Huang, 1998):

(1) Knowledge communities as in individuals, teams/groups and organizations;

(2) Knowledge types as in tacit knowledge, project experience, and explicit knowledge.

In sum, knowledge is complex in several dimensions. Nonaka's (1994, 2002) definition of KM and its conversion modes are well-cited in many KM studies and throughout this research. The research differentiates tacit knowledge and explicit knowledge with a social network perspective. Knowledge was facilitated with emergent meaning by introducing the important dimensions of social network: transactional content and configuration (Nelson, 2001; Huang, 1998). At the same time, human capital wouldn't be useful if it weren't facilitated by tacit knowledge or explicit knowledge that enhanced organizational effectiveness and efficiency to better performance.

2.3.3.1 KM Processes

Most views of KM recognize that it has both social and technological dimensions integrated with IT. KM also has broad aims involving organizational culture, transparency and agility of processes. The infrastructure development of KM is harmonious with individual needs and organizational context. It is generally recognized that early KM initiatives focused too heavily on IT and missed opportunities to improve performance through the knowledge and enhancement of employee networks (Parker et al., 2001). Practicing managers especially recognize that human relationships, their deployment, and configuration are critical to KM.

For instance, the manager of a technical information center at Xerox emphasizes that KM was not technology-driven but "people-driven" (Hickins, 1999). A case study of Xerox describes 80 percent of KM systems that involve adapting to the social dynamics of the workplace. For Davenport and Prusak (1998), most KM projects have one of three emphases:

1. Make knowledge visible and show the role of knowledge in an organization.

2. Develop a knowledge-intensive culture by encouraging and aggregating behaviors, e.g., knowledge sharing.

3. Build a knowledge infrastructure -- not only a technical system, but a web of connections to encourage interaction and collaboration.

Along with Alavi's (1997) concept that KM should embrace both technology and social-cultural factors, Tiwana (2001) suggest two other emphases:

(1) KM should focus on the flow of information.

(2) KM is a foremost a management issue and technology is only an enhancer driven "by the right people in the right place to support knowledge management" (p. 12).

A similar, but more individualistic perspective is expressed by Alavi et al. (2001). For them, KM involves enhancing an individual's learning and understanding by providing more information to the individual. They also saw the role of IT as providing access to sources of knowledge rather than knowledge itself. Sources of knowledge are the nodes of a social network that create, acquire, or transfer the majority of information and/or knowledge.

ICMM includes KM enablers and processes (Van Buren, 1999). He identifies five KM processes: define, create, capture, share, and use. Also, he states that these processes are overlapped and that they reinforce each other. The nature of these KM processes involve different forms of activities and appeared in different functionalities, such as succession planning, market research, total quality management, reengineering, and strategic planning.

These KM processes are further illustrated in the following:

(1) Define deals with identifying intellectual capital types, needs, and requirements.

(2) Create is creating new intellectual capital and uncovering existing intellectual capital.

(3) Capture includes compiling, gathering, representing, codifying, and reorganizing intellectual capital.

(4) Share is defined as disseminating, distributing, and transferring intellectual capital.

(5) Use is applying, incorporating, reusing, exploiting, and leveraging intellectual capital.

Similarly, Dow Chemical implementation a six-step process for managing intellectual assets that include:

(1) Defining the role of knowledge in the business.

(2) Assessing the competition's strategies and knowledge assets.

(3) Classifying the company's portfolio of knowledge assets.

(4) Evaluating the value of those assets to keep, develop, sell or abandon.

(5) Investing in areas where gaps have been found.

(6) Assembling the new knowledge portfolio (Bontis, 1996).

Van Buren's (1999) processes and Dow's management of intellectual assets take on a task-oriented approach; on the other hand, Nonaka's knowledge creation processes are closely related to Gold et al.'s (2001) KM processes. The knowledge creation processes were investigated in several studies such as Gold et al. (2001). In addition, different from a task oriented approach or knowledge creation processes, IBM's KM processes [are] engaged in a "knowledge cycle." The knowledge cycle is the process for knowledge creation, use, and reuse with continuous improvements (Huang, 1998). Continuous improvements introduced dynamics to the KM processes within the boundaries of the users' working environment.

Davenport and Prusak (1997, 1998) point out that increasing knowledge intensity and addressing cultural change are the most challenging issues in the KM processes in addition to making knowledge visible and building knowledge infrastructure. Consistent with IBM's sweet spot development, Hansen and Oetinger (2001) introduce the next generation of T-shaped management. T-shaped management can help to cultivate a sharing environment to transfer knowledge from experts at the jobs, such as tacit knowledge. At the same time, T-shaped management follows hierarchies and organizational routines within a boundary of functionality where explicit knowledge

36

flows. To explain further, a T-shaped management processes provides for sharing knowledge freely across the organization (the horizontal part of the T) while remaining individual business units perform organizational routines in a hierarchy function (the vertical part) (Hansen & Oetinger, 2001). In terms of tie strength, the horizontal part of the T is weak while the vertical part is strong. In terms of tacit versus explicit knowledge, tacit knowledge flows more freely in the horizontal part of T while explicit knowledge is more beneficial in the vertical part of the T. In a business context, a knowledge cycle is linked to the complexity and evolving nature of the marketplace. Hopefully, the reuse of knowledge and intellectual capital can improve response speed and encourage innovation for better outputs. Sometimes, however, an effective implicit knowledge transfer is crucial to the success of innovation driven companies. Because of the nature of knowledge, KM embraces very specific drivers to each organization. It is totally determined by what knowledge is required, how it is assimilated and organized, who has permission to receive it, and where it is delivered. KM involves social, technological, and human aspects of an organization (Alavi et al., 2001; Tiwana, 2001). In addition to Nonaka's (1994) knowledge processes that are studied intensively (Gold et al., 2001; Lee, 2003), the task orientation of knowledge processes are also mentioned (Van Buren, 1999; Bontis, 1996).

a. Creation and Acquisition

Knowledge can be acquired from any type of consumers as well as through direct interaction with customers either by mails, questionnaire, interviews, phones, contacts at fairs, etc. Through these means, companies acquire knowledge about market trends and

37

competitors, Nonaka's (1994). Knowledge acquisition for expert systems is a purely practical problem to be solved by experiment, independent of philosophy. However, the experiments one chooses to conduct will be influenced by one's implicit or explicit philosophy of knowledge, particularly if this philosophy is taken as axiomatic rather than as a hypothesis. We argue that practical experience of knowledge engineering, particularly in the long term maintenance of expert systems, suggests that knowledge does not necessarily have a rigorous structure built up from primitive concepts and their relationships, (Parker et al., 2001). The knowledge engineer finds that the expert's knowledge is not so much recalled, but to a greater or lesser degree made up by the expert as the occasion demands. The knowledge the expert provides varies with the context and gets its validity from its ability to explain data and justify the expert's judgment in the context (Parker et al., 2001).

b. Sharing and Dissemination

Knowledge sharing and transfer are important elements which help organizations explain their level of knowledge internally and externally. The foundations for effective knowledge transfer and sharing can be performed through internet and intranet. In fact, from the interpersonal perspective, the company's intranet is the main source of knowledge communicational channel within the company, where company and industry has a common platform to share. The things which can be published on the intranet can be press reviews, acknowledgements, trends, awards and other information (Massa & Testa, 2009). According to Massa and Testa (2009), knowledge can also be shared or transferred through interviews. This phase is very important to absorb the tacit

knowledge permeating the firm and to build the basis for subsequent knowledge transfer and sharing.

c. Utilizations and Application

The analysis of literature reveals two streams of studies i.e. knowledge creation and knowledge assessment (Carlucci, 2004). Knowledge creation begins with the seminal work of Nonaka (1991) who introduces the concept of the knowledge creating company and defines knowledge management approaches and models as both descriptive and prescriptive frame works. Descriptive frameworks attempt to distinguish the nature of KM phenomena, while prescriptive frameworks attempt to direct methods to be followed in conducting KM.

Among resource-oriented partial frameworks, the intellectual capital model group (McAdam & McCreedy, 1999) and the Economic School in Earl's taxonomy (Earl, 2001), are well known in the business environment. Human Resources literature relies heavily on this grouping of KM models and frameworks, as does the Accounting discipline's work on intangible assets. From this perspective, KM focuses on hiring, retaining, training of personnel, i.e. 'intellectual assets', whereas organizational knowledge is defined as 'the sum of the knowledge of its personnel'. De Gooijer (2000) framework using the concept of performance scorecards would fit into this grouping. However, in the broader view of KM, this is just one aspect that would be included in an integrated approach (Meliha, 2006).

The knowledge process wheel (Marr & Schiuma, 2001) proposes taxonomy of

knowledge management processes. This model identifies seven main processes of knowledge management i.e. knowledge generation, knowledge codification, knowledge application, knowledge sharing, knowledge mapping, knowledge storing, and knowledge transfer (see Figure 2.1). The process is based on the understanding that knowledge is a dynamic in nature. On this basis, knowledge can be transferred, shared, developed and renovated as the cognitive assets of an organization (Wiig, 1997). Application of knowledge to create a company image, which can fully meet expectations of customers, is the core objectives for companies. Through knowledge application the road map is created and it can further direct the companies to excel their strategies (Massa & Testa, 2009). Another significant characteristic of the company's image that incorporates knowledge of customers' opportunity is its localness i.e. the image of a company that is strictly connected to traditions and never forgets its origins.
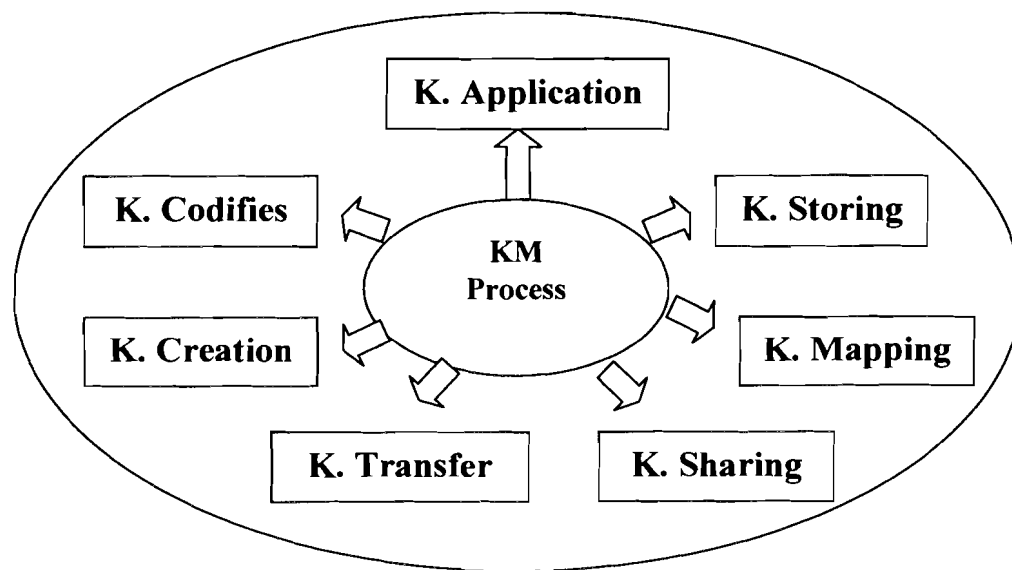
Figure 2.1
Knowledge Process Wheel
Source: Carlucci (2004)

Knowledge assessment as the second stream of study builds on the base of KM and is intended to provide methodological instrument to identify and value intellectual capital of a company. It was developed out of the desire to account for intellectual capital and was first adopted by Skandia (1994). Since 1994, the literature about the assessment of intellectual capital has been enriched by a number of contributions particularly by Bontis, (1999), Carlucci et al. (2004), Sveiby (1998), and Stewart (1997). Although it is important for an organization to manage knowledge internally, it is equally important to effectively manage knowledge as well (El Sawy et al., 1999).

2.3.4 KM Content Capabilities

Knowledge management (KM) is a "conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that will improve organizational performance" (O'Dell & Grayson, 1998, p. 6). KM can be thought as "encouraging individuals to communicate their knowledge by creating environments and systems for capturing, organizing, and sharing knowledge throughout the company" (Mark, 2004, p. 88). Its goal is to identify and leverage collective knowledge in an organization to help the organization compete (Von Krogh, 1998; Alavi & Leidner, 2001).

According to Davenport and Klahr (1998) and Alavi & Leidner (2001), knowledge management has three goals: (1) making knowledge and its role visible in an organization through maps, database, and communications; (2) developing knowledge intensive culture by encouraging knowledge sharing; (3) building a knowledge infrastructure: a

41

technical system and a web connection among people by providing space, time, tools, and encouragement. Knowledge management consists of four knowledge processes: (1) knowledge creation; (2) knowledge storage/retrieval; (3) knowledge transfer; and (4) knowledge application (Alavi & Leidner, 2001). Knowledge creation means developing or replacing the content of an organization's tacit and explicit knowledge (Alavi & Leidner, 2001; Pentland, 1995). knowledge storage or retrieval involves explicit knowledge embedded in a variety of forms like written documentation, electronic database, expert systems, documented organization procedures and processes; and tacit knowledge acquired by individuals and their network (Tan & Libby, 1997; Alavi & Leidner, 2001). Knowledge transfer occurs at various levels: "between individuals, from individuals to explicit resources, from individual to groups, between groups; across groups, and from groups to organizations" (Alavi & Leidner, 2001, p. 119). Knowledge application will create competitive an advantage for the firm. Three mechanisms can integrate knowledge to create organizational capability: directives, organizational routines, and self-contained teams (Grant, 1996b; Alavi & Leidner, 2001). Gold et al. (2001) took the capabilities perspective as the root of knowledge processes. Compared to Bose (2002), Cross et al., (2001), and Nonaka (1994, 2002), Gold et al.'s (2001) knowledge processes capabilities are a better variable for this research that has a focus on IC. As the authors pointed out the capabilities are more important to the dynamics in a firm.

2.3.5 KM Contents

According to McInerney (2002), there are two types of knowledge strategies. The first

42

strategy pertains to the supply side that tends to focus on the distribution and dissemination of current knowledge of the organization and the second one is the demand side that focuses on meeting organization needs to new knowledge. In other words, the first strategy focuses on knowledge sharing and dissemination and the second towards innovation science and mechanics of any knowledge generation. There are two types of knowledge i.e. explicit knowledge and tacit knowledge. Both types of knowledge are significant for organizations. Generally, the creation knowledge depends on the conversion between these types (Earl, 1998; Haanes & Lowendhal, 1997). Nonaka's research into organizational knowledge creation provides an excellent theory and framework related to the processes involved with knowledge creation. The four modes of knowledge conversion described in his 1994 paper are: tacit to tacit; explicit to explicit; tacit to explicit; and explicit to tacit. Nonaka depicts the four modes of knowledge creation (Nonaka, 1994).

The first mode is called socialization and is used to describe the process of creating tacit knowledge from tacit knowledge. This is only possible through interpersonal interactions as the shared experiences help one understand the thought process of the other (on the job training, craftsmanship through imitation, observation etc) (Nonaka, 1994). The second mode of knowledge creation, externalization, fosters the conversion of explicit knowledge to explicit knowledge. This process occurs through the mutual sharing of individual experiences and perspectives to integrate the knowledge, reformulate it, and create new knowledge (Nonaka, 1994).

43

The third mode of knowledge conversion involves the conversion of tacit knowledge into explicit knowledge through a process Nonaka calls combination. This process and the fourth mode of knowledge conversion are complementary and operate over time through a process of mutual interaction (Nonaka, 1994). The fourth mode of knowledge conversion from explicit to tacit can be compared to the internalization process used for learning (Nonaka, 1994). Nonaka proposes that the central engine providing power to his model of knowledge creation is the continual and dynamic interaction between the different modes of creation through the internalization and externalization processes. A failure to create or foster this interchange between tacit and explicit knowledge may cause problems because: purely combining knowledge can lead to a disconnection with reality. Moreover, socialization alone doesn't allow wide enough dissemination of the new knowledge (Nonaka, 1994).

A key observation in this research shows that, from an organizational perspective, the knowledge creation/conversion process takes place when all four of the modes are managed so as to create a continuous cycle or spiral. This is of vital import to organizations that rely on teams to accomplish work. Key triggers in the changes from one mode to another in the spiral form are driven by the team's needs and point in the development of new knowledge. The spiral form begins in the socialization mode as new teams (work-units) are formed, and as members share experiences and perspectives. The trigger begins when members of the work-unit begin successive rounds of meaningful dialog in the externalization mode of the cycle through the use of metaphors and other forms of communication to reveal hidden tacit knowledge.

44

The third stage is triggered when the team begins to process concepts developed in the first two cycles and integrate them with existing knowledge in the combination mode. As the team members begin to iterate the concepts through trial and error, they move into the fourth stage of the cycle called internalization whereby they bring the concepts closer to the final product. A visual depiction of the knowledge creation is spiral. The organizational knowledge creation process, then, can be said to start with the individual, gain momentum and clarity as it is worked within teams, and then moves upward through the organization as more individuals contribute to the new knowledge-base (Nonaka, 1994). According to Nonaka & Takeuchi (1995), the dynamics of the analysis of knowledge creation through cycles of socialization, externalization, combination and internalization cycles are based on the assumption that knowledge is created through conversion between tacit and explicit knowledge. In terms of this assumption, Nonaka & Takeuchi (1995) propose four different models of knowledge conversion: (See figure 2.2).
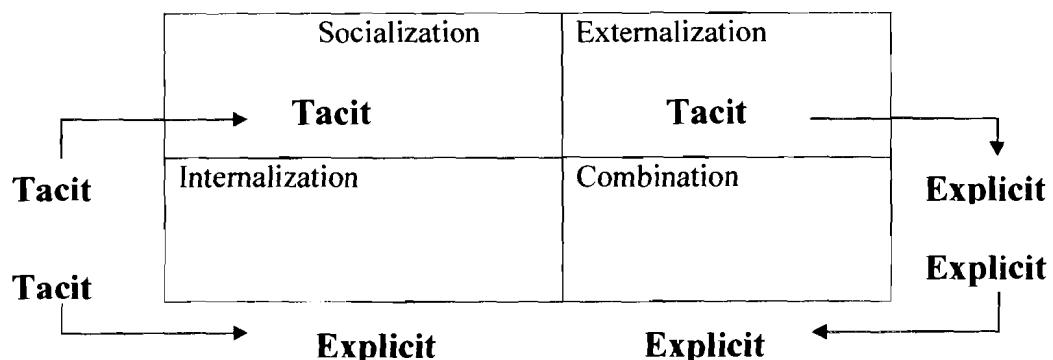
Figure 2.2
Creation Knowledge Model
Source: (Nonaka & Takeuchi, 1995)

Dynamic Theory of Organizational Creation, Organization Science:

1. Tacit to tacit (share experiences, spend time together).

2. Explicit to explicit (Community-based electronic discussion).

3. Tacit to explicit (Acquisition, processing, sharing).

4. Explicit to tacit (Personal experience).

The basic terms in the model are as follows:

1. Socialization: process of sharing tacit knowledge

2. Externalization: process of conversing tacit to explicit knowledge

3. Combination: process of discussion of explicit knowledge through communication.

4. Internalization: process of embodying explicit knowledge to tacit knowledge.

2.3.5.1 Tacit Knowledge

The concept of tacit knowledge is vague and ambiguous, which creates confusion and difficulty in developing and implementing knowledge management strategies (McAdam et al., 2007). Polanyi (1966) advances early distinctions between explicit and tacit knowledge; however, there is still dispute in the literature of the definition of tacit knowledge and role of tacit knowledge in organizations (McAdam et al., 2007).

The process and content of tacit knowledge transfer is poorly understood (Foos, Schum, & Rothenberg, 2006; McAdam et al., 2007). At a biological level, knowledge resides in the human brain as stored neural patterns that are retrieved through thought (Bennet &

Bennet, 2008). Through the continuous creation of new patterns, understanding, meaning, and context to actions are attached (Bennet & Bennet, 2008). Tacit knowledge may be stored implicitly without the individual being consciously aware of the knowledge (Bennet & Bennet, 2008; Guzman & Trivelato, 2008). A conversation, event, or action will then trigger the knowledge, making it explicitly understood by the individual; however, the individual may have difficulty articulating how they know what they know (Bennet & Bennet, 2008; Guzman & Trivelato, 2008; Zhao, 2009).

Explicit and tacit knowledge are the poles of a continuum with all knowledge falling somewhere between the two endpoints (Guzman & Trivelato, 2008; Jennex, 2007). The level of tacitness associated with a piece of information is largely subject to each individual. Jennex (2007) sees that the same piece of information might be explicit to one person but tacit to another, encouraging the notion that tacit knowledge can be made explicit and then coded and stored for future retrieval. Guzman and Trivelato (2008) proposes that all pieces of knowledge contain both tacit and explicit elements. Forcing knowledge into either tacit or explicit classifications is a mistake that neglects the multidimensional features of all knowledge (Guzman & Trivelato, 2008). Scholars have theorized that codified knowledge is dependent on context, social and political processes, making the tacit portion of knowledge difficult to codify (Ancori, Bureth, & Cohendet, 2000; Johnson et al., 2002). Primarily, tacit knowledge must be stored with more context and detail to inform users of what the knowledge means and how it can be applied in new situations (Hamza, 2009).

Tacit knowledge must be attached to explicit knowledge to be processed, codified, stored, understood, and retrieved successfully (Hamza, 2009). Tacit knowledge is problematic because people are often unaware that they possess anything that can be shared (Bennet & Bennet, 2008; Zhao, 2009). Even when an individual becomes aware of the knowledge, tacit knowledge is difficult to express (Zhao, 2009). Individuals may draw practical tacit knowledge about situational decision making from personal experiences (Guzman & Trivelato, 2008). Practical tacit knowledge can be experienced consciously or unconsciously, leaving the individual unable to articulate clearly how he knows something to be true (Bennet & Bennet, 2008; Guzman & Trivelato, 2008; Zhao, 2009). Although tacit knowledge is difficult to transfer, it resides and flows through groups with close relationships by means of conversations, stories, and shared experiences (Singh, 2008). Due to the highly personalized nature of tacit knowledge, it is difficult to transfer without active communication by the knowledge holder as teacher (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004). Once the knowledge holder is gone, others can no longer capture and retain the tacit knowledge he possesses.

As an individual develops competence in a specific area, more of the knowledge about the area is tacit, creating a challenge for the individual to articulate how they know what they know (Bennet & Bennet, 2008). However, tacit knowledge often determines action on explicit knowledge; therefore, tacit knowledge is required for the correct application of explicit knowledge (Zhao, 2009). Tacit knowledge can be thought of as action-oriented knowledge gained from practical experiences and applied to new situations based on personal knowledge (Sternberg, Wagner, Williams & Horvath, 1995).

48

Tacit knowledge is a valuable, yet immeasurable, predictor of future success for individuals as well as groups (Insch, McIntyre, & Dawley, 2008). Tacit knowledge is closely tied to the concept of intellectual capital and has been used as a source of valuing an organization's intangible knowledge assets since the early 1990s (Harlow, 2008). The level of tacit knowledge transfer correlates positively with innovation capability and organizational performance (Rhodes, Hung, Lien, Wu, & Lok, 2008). Hansen, Nohria, and Tierney (1999) reveal that tacit knowledge sharing is more important for organizational performance than codified knowledge sharing.

Sternberg et al. (1995) argue that tacit knowledge is a more accurate predictor of success than general intelligence. Insch et al. (2008) find that high levels of tacit knowledge directly influence grade point average in students. Wagner (1987) finds a strong correlation between tacit knowledge and career success. Taken together, the studies indicate that tacit knowledge is important for both academic and professional success (Insch et al, 2008; Sternberg et al., 1995; Wagner, 1987).

Tacit knowledge relates inherently to management (Insch et al., 2008). Wagner (1987) proposes that tacit knowledge consists of knowledge of how to manage oneself, manage tasks, and manage people. Mulder and Whiteley (2007) see that people are better able to capture tacit knowledge under bounded conditions when there is a sense of shared purpose. Successful transfer of tacit knowledge is dependent on the knowledge management strategy employed and the organizational structure of the institution (Joia & Lemos, 2010). Successful tacit knowledge transfer also depends on an environment of

trust, involvement, and due diligence (Foos et al, 2006).

Individuals often subconsciously obtain and apply tacit knowledge (Bennet & Bennet, 2008; Singh, 2008). Personal experiences and activities, hearing stories, and conversations produce tacit knowledge (Singh, 2008). Information residing in the minds of individuals and not captured by information technology is more accessible within familiar contexts (Louadi & Tounsi, 2008). However, non-information technology-based knowledge is more volatile and prone to disappear as people exit the organization (Louadi & Tounsi, 2008). Individuals need to discover and capture tacit knowledge and then creatively share the knowledge so they can use it efficiently for future decisions (Davis, 2002). Here, Hamza (2009) points out that people might share and preserve tacit knowledge during times of employee turnover by instituting internal review processes between multiple peer groups, reducing the risk of information loss with the exit of a key employee. Once people create tacit knowledge, they can use the knowledge to identify problems, find solutions to problems, and anticipate potential problems (Harlow, 2008). Individuals possessing the knowledge for problem identification, solution, and anticipation are valuable to the organization and there is a need to transfer the knowledge to others in the organization (Harlow, 2008).

Tacit knowledge exists in four overlapping forms: embodied, intuitive, effective, and spiritual (Bennet & Bennet, 2008). Embodied tacit knowledge is kinesthetic and sensory (Bennet & Bennet, 2008; Merriam, Caffarella, & Baumgartner, 2006). The knowledge of how to ride a bicycle or identify the smell of fresh cut grass is an embodied tacit

knowledge prompting overt conscious awareness (Bennet & Bennet, 2008). Merriam et al. (2006) linked embodied tacit knowledge to experiential learning, which may be gained through mimicry.

Intuitive tacit knowledge is a personal sense of knowing that cannot be explained, yet it may influence decisions or actions (Bennet & Bennet, 2008; Klein, 2003). Intuitive tacit knowledge resides in the subconscious because of continuous learning (Bennet & Bennet, 2008). Intuitive tacit knowledge is the most difficult to articulate and transfer because intuitive tacit knowledge development requires the individual to meaningfully experience the precise situations (Klein, 2003). Effective tacit knowledge involves implicit feelings and explicit emotions (Bennet & Bennet, 2008). Emotions affect all thoughts and behaviors in some way. Feelings and emotions are important in influencing decisions and actions even when individuals are not consciously aware of the feelings (Bennet & Bennet, 2008). Unless people discuss feelings and emotions about decision-making, others may not effectively understand the role of effective tacit knowledge or have the ability to receive the knowledge (Bennet & Bennet, 2008). Spiritual tacit knowledge is unique because it does not require an individual to have had previous related experiences (Bennet & Bennet, 2008).

Spiritual tacit knowledge is primarily focused on the moral and emotional aspects of human nature and informs thoughts and actions related to higher learning, wisdom, values, purpose, and common goods. Spiritual tacit knowledge allows individuals to view events in a relational frame of reference (Bennet & Bennet, 2008). Researchers may

retrieve tacit knowledge by observing and discussing the role of emotions, intuitions, and personal feelings about decision making by leaders (Bennet & Bennet, 2008).

Individuals require a high level of trust to authentically represent and share tacit knowledge (Zhao, 2009). Bennet and Bennet (2008) suggest embedding tacit knowledge throughout the organization by educating employees about the concept of tacit knowledge and its importance for the organization, encouraging discussion and dialogue about experiences, feelings, and intuitions, conducting after-action reviews, and facilitating audits of policies, practices, and historical themes. Identifying and embedding tacit knowledge into organizational process creates an area of competitive advantage that competitors will be unable to duplicate (Bennet & Bennet, 2008; Zhao, 2009).

2.3.5.2 Explicit Knowledge

The term explicit knowledge is an approach that holds knowledge as something that can be explained by individuals, even though some effort and even some forms of assistance may sometimes be required to help individuals articulate what they know. As a result, the explicit knowledge approach assumes that the useful knowledge of individuals in an organization can be articulated and made explicit. Starting from the premise that important forms of knowledge can be made explicit, the explicit knowledge approach also believes that formal organizational processes can be used to help individuals articulate the knowledge they have to create Knowledge assets (Ron Sanchez & Linden, 2001).

Furthermore, in terms of the explicit knowledge approach, it is believed that explicit knowledge assets can be disseminated within an organization through documents, drawings, standard operating procedures, manuals of best practice, and the like (Ron Sanchez & Linden, 2001). In contrast to the views held by the tacit knowledge approach, the explicit knowledge approach holds that knowledge is something that can be explained by individuals -- even though some effort and even some forms of assistance may sometimes be required to help individuals articulate what they know. As a result, the explicit knowledge approach assumes that the useful knowledge of individuals in an organization can be articulated and made explicit (O'Dell & Grayson, 1998). Starting from the premise that important forms of knowledge can be made explicit, the explicit knowledge approach also stipulates that formal organizational processes can be used to help individuals articulate the knowledge they have to create knowledge assets.

Again, according to explicit knowledge approach, Alavi and Leidner (2001) state, explicit knowledge assets can be disseminated within an organization through documents, drawings, standard operating procedures, manuals of best practice, and the like. Information systems are usually seen to play a central role in facilitating the dissemination of explicit knowledge assets over company intranets or between organizations via the internet.

Usually accompanying the views that knowledge can be made explicit and managed explicitly is the belief that new knowledge can be created through a structured, managed, scientific learning process. Experiments and other forms of structured learning processes

can be designed to remedy important knowledge deficiencies or market transactions or strategic partnering, or may be used to obtain specific forms of needed knowledge or to improve an organization's existing knowledge assets (Grant, 1996; Alavi & Leidner, 2001). The recommendations for knowledge management practice usually proposed by researchers and consultants following the explicit knowledge approach focus on initiating and sustaining organizational processes for generating, articulating, categorizing, and systematically leveraging explicit knowledge assets. Some examples of knowledge management practice in this mode help to illustrate this approach. In addition to its tacit knowledge management practice of moving new employees around to transfer knowledge of its production system, Toyota also follows a highly disciplined explicit knowledge management practice of documenting the tasks that each team of workers and each individual worker is asked to perform on its assembly lines. These documents provide a detailed description of how each task is to be performed, how long each task should take, the sequence of steps to be followed in performing each task, and the steps to be taken by each worker in checking his or her own work (Spear and Bowen 1999). When improvements are suggested by solving problems on the assembly line as they occur or in the weekly Quality Circle meetings of Toyota's teams of assembly line workers, those suggestions are evaluated by Toyota's production engineers and then formally incorporated in revised task description documents.

Other firms have taken this explicit knowledge management approach in product development processes even further. For example, GE Fanuc Automation, one of the world's leading industrial automation firms, develops design methodologies that are

applied in the design of new kinds of components for their factory automation systems. In effect, instead of leaving it up to each engineer in the firm to devise a design solution for each new component needed, GE Fanuc's engineers work together to create detailed design methodologies for each type of component the firm uses. These design methodologies are then encoded in software and computerized so that the design of new component variations can be automated. Desired performance parameters for each new component variation are entered into the automated design program, and GE Fanuc's computer system automatically generates a design solution for the component. In this way, GE Fanuc tries to make explicit and capture the design knowledge of its engineers and then to systematically re-use that knowledge by automating most new component design tasks, (Spear & Bowen, 1999).

2.3.6 Knowledge Management System

Knowledge management system (KMS) refers to "the use of modern information technologies (e.g. the Internet, intranets, extranets, collaborative computing/groupware, software filters, agents, data warehouse) to systematize, enhance and expedite intra and inter firm knowledge management" (Alavi & Leidner, 1999, p. 2). KMS is "a class of information systems applied to support and enhance organizational processes of knowledge creation, storage /retrieval, transfer and application" (Alavi & Leidner, 1999, p. 2). KMS can be applied to three common applications: (1) enable the coding and sharing of best practice transfer within an organization; (2) create corporate knowledge directories such as mapping of internal expertise; (3) create a knowledge network such as providing an online forum (Alavi & Leidner, 2001).

2.4 INTELLECTUAL CAPITAL

Intellectual capital has been studied by many past researchers (e.g. Amir & Lev, 1996; Bontis, 1999; 2001a; Edvinsson & Malone, 1997; Stewart, 1997; Wen-Ying Wang & Chingfu Chang, 2005), who investigated the influence of intellectual capital on business performance. Intellectual capital refers to strategic intangible resources and can be defined as all intangible resources that are available to an organization, that give a relative advantage, and which in combination are able to produce future benefits – intellectual capital measurement refers to the discipline of identifying and measuring intangible resources (Stam, 2005). However, most past researchers have focused on the impact of individual intellectual capital on performance while neglecting the effects of specific elements of intellectual capital. Table 2.2, below, present a summary of the main IC definitions.

Table 2.2
A Summary of the Main IC Definitions

Authors	Definition of (IC)
Stewart, 1997	Package useful knowledge that includes an organizations processes technologies, patents, employees, skills and information about customers, supplier and stakeholder.
Broohing, 1996	IC is the term given to combined intangible assets which enable the company to function
Sveiby, 1998	It is the knowledge, experience, brainpower of employee as well as knowledge resources, stored in an organizations databases system processes, culture and philosophy.
Bontis, 1999	The collection of intangible resources and their flows.
Brooking, 1997	The difference between the book value and what somebody is prepared to pay for it.
Edvinsson, 1997	A source of intangible (hidden) assets that often don't appear on the balance sheet.
Harrison & Sullivan, 2000	Knowledge that can be converted into profit.
Roos et al, 1997	The sum of knowledge of company's members and practical translation of this knowledge like trademark, patents and brands.
Denise Hung et al. 2007	A composite of the wisdom, intelligence, flexibility, creativity, and entrepreneurship core competencies necessary to succeed in an increasingly competitive global economy where technology and knowledge dominate.
Caddy, 2000	IC as the difference between intangible assets and intangible liabilities.
Wen-Ying & Chingfu, 2005	Assert that intellectual capital assists enterprises in promoting competitive advantage and value.

56

The evaluation of the intellectual capital has been assess through many tools such as Balance Scorecard system (Kaplan and Norton, 1996, 2001) and activity base costing. In this study we are looking for investigating the intellectual capital influence on Iraqi firm's business performance and determine the influence of intellectual capital, with moderating variable as technology and culture influencing Iraqi firm's business performance (Wang & Chang, 2005). Figure 2.3 below shows the conceptual framework of the direct impact of intellectual capital elements on performance.

```
┌─────────────────────┐
│   Human Capital     │ ─────┐
└─────────────────────┘      │
┌─────────────────────┐      │      ┌─────────────────────┐
│  Innovation Capital │ ─────┼────▶ │    Performance      │
└─────────────────────┘      │      └─────────────────────┘
┌─────────────────────┐      │
│   Process Capital   │ ─────┤
└─────────────────────┘      │
┌─────────────────────┐      │
│  Customer Capital   │ ─────┘
└─────────────────────┘
```
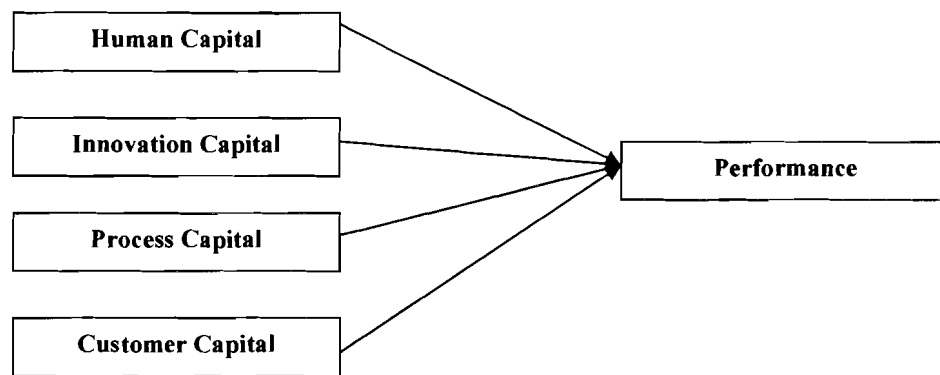
Figure 2.3
Conceptual Framework of the Direct Impact of Intellectual Capital Elements on Performance
Source: (Wang & Chang, 2005)

The human capital and customer capital play a vital role in business performance. Organization in Iraq that have existed longer have accumulated more abundant experience, using more knowledgeable workers, or have higher educational knowledge.

Based on the few past studies, the researcher's have shown relationship between customer satisfaction and business performance; only very few studies actually provide empirical evidence. On the other hand, only few researchers have found a significant and positive

57

relationship between customer satisfaction and financial performance (Ittner & Larcker, 1998a).

2.4.1 Intellectual Capital Models

A model is an intellectual construct in artifact form that provides an abstract, highly formalized, often visual, yet simplified representation of a phenomenon and its interactions, (Stam, 2007). Intellectual capital refers to strategic intangible resources and has been defined as all intangible resources that are available for an organization, that give a relative advantage, and which in combination are able to produce future benefits; intellectual capital measurement refers to the discipline of identifying and measuring intangible resources (Stam, 2007). During the past decade models of plethora have been developed.

The main aim of these models is to uncover the intellectual capital of an organization, in order to solve either internal management problems, or external communication problem. One of the main concerns of the intellectual capital movement in the past decade has been the development of a so-called taxonomy- a branch of various classes of intangibles and their relationship (Bontis, 2002, 2001b).

Re and more agreement about an emerging standard which has its roots in a series of early methods like the intangible Assets Monitor (Sveiby, 1998), the skandia Navigator (Edvinsson & Malone, 1997) the intellectual capital index (Roos et al., 1997), make a distinction between three types of intangibles, although each author uses its own

denotations, the different subset makes similar distinctions, these three sub-classes are referred to as human capital, structural capital, and relational capital (Stam, 2007; Bontis, 2002). Nowadays, the majority of models are based on this triplet "taxonomy" or subdivision, the reasoning behind this subdivision is that the concept of intellectual capital is too broad, and therefore needs further specification – the subdivision provides a useful framework for arrival the indicators, (Stwart, 1997).

Although the logic of the models is that value creation (i.e. Intellectual capital) is the product of interaction between the three classes of intangibles (Edvinsson & Malone, 1997; Roos et al., 1997, Stwart, 1997; Sveiby, 1998) most models only present static indicators related to the individual classes. The acknowledgement of this shortcoming is the main motive for development so that a radical new intellectual capital reporting model. Table 2.3 a summary of most of these models for the purpose of comparison amongst the contemporary models of intellectual capital intangible asset.

Table 2.3

The Models for the Purpose of Comparison amongst the Contemporary Models of Intellectual Capital

Model Component	Model Diagram
Skandia Model (1994) • Intellectual capital is the sum of intangible values which comprise of: a- Human capital-knowledge, skills and capabilities, b- Structural capital: every things that remains when the employee go home: database, software, manuals, trademarks, organization structures, etc. customer capital is the relationship built up with the customers, and is a significant part of structural capital.	Market value Financial capital Intellectual capital Human capital Structural capital Customer capital Organization capital Innovation capital Process capital
Broohing Model (1996) • Intellectual capital component are: a- Market assets. b- Human-center assets. c- Intellectual property. d- Infrastructure asset.	Human – centered Assets Intellectual Assets Market Assets Intellectual property Infrastructure asset
Roos et al Model (1997) • Intellectual capital includes: a- Thinking assts: human capital. b- Non-thinking assets: structural capital.	Intellectual capital Thinking assets Human capital Non-thinking assets. Structural capital

60

Table 2.3: (*continued*)

Model Component	Model Diagram
Stewart Model (1997) • Intellectual capital as intellectual materials which consists of: a- Knowledge. b- Information. c- Intellectual property. d- Experience. That can be put to create wealth.	
Sullivan Model (1998) • Intellectual capital is knowledge that can be converted into profits. Intellectual capital comprises three elements: a- Human capital. b- Intellectual assets. c- Structural Capital	
Saint-Onge Model (1996) • Prefers knowledge capital to Intellectual capital knowledge capital is the sum of: a- Human capital: capabilities of individual to provide solutions to customers. b- Relational capital: the depth width, attachment and profitability of franchise. c- Structural Capital: the capabilities of organization and on to meet market requirements.	

Table 2.3: (*continued*)
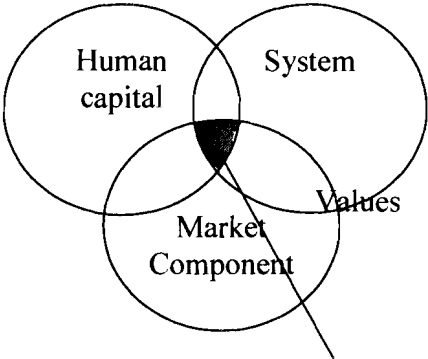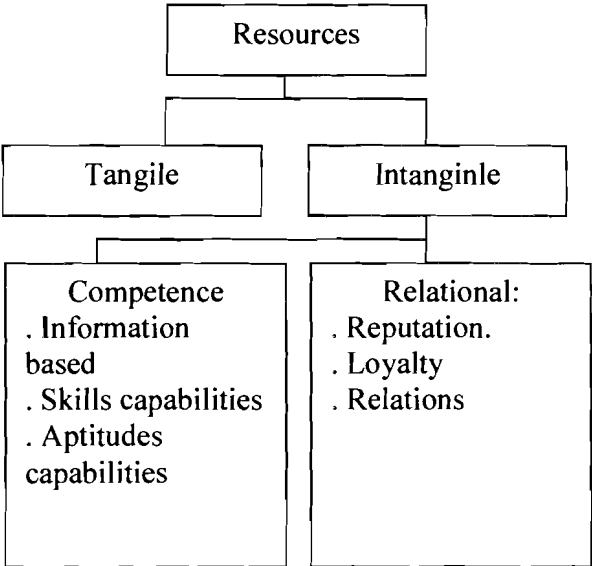
Model Component	Model Diagram
Edvinson & Malone Model (1997) • Intellectual capital consist of: a- Human capital: what people can do individually and collectively? b- System component: Knowledge in firms, which is independent of people. Includes patents. Contracts and database. c- Market component: relationship between organization & out sides.	
Haanes & lowedahl Model (1997) • Intellectual capital is intangible resources of: a- Competencies'- various abilities to perform and are reflected at individual and organization level. b- Relationship. Reflected in the reputation of the company, customer loyalty. Both of these exist in an individual and collective fashion.	

Table 2.3: (*continued*)

Model Component	Model Diagram
Mayo Model (2000) • Most common form of intellectual capital: a- Customer (External) capital: customer relationship, loyalty, satisfaction & image. b- Organizational (Intemal): structure capital, system patent, know-how database, knowledge, culture. c- Human capital: individual, competence and experience. Judgment, leadership and motivation.	 Customer (External) capital Organization capital Values Human capital
Marr,B. Model (2004) • Intellectual capital is the dynamic interaction between human, structural and relational capital. And the dynamic interaction between intellectual capital component and other resources is essential to deliver organizational performance. In fact it is the interaction among the different types of capital that creates wealth within an organization.	Physical capital Monetary capital Intellectual capital Human capital Relational capital Organizational capital

Table 2.3: (*continued*)

Model Component	Model Diagram
Allee Model (2000) • Expanded view of intellectual capital: a- Business relationship, alliances and business relationship with customer, partners, suppliers. Investors and government (BR) b- Internal structures: systems, work process that leverage competitive and technologies, communication and technologies (IS) c- Human competence (HC) d- Social citizenship (SC) e- Environmental health (EH) f- Corporate identity (CI)	
Mc Elory Model (2002) • Modifies Edvinson's intellectual capital model: intellectual capital consist of: a- Human capital. b- Structural capital c- Social innovation capital	

In conclusion, it appears that most of the definitions of intellectual capital listed above include human capital, structural capital and relational/customer capital.

2.4.2 Elements of Intellectual Capital

Intellectual capital, (also considered as an intangible asset) is defined as (capital) assets that lack physical substance but are likely to yield future benefits (Canibno et al., 2000). According to Skndia (1994), intellectual capital is the aggregate sum of intangible value which comprises (human capital, structural capital, customer capital and relational capital).

a. Customer Capital

The term customer capital is explained as the relationship between firms and their customers. Pike, Rylander, and Roos (2002) refer to customer capital as relational capital. This is one of the important dimensions which influence the inward relationships of an organization and the customer (Hsiu, 2006). The notion of a customer base is commonplace in the marketing and industrial organization literatures. Within industrial organization, the customer base is often associated with switching costs rather than search frictions, however (Klemperer, 1995; Farrell and Klemperer 2007). The firm dynamics we emphasize stem from convex costs to customer base expansion. In a related vein, customer base concerns are becoming increasingly recognized also within the international trade and international macroeconomics literatures, where recent research uses them to explain exports and international pricing (e.g. Alessandria 2004, Arkolakis 2008, Drozd and Nosal 2008, Eaton, et al., 2010).

b. Human Capital

Human capital is a thinking asset (Roos et al., 1997); it represents the knowledge, skills and capability of the individual employees to provide solutions to the customers (Skandia, 1994; Sullivan, 1999). In other words, it represents the individual knowledge stock of an organization (Bontis et al, 2001) and it is the firm's collective capability to extract the best solutions from the knowledge of its individuals (Bontis, 1999). It is appropriate to deduce that human capital closely influences innovation capital. Employees are needed to carry out the internal process of a firm. Employees are also required to perform all customer services. By providing quality of service while implementing internal processes, the capability of employees would affect process efficiency and customer satisfaction (Wang & Chang, 2005). Stewart (1997) focuses on the relationship between customers and employee capabilities. He pointed out that employees should possess suitable knowledge or skills to serve customer needs. According to Wang and Chang (2005), human capital affects business performance through innovation capital, process capital and customer capital. Figure 2.4 shows the links between the intellectual capital components and business performance.
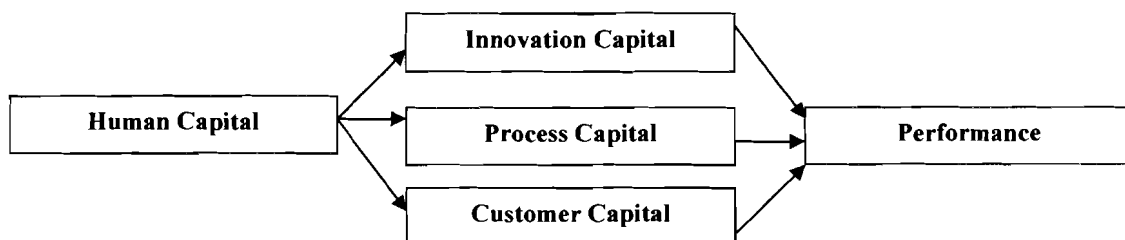
Figure 2.4
Conceptual Framework of the Indirect Impact of Human Capital Elements on Performance
Source: Wang and Chang (2005)

According to Skanidia's model, the hidden factor of the human and structural capital is a mixture of intellectual capital with added together. On the other hand, human capital is explained as the combination of innovation capital, process capital and customer capital. According to Nick (2001), human capital is the ability of company's individual employees to meet the task at hand.

c. Structural Capital

Structural capital has not been defined adequately in the past studies in which it had different tags but similar meanings among different intellectual capital concepts. Based on the past literature, structural capital (Bontis, 2001a, 2001b, 2002) can be a process capital (Van Buren, 1999) and organizational capital, also interlinked with innovation capital (Van Buren, 1999). Bontis (2002) explains structural capital as the knowledge entrenched within the schedules of an organization that includes technological modules and architectural competencies. Generally speaking, the knowledge infrastructure in Gold et al. (2001) constitutes variables such as organization structure, culture and technology jointly.

Viewed differently, structural capital, as discussed by Bontis (2001), is the hardware, software, databases, organizational structure, patents, trademarks and everything else that employees use to support their business activities and processes. The extract of structural capital, however, has more emphasis on the "the knowledge embedded within the routines of an organization" (Bontis, 2002, p.45). The cultural and technological aspect, which is combined with structural capital, has more involvement toward knowledge base

infrastructure (Hsiu, 2006).

Structural capital includes technological factors and technical competencies (Bontis, 2002). Bontis (2002) argues that the relationship between structural capital and human capital can be located within social network. The social characteristics interconnect each individual in an organization. The social characteristic is one of the outlets as defined by Bontis (2002). These outlets are the owners of the tacit knowledge within their social networks. Among different components of IC, structural capital is the most difficult as it is related to other capital in terms of definition.

The main focus of structural capital is to embrace a sound foundation, with views from organizational capital, process capital, even innovation capital and the KM model (Hsiu, 2006).

d. Relational Capital

The relational capital is identified, sometimes, with customer capital (Rock, 2002). The focus of relational capital is on organization (Hsiu, 2006). In the knowledge-based society, intellectual capital plays a significant role in the establishment of intangible and knowledge towards value creation (Choo & Bontis, 2002; Lev, 2001; Marr, 2004; Roos & Roos, 1997). Particularly, the past literature explains human, organizational and customer capital as different entities and suggest that they are interconnected causally so that human capital creates knowledge which then can become constant in organizational capital to promote customer relations (Fernstrom et al., 2004; Johansson et al., 2002 ;

Marr, 2004; Roberts, 2003). Table 2.4 below provides a summary of the some previous

studies of IC.

Table 2.4:
The Some Previous Studies of IC

Authors (Year)	Findings
Andriessen (2001)	A total of 363 companies from (2250) (15% response rate) European, North America and Asian organizations responded to direct mail surveys. Most agreed that IC measurement hold be more useful as internal management. There is an external communication to stockholders as into stores.
Harrison (2000)	The study examined IC in 202 of the 1200 lagged companies in (USA) 66% of all responded who reported that they had any systems in place that tried to capture knowledge, skills and best practices.
Sveiby (1998)	Sveiby found that industries heavily depended on IC like companies in the pharmaceutical and business since industries are valued at multiples of book value. In constant, companies that mainly manage tangible assets like these in traditional manufacturing and react estate industries have market values that are close to their book values.
Huang, et, al., (2007)	It is observed by path analysis that among the three clemencies of engineering consulting firms. Intellectual capital, human capital has a great influence on structural capital and relational capital has direct influence on business performance. Human capital has an influence upon the business performance via the relational capital.
Ismail (2007)	The study makes important theoretical and empirical of IC, on the effect and influence of spiritual capital and the importance of managing and leveraging of IC on the performance of the organization. The study indicates a positive significant relationship between relation, human, spiritual and structural capital and managing and leveraging of IC on the performance, where KM has indirect relationship to the performance.
Sanches & Castrilto (2005)	What is well know is that intellectual capital reporting is going importance day by day, and it is now clear that measuring, managing and reporting intellectual in universities and research centres is becoming crucial. IC framework is on easy instrument to use to characteristic research activities in universities. It is a learning process about what are and will the key issue for universities and pressures university authorities to define strategic performance.
OECD (2006)	The contribution of unmeasured (IC) to economic growth was 10%-11% of gross domestic product (GDP) in the united states over the period (1995-2002) rivaling the contribution of tangible capital and both types of capital contributed equally to labors productivity growth in those years.

2.5 TECHNOLOGY

2.5.1 The Concept of Technology

Barley, (1990) noted that three uses of the term, *technology*, have been prevalent in social

science research: 1) technology often refers to apparatus, machines, and other physical

devices; 2) technology may mean technique, the behaviors and cognitions that compose

an instrumental act; and, 3) technology is frequently used in the sense of the specific and

systemic arrangement of persons, materials, and tasks (Barley, 1990). According to

Orlikowski and Barley (2001), it accounted for the homogeneity of practices by pointing

to coercive and mimetic processes, such as technologies that drive the adoption of

culturally legitimate forms and routine (Orlikowski & Barley, 2001). Additionally, the

authors argue that technologies directly determine differences in attributes like the span

of control, centralization of authority, and the formalization of rules and procedures

(Barley, 1990). Further, according to Barley (1996), contingency theory and socio-

technical systems theory attest to the inseparability of technology, work, and formal

structuring as it relates to individual users; thus, all components must be tailored to fit the

technologies and the work with respect to the individual users.

Unfortunately, most theories have conceptualized technology abstractly or as a material

cause, and these theories have largely ignored the role of human agency in shaping either

the design or the use of the various technologies (Orlikowski & Barley, 2001). Thus,

Barley (1990) argued that the term technology should be confined to specific tools,

machines, and techniques. Further, Barley (1990) followed Orlikowski in using the term

"interaction order" to refer to the concrete, repetitive activities and interactions that

characterize the daily routine of a social setting, which may impact the usage and

acceptance of technology (Orlikowski, 2001) as cited by Barley, 1990). Additionally, the

term technological structure can be used to denote the abstract relational patterns and

social networks prescribed and enhanced by specific technological systems (Barley,

1990). Indeed, Barley (1990) used Nadel's theory of social structure to effectively argue

that the micro-social dynamics occasioned by new technologies reverberate up levels of

analysis in an orderly manner; therefore, a technology's material attributes are said to have an immediate impact on the non-relational elements of one or more work roles. According to Barley (1990), these changes influence individual roles, which effect social networks; thus, individual roles and social networks will mediate a technology's effect on the individual user.

Also, as Barley (1990) further noted, various research perspectives have long held that new technologies first alter tasks and skills, and then these changes create opportunities and pressures for modifying the organizational structure as well as individual user behavior. Barley (1990) argues that once in place, new technologies shift individual work roles and activities, which require multiple modifications by the individual users. In addition, according to Barley (1990), socio-technical researchers have long argued that as technologies alter tasks and skills, jobs become more or less interesting, meaningful, responsible, and further, that technologies do indeed determine job parameters and the abilities that jobs require. Lastly, when introduced into a work setting, new technologies initially modify tasks, skills, and other non-relational aspects of roles, which in turn shapes role relations; thus, using a role-based approach, a researcher could trace the influence of technology, from an individual level of analysis to a dyadic level of analysis and then to the level of the organization or occupation (Barley, 1990).

Daft and Macintosh performed a study using 24 work-units to ascertain the relationship between task variety and task analyzability as related to task uncertainty. This notion was based upon an assumption that uncertainty and the amount of information processed are

71

closely related. They reported that empirical studies found that complex tasks require more information processing than simple, routine tasks (Daft & Macintosh 1981).

Craft Technology requires little problem solving, is very routine in nature and requires a non-computational response (manufacture of fine glassware, master chefs, and money-market traders).

Non-routine technology is portrayed as requiring frequent problem solving, has a high degree of variety, and requires non-computational response (industrial research and development, policy planning, social science research).

Engineering Technology can be said to require frequent problem solving exercises, has a high degree of variety, and requires computational response (engineering, accounting, computer programming).

Routine Technology experiences relatively few problem solving opportunities, has very little task variety, and requires a computational response (assembly line, clerical, machine operators). The nature of the work performed in businesses within higher knowledge-intensity sectors requires higher level of use of information technology as well as larger implementation of practices that improve business performance level (Bontis et al., 2002).

2.5.2 Adoption to Technology

Different communication technologies, such as telephone and computer mediated communication, have become a powerful force in the ongoing globalization process, and have strong effects on the development of multinational companies by helping them to

achieve efficiency, coordination, and communication. One important benefit of using communication-related technologies is that they can enable organizational members to effectively communicate and collaborate across organizational and geographical boundaries. Specifically, research has proven that the use of technology can facilitate communication among managers across functional and geographical boundaries in multinational companies, and enhance coordination of multinational activities in the development of strategic opportunities (Anderson & Foss, 2005).

Furthermore, scholars agree that the ability to exploit local opportunities through effective integration of multinational activities is a key factor influencing the performance of multinational companies (Bartlett & Ghoshal, 1998; Prahalad & Doz, 1987). Information technology can be used as a tool to serve the dual objectives of exploring local opportunities across different national markets and integrating those local opportunities effectively across multinational branches in the company, thus maximizing the economic benefits and improving the functional performance of multinational companies. Advances in communication related technologies have helped multinational companies to —increase their economic efficiencies by learning about and then obtaining inputs of managerial, human power, and capital from more cost-effective sources around the globe (Doktor et al., 1991, p. 259).

Therefore, how to effectively use communication technologies becomes an important research topic that can provide multinational organization with new insights to improve their management. Technology affects organizational communication at both the micro-

and the macro-level. Employees spend a lot of working time using technology, and their use of technology is related to their job satisfaction in different ways (O'Kane et al., 2004). First, technology helps employees to complete their tasks more easily and increases their confidence in their abilities, thus enhancing self identity. Second, the wide collaboration and greater communication enabled by technology help employees to develop interpersonal relationships with their colleagues. Third, technology supports information and knowledge sharing among organizational members which can lead to increases in organizational innovation as an effective employee.

2.6 CULTURE

2.6.1 Organizational Culture

Organizational performance is influenced by culture. Whether culture is deemed as an asset or as a liability depends on management subscription of cultural values. Ever since organizational culture was first recognized as a bona fide component of business performance, executives and managers have sought to turn this asset into a source of competitive advantage. Organizational change can only be created or identified as how hierarchical management structure reacts towards a more egalitarian approach. The appropriate control and proper management can motivate to promote organizational culture (Fernandes-Richards, 2005).

The term culture is defined as a signal of message which is interpreted about how to behave around here. As human beings, we are hardwired to adjust and fit into the communities of which we are members. This is essential if we are to become accepted

socially, and in the case of an employer, if we are to keep our job. Employees pick up these messages about expected behavior, and adjust their own accordingly. Those who cannot or will not adjust tend to either leave of their own free will or be ejected. Meanwhile, culture can be described as the characteristic way in which work is done in different organizations (Taylor, 2007). There is an increasing need for organization to be responsive and competitive or else culture can react as a liability. This requires that the capability of soft assets (people) and hard (plant) be managed effectively. The operative measure of culture has many levels and is largely intangible (Wood, 2008).

In order to provide a framework for the culture literature review and subsequent application to the shuttle processing organization, it was important to review the research model and study environment in order to properly focus the research. This evaluation led to the following subsidiary questions:

1. What is culture?

2. What are the theories of organizational culture?

3. What are the effects of culture on an organization's performance?

A relationship between leadership and organizational culture is discussed throughout current literature, but there are a few empirical studies which have been performed validating this assertion (Denison & Mishra, 1995; Trice & Beyer, 1991). Block (2003) maintains that while there exists a large amount of independent literature, the interconnectivity between the two remains more an implied theory than empirically proven fact.

2.6.2 Culture Emergence

Pettigrew's (1979) *On Studying Organizational Cultures* was one of the first long-term longitudinal studies performed with the explicit purpose to study the emergence and development of an organization's culture. Pettigrew's research design is centered on a series of social dramas in a private British boarding school, and how the aggregation of its founder's rites and rituals compose what is now termed organizational culture. Pettigrew also encourages the use of softer concepts (anthropology and sociology) in the study of the organization. The decade of the early 1980s marked the onslaught of development in the debate and discussion of organizational culture. While work had been accomplished on human relations within the company, as well as organizational studies in a generic sense, the following books are recognized as integral to bringing the concept to the forefront (Hofstede, Neuijen, Ohayv, & Sanders, 1990).

1. Ouchi's (1981) Theory Z: How American Business can meet the Japanese Challenge.

2. Pascale and Athos's (1981) The Art of Japanese Management: Applications for American Executives.

3. Deal and Kennedy's (1982) Corporate Culture: The Rites and Rituals of Corporate Life.

4. Peters and Waterman's (1982) In Search of Excellence: Lesson's from America's Best Run Companies.

Deal and Kennedy (1982) provide another classic text of the subject with the introduction of their model. It consists of five elements that define the sociopath homological and

76

psychological perspectives within the organization. These elements are as follows:

(1) The business environment (orientation within the environment.

(2) Values (key beliefs and concepts shared within the organization.

(3) Heroes (roles models for success within the company.

(4) Rites and rituals (routine behavior rituals and ceremonies).

(5) The cultural network (stories and gossip that carry information about valued behavior throughout the organization).

One of the seminal books credited with introducing the idea of culture in the corporate environment is In Search of Excellence, written by Tom Peters and Robert Waterman in 1982. It remains today one of the most widely-read business books ever. Peters and Waterman are employed by McKinsey, and in 1977 they embark upon a project to look at an organization's structure and people. Here, the concept of looking at organizations as cultures was first introduced (Bogner, 2003).

2.6.3 Culture Definition

Though Peters and Waterman (1982) are the first to apply the term culture to an organization, Schein (1992) is the first to define and clarify the concept while tying it to leadership. Schein (1992: 15) states that "culture and leadership are two sides of the same coin in that leaders first create cultures when they create groups and organizations". Schein (1992) describes how leaders create organizational cultures, thinking that a culture originates from the beliefs, values, and assumptions of its founders, from group learning experiences and new beliefs and from values and assumptions brought by new members.

77

Schein (1992) further describes mechanisms by which leaders embed the assumptions they hold, thereby creating cultures.

Schein (1992) believes that there are three levels at which culture can be analyzed. At the top is the level of artifacts. These are the visible products of an organization, the processes and characteristics that are easily observed but often difficult to interpret. Schein (1992) cautions that it is dangerous to try and decipher deeper meaning from these observations, feeling they may ultimately be manifestations of one's own biases and feelings.

Lastly, the level of basic underlying assumptions is encountered. Schein (1992: 22) describes basic assumptions as "like theories-in-use, tend to be those we neither confront nor debate and hence are extremely difficult to change". He (1992) looks at this from a psychological perspective, postulating that it is within this context that culture has the most effect. People tend to view the world around them based on their own personal assumptions, often distorting reality to fit their perception of a situation. This often leads to misinterpretation of others' actions. When assumptions are shared, the organizational behavior becomes reinforced over time. According to Howard (1998), anthropologists have proposed over 164 definitions of culture, in one of the earliest formal declaration of the term organizational culture. The Organizational Culture Inventory utilizes 12 scales to determine cultural styles, representing a combination of task and interpersonal relationships. These cultural styles are as follows.

(1) A humanistic-helpful culture.

(2) An affiliation culture.

(3) An approval culture.

(4) A conventional culture.

(5) A dependent culture.

(6) An avoidance culture.

(7) An oppositional culture.

(8) A power culture.

(9) A competitive culture.

(10) A competence/ perfectionist culture.

(11) An achievement culture.

(12) A self actualization culture.

Cooke and Rousseau (1988) produce evidence that there are differences across organizations with respect to their cultural content, and that the differences are consistent with the organization's management style (Howard, 1998). Cameron and Quinn (1999) provide a framework to help managers understand their environment and help facilitate a change in their organizational culture. They believe the broadness of organizational culture has aided in the development of an overwhelming amount of dimensions in scholarly research (Deal & Kennedy, 1982; Hofstede, 1980; Kotter & Heskett, 1992; Trice & Beyer, 1991). A list of 39 indicators defining organizational effectiveness was analyzed, with two major dimensions dividing the indicators into four clusters (quadrants). These clusters represent the core values upon which organizations are judged.

Cameron and Quinn (1999, 2006) note that these four clusters represent competing assumptions: those of flexibility and discretion versus stability and control and those of internal focus and integration versus external focus and differentiation. These four quadrants were labeled to exemplify their most prominent characteristics and are the following:

1. Clan (family style organization)

2. Adhocracy (dynamic, entrepreneurial, and creative)

3. Hierarchy (formalized and structured environment)

4. Market (results-oriented workplace.

The Organizational Culture Assessment Instrument (OCAI) is developed to help interpret an organization's cultural profile in order to assist the process of cultural change. This instrument comprises six organizational cultural dimensions (dominant characteristics, dominant leadership style, approach taken when dealing with employees, the organizational "glue" that holds the organization together, strategy orientation, and success criteria and rewards) (Cameron & Quinn, 2006). Hofstede (1980: 25) defines culture as "the collective programming of the mind that distinguishes the members of one category of people from those of another". His cultural values framework is developed using data from over 88,000 employees from 72 countries. This leads to the initial identification of four cultural dimensions, which later are expanded to five. The cultural dimensions are as follows:

(1) Individualism-collectivism—relates to the integration of individuals into primary groups, and the degree upon which individuals look after themselves while in the

group

(2) Power distance—the extent to which people accept inequality in power among its institutions and people

(3) Uncertainty avoidance—the levels at which society feel uncomfortable with lack of structure and ambiguity

(4) Masculinity and femininity—the extent to which a society considers the dominant values to be "masculine" in nature

(5) Long-term orientation and short-term organization—the development of value where deferred gratification is accepted and order is observed versus a society where immediate satisfaction is desired and results are expected quickly (Ergeneli, Gohar, & Temirbekova, 2007; Hofstede et al., 1990; Kirkman et al., 2006). These five dimensions have been measured using the Values Survey Module and found to influence transformational leadership aspects (Ergeneli et al., 2007).

2.7 THE RELATIONSHIPS AMONG KM, IC, TECHNOLOGY AND CULTURE

Through the linkage of information and communication systems in an organization, previously fragmented flows of information and knowledge can be integrated. The technological dimensions that are part of effective K & IC management include business intelligence, collaboration, distributed learning, knowledge discovery, knowledge mapping, opportunity generation as well as security (Grant, 1996). As noted by many researchers, an important component at culture is vision and values. A vision that permeates the organization can provide people with a needed sense of purpose that

transcends everyday activities. The vision can incorporate not only a vision statement that conveys a clear and unambiguous statement of the future and direction of the organization, but it can also incorporate a system values. Explicitly stated vision including value statement can encourage the growth of knowledge & IC. Trust and openness are commonly cited as two of these explicitly stated values that promote K & IC (Kreuger & Andreas, 2008).

2.8 BUSINESS PERFORMANCE

Business performance is defined as a measurable result of the level of attainment of organization's goals (Daft & Marcic, 2001) or a measurable result of the organization's management of its aspects (ISO 1999), or a mechanism for improving the likelihood of the organization successfully implementing a strategy (Anthony, 1998). Business performance evaluation is the process to help management decisions regarding an organization's performance by selecting indicators, collecting and analyzing data, assessing information against performance criteria, reporting and communicating and periodically reviewing and improving this process (Coelho, 2005). Kaplan states that if organizations can not measure performance they cannot manage their business. If organizations are to survive and prosper in information age competition, they must use measurement and management systems derived from their Strategies and capabilities (Kaplan & Norton 1996).

This statement summarizes the necessity of organization to measure, and as a direct consequence, to evaluate their performance (O'Reilly, Wathey & Gelber 2000). Strategic

performance is defined as measurable outcome of the level of attainment of organization's goals (Daft & Marcic 2001) or measurable outcome of the organization's management of its aspects (ISO 1999), or mechanism for improving the likelihood of the organization successfully implementing a Strategy (Anthony, 1998). "Strategic performance evaluation is the process to help management decisions regarding an organization's performance by selecting indicators, collecting and analyzing data, assessing information against performance criteria, reporting and communicating and periodically reviewing and improving this process" (Coelho , 2005: 30).

Huang (1998) states that knowledge is valued differently among people. If knowledge is hard to measure, its activities and results should be the best proxies for measurement. Knowledge results, rooted in processes and activities, include judgment, expertise, rapid pattern recognition, error avoidance, reuse, and innovative thinking (Huang, 1998). Finally, according to Zack et al. (2009), the business performance extends the eras of measurements to the four perspectives, which includes innovation, rate of new product development, customer satisfaction and customer retention. In addition, they see that "there was no significant relationship between KM practices and financial performance". Accordingly, the researcher will adopt the innovation, rate of new product development, customer satisfaction and customer retention as dimensions to measure business performance.

2.8.1 Strategic Business performance models

Summarizing the ideas of many authors, it can be said that the roles of business

performance evaluation are (Coelho, 2005):

(1) To ensure compliance with crucial minimum standards.

(2) To check how well organization are doing.

(3) To test strategic assumptions.

This assessment ignores the growing need for performance management and provides a reliable basis for communicating with interested parties-including public reporting. Over many years organizations have been using financial measures to show the results. Over the past few years, though, there has been an increasing demand for measuring non-financial results-particularly in social and environmental areas interrelated with organizations activities, (Elkington 1997).

Numerous models are formulated proposing an integrated and more balanced view of business performance. Among the models suggested in the literature, the economic value added (EVA) (Otly,1999), the business excellence model (Tan,2002), the performance prism, and the balanced score card (Kaplan and Norton 1996) are considered the most significant contribution, which are widely used by organizations . These are integrated models that also identify intangibles as one of their perspectives to evaluate business performance.

a. Economic value Added (EVA)

Economic value added has been developed by the stern Stewart Corporation as an overall measure of financial performance that is intended to focus manager's minds on the

delivery of shareholder value (Otly, 1999).

As is well known, most measures of financial performance such as profit or return on investment suffer from inherent defects that may cause dysfunctional decision making on the part of managers. EVA, which is defined as accounting profit less a charge for capital employed, is claimed to be less problematic in this respect. Stern steward attempt to motivate the increase of shareholder value by developing a more objective measure that is less prone to managerial manipulation were it need to be recognized that the measure does not anticipate the earning of future income, despite the existence of predictions based on stock market relations, but it remains an historic income measure (Otly, 1999).

b. Business Excellence Model

Some authors such as (Edgeman, 2000; Tan, 2002) demonstrate that organizations around the world are using business awards model as framework for performance management . BEM identifies a perspective that addresses the intangible resource of an organization. BEM is a non-prescriptive self – assessment framework based on nine criteria. Four criteria are defined as enablers (i.e. leadership , people, management , policy and strategy , renounces , processes and are defined as results lie people satisfaction , customers satisfaction, impact on society, business results).

The enablers concern what an organization does; the results are concerned with what an organization achieves. Results are the levers that management can pull to deliver future results (Carlucci, 2004); the model explicitly acknowledges the importance of cognitive

85

resource to improve business performance. One of the concepts at the basis of the model is the continuous learning innovation and the improvement it assumes that organizational performance is optimized through knowledge management in accordance with the culture of continuous learning, innovation and improvement. Therefore, knowledge management is identified as a fundamental driver for the improvement of enablers which determine the business results. In sum, business excellence model as the most recognized models around the world have in general the following principles (Tan, 2002).

(1) Business results.

(2) Process management.

(3) People management.

(4) Customer management.

(5) Resource management.

(6) Strategy and policy planning.

(7) Leadership and innovation.

(8) Impact on society and environment.

(9) Information management.

(10) Performance and management of suppliers and partners.

c. The performance prism

A more recent performance management framework is the performance prism (Neely et al., 2002), which addresses intellectual capital and their management in the "capabilities facet". The performance prism is a three – dimensional performance measurement framework that consists of five interrelated facets: stakeholder contribution. Each facet

represents a key factor that determines organizational success. The weight given to each facet depends on the strategic direction and the constellation of stakeholders of an organization (Carlucci et al., 2004).

The performance prism adopts balanced view on stakeholders as well as on their demands and desired contribution. According to Neely et al. (2002) all initiatives and activities implemented to pursue the strategy form enablers to improve the value delivered to the organization's stakeholder is there for the first performance facet. The second facet is the strategy facet, which must ensure that value is delivered to the stakeholder. In the third facet the organization specifies the processes in order to execute the strategies, and the fourth facet highlights the capabilities that allow an organization to perform its processes. Finally, in the fifth facet, the performance prism addresses whether or not the organization gets what it requires from its stakeholders (stakeholders contribution). The performance prism highlights that on the one side, stakeholders represent the reference point for value creation, and on the other side, the necessary actors for the functioning organization. Unlike the business excellence model, which focus attention on the role of learning process and more generally, on the management of intellectual capital, the performance prism highlights the importance of capabilities. It adopts a competence-based review of an organization. In other words, the ability of an organization to generate a value is based on organizational capabilities, (Neely, 2002).

d. The Balanced Scorecard (BSC)

The balanced scorecard (BSC) provides a framework for strategic performance

management system (Epstein & Wisner, 2001) that enables organizations to become aligned and focused on implementing long-term strategy. The process presented by the balanced scorecard is a closed loop of on management system (Anthony, 1998; Kaplan & Norton 1996; Kaplan, 2000):

(1) Translates strategy and vision into action (through objectives, targets and initiatives).

(2) Gives feedback of the action (through integrated measures of the objectives, targets and initiatives and their evaluation).

(3) Closes the loop through the maintenance or change of the strategy. The Balanced Scorecard (BSC) Approach has been developed at Harvard Business School by Kablan & Norton since the early 1990.

It is an initially multi-dimensional approach to performance measurement and management linked specifically to organizational strategy. It suggests that in addition to the financial measures of performance, attention should be paid to the requirement of customer, business process and longer term sustainability. Thus, four areas of performance are defined (now labeled as financial, customer, internal business and innovation), and it is suggested that up to four measures of performance should be developed in each area. These (potentially) 16 performance measures are not necessarily comprehensive, but should represent the critical success factors necessary for continued organizational success or minimally, survival. Thus, there is an intension to make a close link between the business unit strategy adopted and the performance measures selected, (Carlucci et al., 2004).

According to Kaplan and Nortan (1996-2000), BSC is more than a tactical or an operational measurement system. Innovation companies use scorecard to manage their strategy over their long run and to develop critical management processes to:

(1) Clarify and gain consensus about strategy.

(2) Communicate strategy throughout the organization.

(3) Translate vision and strategy into action (Plan, set objective), targets and align strategic initiatress.

(4) Link strategic objectives and measures to long term targets and annual budget.

(5) Align department and personal goals to the strategy.

(6) Perform periodic and systematic strategic reviews.

(7) Obtain feedback to learn about improve strategy.

According to Drucker (1999 :98), "Profit is not the explanation cause or rationale of business behavior and business decisions, but the test of their validity". The BSC extends the areas of measurements to the four perspectives. There are, financial, Customers, Internal Processes and learning and growth (Maluenda, 2006).

a. Financial:

(1) How do the shareholders see the corporate?

(2) How do we increase the stakeholder value?

Every business exists to generate profit. The financial of perspective depicts the organization's performance from the shareholder's point of view; this can contain areas of Measurement such as:

(1) Profit

(2) ROI (return on investment)

b. Customer:

(1) How do the customers see the corporate?

(2) How do we improve customer's value & satisfaction?

For a business to be successful in generating a profit and growth it needs to please its customers and thus take into account customers perspective. Measuring areas could be:

(1) Customer value

(2) Customer satisfaction

(3) Customer Acquisition

(4) Customer Retention

c. Internal Processes:

(1) How is the corporate internal process performing?

(2) Which business processes must the corporate optimize?

By reviewing the internal process performance the corporate can find the value creating activities and attempt to improve these and the activities which they require to function efficiently. This could include measurement, such as:

(1) Regular business processes.

(2) Risk management processes.

(3) Knowledge management process.

d. Learning and Growth:

(1) Which measures does the corporate take to assure growth?

(2) What activities should the corporate pursues to assure growth and increasing value creation?

Optimizing current business process alone does not give long term prosperity. New processes must be developed, new value creating activities must be found, and new markets must be penetrated to ensure long term prosperity. This could include measurement such as:

(1) Time to market new products.

(2) Work force for training and development

(3) Process improvement

These areas should be considered and measured to gain a 'balanced' view of the corporate performance. Measurement must however be aligned to the business strategy to be of any relevance. Measuring has one hold value; measurement exists to assess performance and ensure it. All measurements should be derived from the strategy to compose a relevant and balanced picture of the corporate performance (Kaplan & Nortan, 1996). According to the balanced scorecard, any business strategy needs to address each of the four perspectives (Kaplan & Norton, 2000). Associates managerial activities with each of the four perspectives identified in the balanced scorecard; KM is suggested as a

strategic management activity in the learning and growth perspective. In fact, the learning and growth perspective provides in infrastructure (e.g. Skills and creative employees) for the realization of the aims in the remaining perspectives (Kaplan, & Norton, 1996- 2000).

2.9 KNOWLEDGE MANAGEMENT AND BUSINESS PERFORMANCE

In the current competitive context, many organizations have realized that the only source of sustainable competitive advantage they can leverage is the effective use of their existing knowledge as well as the fast acquisition and utilization of new knowledge (Carlucci & Schiuma, 2004). Tecce (1998) argued that the competitive advantage of companies in today's economy stems not from market position, but from the difficulty to replicate knowledge assets and the manner in which they are deployed. In agreement with this viewpoint, Laudon and Laudon (2004) claimed that "knowledge assets are as important for competitive advantage and survival, if not more important, are physical and financial assets" (p. 35).

Due to the strategic significance of knowledge, strategists are faced with a rapidly growing need to find and improve on ways to create, locate, manage and ensure that the power of knowledge is leveraged and shared throughout the organization (Krueger & Andreas, 2008). Zack (1999) argue that the power of KM does not only reside in the ability to positively influence strategy formulation (i.e. knowledge to exploration leading to innovative ideas), but also, and just as importantly, in the ability to exploit the power of knowledge via strategy formulation.

It seems to be generally accepted that in today's competitive environment, continuous innovation is a necessary precondition. Therefore, many authors, implicitly or explicitly equate the ability to innovate with competitive advantage (Dixon, 2000; Stam, 2007). So, KM is not a goal in itself, but to support the economic goal of continuous innovation as a decisive factor of competitive advantage. Based on an extensive research among 25 firms on industry, Zack (1999) concludes that the most important context for guiding KM is the firm's strategy.

As noted by the observers in strategic management, effective KM through the development of capabilities should contribute to key aspects of business performance (Gold et al., 2001). Reconciling the insights and recommendations of recent literature within KM with performance-based assessment of the strategic management literature; we sought to identify the key contributions of KM capability. Such contributions may include improved ability to innovate, improved coordination of efforts, and rapid commercialization of new products. Other contribution may include the ability to anticipate surprises, responsiveness to market change and reduced redundancy of information knowledge edge (Gold et al., 2001).

To sum up, KM is at the heart of business performance improvement and value creation (Carlucci et al., 2004). And the ability to continually explore and exploit knowledge relates directly to the organization's goal of sustaining survival via growth and profitability. It would seem that the ability to explore and exploit the power vested in knowledge more rapidly will be directly related to a decrease in imitation and increase in

innovation, with successive stages gradually up to evolutionary process of transforming what is incremental into what is technological and then into groundbreaking innovation (Krueger & Andreas, 2008).

2.10 INTELLECTUAL CAPITAL & BUSINESS PERFORMANCE

The notion of intellectual capital is the most important source of competitive advantage for the firm. Grant, (1996), states that intellectual capital is of strategic importance as one of the primary sources of the profitability of a firm (Marr, 2004). According to Marr (2004), the intellectual capital most significantly contributes to an improved competitive position of an organization. The logic is, here, that intellectual capital enables the organization to add value to important stature which in turn leads to improve competitive stance. The value added origins to enhancement of the effectiveness and efficiency of organization. Intellectual capital is the key factor in succeeding (Marr, 2004). To obtain competitive advantage, it is crucial for an organization to utilize knowledge efficiently and to enhance their innovation potential. Furthermore, reporting these intangible assets systematically to customer partners and investors, as well as creditors has become critical success factor. Managing intellectual capital (IC) is therefore becoming increasingly important for future organizations. Figure 2.5 illustrates how intellectual capital impacts on business performance (Marr, 2004).

Business Environment

HC | SC | RC | Other resourc

Vision | Business | Strateg | Measures

Business Process

Knowledge Process

Business success
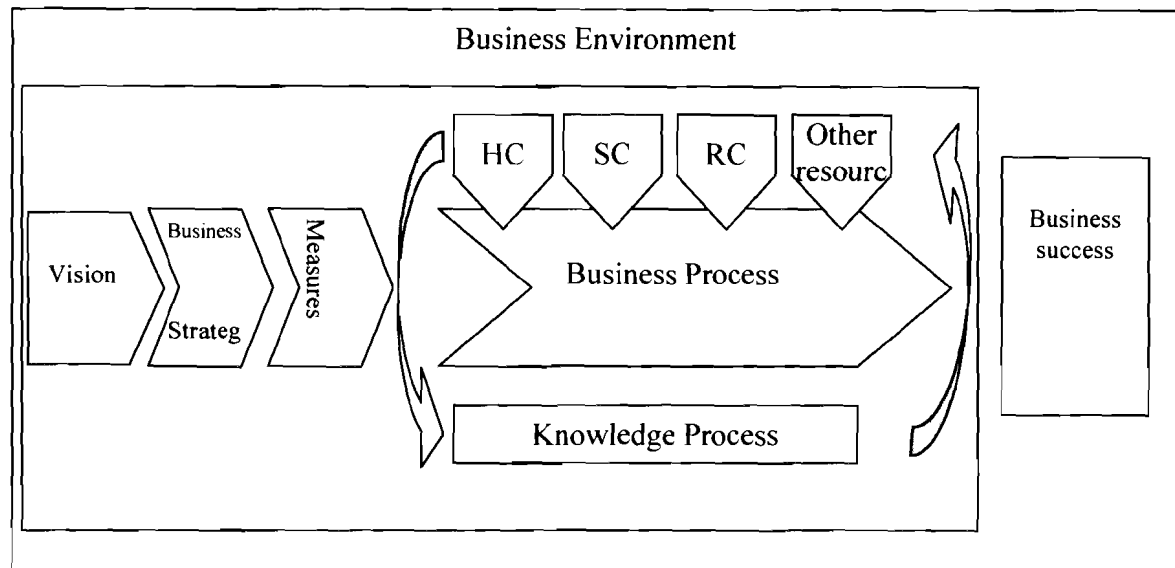
Figure 2.5

Illustrates How Intellectual Capital Impacts on Business Performance
Source: Adopted from: European ICS Guidline (2007)

To be brief, intellectual capital is widely recognized as the critical source of true and sustainable competitive advantage (Marr, 2004). In other words, intellectual capital components are the basis for sustainable source of business advantage (Kannan & Aulbur, 2004, 289). This is Herremans & Issac's (2004) view that intellectual capital elements almost continuously provide employee with the means to a thin desired organizational ends. The intellectual capital of a firm has to be of the right kind in order to be the source of long-term business success (Peltoniemi & Vuori, 2005).

2.11 TECHNOLOGY AND BUSINESS PERFORMANCE

Different communication technologies, such as telephone and computer mediated communication, have become a powerful force in the ongoing globalization process, and have strong effects on the development of multinational companies by helping them to achieve efficiency, coordination, and communication. One important benefit of using communication-related technologies is that they can enable organizational members to effectively communicate and collaborate across organizational and geographical boundaries. Specifically, research has proven that the use of technology can facilitate communication among managers across functional and geographical boundaries in multinational companies, and enhance coordination of multinational activities in the development of strategic opportunities (Andriessen & Tissen, 2000).

The use of technology is essential for organizational communication in multinational companies. Technology adoption influences how certain technology is used by employees and its effects. In adopting and implementing certain technologies, decision makers have to consider three elements in producing an integrated communication package: atmosphere, process, and methods (Foster, 2009). Organizations need to consider both potential benefits as well as the problems associated with any technology under consideration, and create an appropriate atmosphere and process to adopt that technology so as to maximize the positive benefits of the technology. Other factors can also influence technology adoption (Ergeneli, 2007). First, organizational features, such as age, size, and culture, influence new technology adoption. Usually, younger, larger firms with higher levels of technology are the early adopters. Second, perceived

organizational advantages, such as increased communication and increased information flow, influence technology adoption at both organizational and interpersonal levels. Third, social pressures, such as the self-image an organization presents in society, can push an organization to adopt technologies that have been adopted by many other organizations.

2.12 ORGANIZATIONAL CULTURE AND BUSINESS PERFORMANCE

Authors of the various researches included in this section could recognize a relationship between organizational culture and organizational performance. A wide variety of research on the link between organizational culture and organizational performance has occurred since the 1980s. Researchers believe in that a link exists, but as Wilderom (2000: 193) states, "Between a mere belief and hard scientific evidence, however, there is a world of difference". Denison's (1983) review of 34 companies shows that culture has a measurable effect on company performance. The study assesses the perceptions of 43,747 respondents in 6,671 work groups. The findings indicate the potential to monitor an organization's management system and culture and to predict their impact on future performance of the company.

Coogan and Partner (2006) emphasize 14 corporate culture traits present in companies that outperform other companies. These traits include employee satisfaction, retention, and recognition. The study reviews the impact of organizational culture on organizational performance. Chehade et al. (2006) use a modern approach to study organizational performance. The authors emphasize that the analysis of the organization's culture is

necessary to address business weaknesses and strategic opportunity. Carmeli and Tishler (2004) research the relationship between intangible factors and organizational performance. They have studied the impact on performance measures, and investigated the effect of organizational elements, perceived environmental uncertainty, geographic location, and organizational size on performance measures.

Kee's (2003) research on the success of the Caterpillar organization correlates culture and performance. The Caterpillar Corporation changes its poor performance by learning and understanding its culture, identifying key cultural elements, and focusing on strong culture leadership. The principle argument of Mallak's (2001), study is that cultural information is critical to the management of an organization. Mallak discusses the impact of strong cultures on the organization's performance. The author offeres a five-step plan that analyzes the organization's culture and ways in which to transform the organization (Mallak's, 2001).

The studies and subsequent literature on organizational culture are applied to a wide spectrum of organizations. Runy (2007) writes specifically on healthcare changes. She notes that the key to transforming organizational culture is to create a results-driven environment that foster teamwork, innovation, and top-quality care. She also states that a high-performing organization has a committed workforce aligned with its mission, vision, and values and motivated to achieve organizational objectives. Not all researchers agree that there is a link between organizational culture and organizational performance. For example, in Martin's (2002) view, researchers need a larger sample of organizations to

confirm the link. Researchers, Lee and Yu (2004), investigate the relationship between organizational culture and organizational performance, investigating the validity of the culture construct and assessing the ways in which culture affects organizational performance. Atkins and Turner (2006) has a first-person experience with the impact of organizational culture on performance. The authors are part of a public entity's decision to change their culture because management and staff do not feel the organization reaching its full potential. The effort results in increasing organizational performance.

The literature noted in this section is important to current and future research of organizational culture. If culture and culture assessments are to become usable concepts for an organization, knowledge of early and current research must become part of developing creative ways to improve the work environment. As Schein (2000) states, "it is better to build on what is working than what is not working".

2.13 SUMMARY

This chapter has extensively reviewed literature relating to knowledge management, intellectual capital and business performance. Through research, efforts and many studies, it is confirmed that the knowledge management and intellectual capital have been identified as a key resource and driver of organizational performance. The reason for developing such a study is that little research has clearly addressed both subjects at the same time. After verifying that knowledge management and intellectual capital are different concepts in the Iraqi industry, this study tries to identify the relevancy and perceived value of such organizational variables in the Iraqi companies.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This chapter presents the theoretical framework and methodology followed in this study.

More specifically, the purpose of this chapter is to describe:

1. The research variables adopted in this study;

2. The research model;

3. The hypotheses to be tested;

4. The measurements;

5. The survey instrumentations;

6. The procedure for selecting the sample;

7. The statistical methods used to test the hypotheses.

3.2 RESEARCH FRAMEWORK

In terms of the research purpose determined, the research framework for the Iraqi industries is developed as follows. You may consider figure 3.1 below,

knowledge management

- knowledge process:

* Creation &acquisition
* k. sharing & dissemination
* k. utilization &application

-knowledge content:

* Tacit knowledge
* Explicit knowledge

Intellectual Capital

* Customer Capital
* Human Capital
* Structural Capital
* Relational Capital

Businesses Performance

* Innovation
* Rate of new product development
* Customer's satisfaction
* Customer's retention

* Culture
* Technology

Figure 3.1

Research Framework

3.3 HYPOTHESIS DEVELOPMENT

The hypotheses to be tested are related to the research questions. Firstly, based on the discussion are knowledge management includes knowledge content (tacit & explicit knowledge) and knowledge processes (knowledge creation, sharing and utilization). Second, intellectual capital includes (customer capital, human capital, relational capital and structural capital). Third, technological efficiencies and culture to moderate business performance and the possible relationships between them. The following set of hypotheses is proposed:

H1: There is a positive relationship between knowledge management process and business performance.

H1a: There is a positive relationship between knowledge creation and business performance.

H1b: There is a positive relationship between knowledge sharing and business performance.

H1c: There is a positive relationship between knowledge utilization and business performance.

H2: There is positive relationship between knowledge management content and business performance.

H2a: There is a positive relationship between tacit knowledge and business performance

H2b: There is a positive relationship between explicit knowledge and business performance.

H3: There is a positive relationship between intellectual capital and business performance.

H3a: There is a positive relationship between customer capital and business performance.

H3b: There is a positive relationship between human capital and business performance.

H3c: There is a positive relationship between structural capital and business performance.

H3d: There is a positive relationship between relational capital and business performance.

H4: Culture moderates the relationship between (knowledge management process, knowledge management content, and intellectual capital) and business performance.

H5: Technology moderates the relationship between (knowledge management process, knowledge management content, and intellectual capital) and business performance.

3.4 RESEARCH DESIGN

3.4.1 The research objectives are as the followings:-

1) To investigate the relationship between knowledge management process (creation, sharing, and utilization) and business performance.

2) To investigate the relationship between knowledge management content (tacit and explicit knowledge) and business performance.

3) To investigate the relationship between intellectual capital (customer capital, human capital, structural capital, and relational capital) and business performance.

4) To determine the moderating effect of culture on the relationship between knowledge management process, knowledge management content, intellectual capital and business performance.

5) To determine the moderating effect of technology on the relationship between knowledge management process, knowledge management content, intellectual capital and business performance.

The research focuses on developing a comprehensive model that supports industrial organizations in Iraq to leverage their knowledge and intellectual capital capabilities in

enhancing their business performance.

3.4.2 Nature of Study

This is a sample survey involving Iraqi companies in Iraq. Based on the listing provided by the United Nation for the year 2009, the total number of the companies identified in the report is 320. The nature of business of these companies is construction, food, pharmaceutical, chemical, petrochemical, textile and engineering. Table 3.2 illustrates the distribution of these industries and their nature of business operations.

3.4.3 Unit of Analysis

The data is collected from managers of Iraqi companies. The respondents from Iraqi companies represent different levels of knowledge, experiences and skills in the field of knowledge and intellectual capital and can have an impact on the improvement of business performance.

3.5 POPULATION AND SAMPLING FRAME

3.5.1 Population

The population of the present study consists of 320 companies in various industries in Iraq (see table 3.1), which includes construction, food, pharmaceutical, chemical, petrochemical, textile and engineering (Report of United Nations Industrial Development Organization, 2009).

Table 3.1

Distribution of Iraqi Industry Company Based on the Industry Sector

Population	No. of Companies
Construction	83
Food and Pharmaceutical	68
Chemical and Petrochemical	46
Textile	41
Engineering	82
Total	**320**

Accordingly, the study covers all medium and large industrial establishments, which consist of 320 companies in various industries in Iraq (see table 3.2).

3.5.2 Sample Size

Given the lack of comprehensive data on SMEs in Iraq, there is a need to develop a more reliable source. In view of this, the study develops its sampling frame by using information obtained from the listing of companies as published in the United Nations Report 2009(Report of United Nations Industrial Development, 2009). The population of the present study consists of 320 managers of companies in various industries in Iraq.

The managers were chosen as respondents since they know the important role of knowledge and intellectual capital to improve business performance (Report of the Iraqi Ministry of Industry and Minerals, 2009). Based on Sekaran & Bougie (2010) the sample size in this study is 181.

Table 3.2

Distribution of Iraqi Industry Companies Based on the Location for Companies

Province	Number of companies					Total
	Construction	Food and Pharmaceutical	Chemical and Petrochemical	Textile	Engineering	
Baghdad	42	32	13	17	17	121
Nineveh	9	7	4	5	3	28
Kirkuk	1	1	2	2	1	7
Arbiel	-	3	-	2	1	6
Dhok	1	1	-	2	1	5
Sulaymaniya	1	3	-	1	2	7
Saladdin	-	3	2	2	3	10
Al-anbar	7	3	4	1	2	17
Dayala	1	2	-	-	8	11
Wasit	-	2	-	3	2	7
Karbala	-	5	-	-	3	8
Najaf	8	-	3	1	4	16
Babel	-	6	3	3	9	21
Muthanna	3	-	2	-	2	7
Missan	4	-	-	-	3	7
Dhiqar	2	-	-	-	7	9
Al-kadissyia	-	-	1	2	6	9
Basra	3	-	12	-	8	23
Total	**83**	**68**	**46**	**41**	**82**	**320**

3.6 DATA COLLECTION PROCEDURE

The data are collected through survey questionnaire, which are distributed among the managers of Iraqi companies. The names of all managers from 320 companies are put in a basket. The researcher randomly chooses 250 names from the basket. The successful names chosen are each given a questionnaire. A self-administrated questionnaire is used in this study to collect the data (see table 3.3).

Respondents were given three weeks to answer the questionnaires. This is to make sure that they have enough time to attend to the questionnaires.

Table 3.3
The Number and Percentage of Questionnaires Distribution in This Study

Population	No. of Companies	Distributed questionnaires (sample)	%
Construction	83	65	26
Food and Pharmaceutical	68	53	21.2
Chemical and Petrochemical	46	36	14.4
Textile	41	32	12.8
Engineering	82	64	25.6
Total	**320**	**250**	**100**

3.7 OPERATIONAL DEFINITIONS

The purpose of this research is to study the problem faced by Iraqi companies as well as to enhance business performance. After having completed the preparation for the preliminary version of questionnaire, the researcher measures and quantifies its contents honestly and sincerely.

3.7.1 Knowledge Management

This study defines Knowledge management as the process of continually managing knowledge of all kinds to meet existing and emerging needs. This is done in order to identify, exploit and acquire knowledge assets and to develop new opportunities (Quintas,1997) with two dimensions as knowledge content (Tacit & Explicit knowledge) and knowledge process (knowledge creation, sharing and utilization). Quintas (1997) uses five-point Likert scale ranging from (strongly disagree, disagree, neither, agree, and strongly agree).

3.7.1.1 Knowledge Content

According to McInerney (2002), there are two types of knowledge content, tacit and

107

explicit knowledge. Tacit knowledge is the competencies of personal insight, experience, intuition, skills, learning and strategic thinking embedded in an individual mind and cannot be codified in database or documents (Mental knowledge), Bhardwaj & Monin (2006). Explicit knowledge management is expressed by words, numbers and sounds shared throughout with data, scientific equations, visual tools, curriculum features and booklets. Hence, knowledge can easily be transferred to individuals (Nonaka, 2004).

The dynamics of the analysis of knowledge creation through cycles of socialization, externalization, combination and internalization cycles is based on the assumption that knowledge is created through conversion between tacit and explicit knowledge (Nonaka& Takeuchi, 1995). To measure knowledge content, two items are used (Tacit & Explicit knowledge). Some examples of the items include "My organization has clear vision and strategic direction" and "My organization has advances knowledge about future market change". The items of the survey are modified from (Youndt, 1998; Stam, 2007; Bontis, 1998; Gold et al., 2001).

3.7.1.2 Knowledge Process

Knowledge Process means the general attitudes to seek knowledge through creation, acquisition, participation and application of knowledge. This can be done through training, learning, observation, experiments and other activities. To measure knowledge process, three items are used which are: knowledge creation, sharing and utilization. Some examples of the items include "My Organization: has processes for acquiring knowledge about our customer. "My Organization: has processes for distributing

108

knowledge throughout the organization". "My Organization: has processes for applying knowledge learned from past experiences, success, stories and mistake". The items of survey are modified from (Youndt, 1998; Bontis, 1998).

3.7.2 Intellectual Capital

The intellectual capital is defined in this study as the asset of intangibles, (resource capabilities and competence) that drive organizational performance and value creation (Bontis et al., 2000), with four dimensions as customer capital, human capital, relational capital and structural capital. Bontis et al., (2000) has used five - point Likert scale ranging from strongly disagree, disagree, neither, agree, and strongly agree. To measure the intellectual capital, four items are used as follows: customer capital, human capital, relational capital and structural capital. Some examples of the items include "My organization has a highly component management team." "My organization uses customer feedbacks to provide quality products and services to our customer". "My organization uses feedback and recommendations from vendors to produce better products and services to our customer". "My organization has a good information system utilized staff to improve their performance" (Ismail, 2005; Zake, 2009).

3.7.3 Technology

This study defined Technology as tools, methods and techniques representing organization (Chehade, 2006). To measure it, five questions were used. Some examples of the questions include, "My organization; Uses technology that allows it to monitor its industry environment and competition." Chehade (2006) has used five - point Likert

scale from (strongly disagree, disagree, neither, agree, and strongly agree).

3.7.4 Culture

Organizational culture is defined in this study as a group of customs, values and rituals shared by Individuals within the organization, (Coakes, 2003). To measure it, five questions are raised. Some examples of the questions include "In my organization: Employees understand the importance of knowledge and intellectual capabilities to corporate success". According to Coakes (2003), he has used five - point Likert scale ranging from strongly disagrees, disagree, neither, agree, and strongly agree.

3.7.5 Business Performance

Business performance is defined in this study as the degree to which an organization realizes its strategic goals and objectives (Daft, 2001; Johnson et al., 2001), with four dimensions as (innovation, rate of new product development, customer's satisfaction and customer's retention). Zack et al., (2009), has used five - point Likert scales ranging from strongly disagree, disagree, neither, agree, and strongly agree. To measure the business performance, four items are used as follows: innovation, rate of new product development, customer's satisfaction and customer's retention. Zack et al., (2009). Some examples of the items include "Over the past three year: My organization has improved its ability to have new products\services". "Over the past three year: My organization adopted new development programs to raise employee's efficiency and improve production". "Over the past three year, my organization has improved its "Customer Satisfaction Index"."Over the past three year: My organization has achieved an

improvement in the effectiveness and operational efficiency. The items of survey

modified from, (Ismail, 2005; .Zack, 2009). Based on the above, table (3.4) summarizes

variables of the study, dimensions and their sources.

Table 3.4
Summarizes Variables of the Study, Dimensions, and their Sources

Variables	Type variable	Dimension	No. of Items	Resources
Knowledge Management	Independent variable	Creation & Acquisition	5	Modified from Gold et al. (2001).
		Know. Sharing & Dissemination	5	Gold et al. (2001); Youndt(1998) and Bontis(1999).
		Know. Utilization & Application	5	Gold et al. (2001).
		Tacit Knowledge	5	Youndt, (1998); Stam(2007); Bontis(1998) and Gold et al. (2001).
		Explicit Knowledge	5	Youndt, (1998); Stam(2007); Bontis(1998) and Gold et al. (2001).
Intellectual Capital	Independent variable	Customer Capital	5	Bontis (2002); Puntillo(2009)
		Human Capital	5	Ismail (2005); Zake(2009)
		Structural Capital	5	Youndt (1998)
		Relational Capital	5	Bontis(1999) and Gold et al. (2001)
Culture	Moderator	-------------------	5	Bontis (1999); Gold et al. (2001)
Technology	Moderator	-------------------	5	Gold et al. (2001)
Business Performance	Dependent variable	Innovation	5	Zake(2009); Puntillo(2009); Ismail(2005)
		Rate of New Product Development	5	Zake(2009); Puntillo(2009),
		Customer's Satisfaction	5	Ismail (2005); Peltoniemi(2005)
		Customer's Retention	5	Gold et al. (2001); Zake (2009) and Puntillo(2009)

Table (3.4) contains the dimensions of each independent variables (knowledge

management and intellectual capital) and measures of the dependent variable which is

111

business performance in addition to culture and technology as mediator variables and the sources that have been adopted from previous studies.

3.7.6 Personal Information

Information of the individual's respondent's questions included form (age, sex, educational attainment, specialization, length of service, accesses).

3.8 INSTRUMENTATIONS

The researcher seeks for advice from a group of experts and arbitrators with specific specializations. This expert group's advice is considered in preparing the final draft. The variables are measured on a five-point Likert-Typed Scale ranging from 1 = strongly disagree to 5 = strongly agree. Accordingly, the following paragraph explains how each variable of the study will be defined and measured.

The questionnaire is translated from English language to Arabic language. It is anticipated that it would be easier for the respondents to understand if the questionnaires were posed in Arabic language and this would encourage them to respond to the survey. Sekaran (2000) suggests that it is important to ensure that the translation of the instruments is developed accordingly. Therefore, the English version has been translated into the Arabic language by a native Arabic who is fluent in both languages (English and Arabic). The Arabic questionnaire has then been translated back into English by another person with the same qualification. Finally, both versions, i.e. the translated and the original ones, have been examined and compared by the researcher.

3.8.1 QUESTIONNAIRE DESIGN

The questionnaire design as described below in the table 3.5.

Table 3.5
Explain the Main of Measurement

No.	Axes	Main Variable	Sub Variable	No. of Question
First Axes	Identifying Information		Age, sex, educational attainment, specialization, length of services, accesses.	
Second Axes	Knowledge Management	Knowledge processes	Creation and Acquisition	5
			Know. Sharing & Dissemination	5
			Know. Utilization & application	5
		Knowledge content	Tacit Knowledge	5
			Explicit Knowledge	5
Third Axes	Intellectual Capital		Customer Capital	5
			Human capital	5
			Structural capital	5
			Relational capital	5
Forth Axes	Business performance		Innovation	5
			Rate of new product development	5
			Customer's satisfaction	5
			Customer's retention	5
Fifth Axes	Moderator		Culture	5
			Technology	5
	All question			75

Table (3.5) summarizes description of the questionnaire sample which includes (demographic, variables, dimension and questions number). The questionnaire includes all the variables of the study, which include knowledge management independent variables which are knowledge content (Tacit & Explicit knowledge), knowledge process (knowledge creation, sharing and utilization). The intellectual capital is an independent variable which includes (customer capital, human capital, relational capital and structural capital). The dependent variable is the business performance, which includes (innovation, rate of new product development, customer's satisfaction and customer's retention). In addition, culture and technology are moderator variables.

113

3.9 DATA ANALYSIS PROCEDURE

After collecting the data, the Statistical Package for Social Science (SPSS) software (ver. 17), and Analysis of Moment Structure (AMOS Ver.5) were employed to analyze the collected data from the questionnaire. Correlation analysis is used to describe the degree to which one variable is linearly related to another (Levin & Rubin, 1998). The researcher has also conducted regression analysis to test the strength of associations between the studied variables. Analysis of Variance (ANOVA) is used according to the respective objectives of the study. Multiple regression analysis was used to examine dependent variable (Business Performance) with the independent variables (Knowledge Management and Intellectual Capital). On the other hand, the study applied regression to verify the moderation effects on the relationships between the dependent variable and independent variables (Knowledge Management and Intellectual Capital).

3.10 PILOT STUDY

The pilot study was conducted from a small sample of 50 respondents (Sekaran (2010). The survey instrument was pilot tested on a small scale sample of respondents from the industry in Iraq. The result was analyzed to determine the reliability of the instrument.

Table 3.6 shows the reliability test results of key components of the instrument for the research. The data was collected as suggested by Sekaran (2010). According to Sekaran, the instrument is considered good when the alpha coefficient is .80, acceptable when it is .70 and poor when it is .60. Table 3.6 summarizes the reliability coefficients of each variable, based on the pilot test data, which will give support to use the final questionnaire.

114

Table 3.6
Reliability Coefficients of Variable Measures

Variables	Cronbach's alpha	Number of items
Knowledge management	.784	25
Intellectual capital	.748	20
Business performance	.858	20
Organizational culture	.703	5
Technology	.722	5

A pilot test was also carried out prior to the actual distribution of questionnaires to the respondent. Its main purpose is to verify the understanding of the questionnaire in terms of presentation, relevance of the questions and to determine the validity and reliability-resolution, Sekaran (2010).

3.11 SUMMARY

This chapter contains a description of the research methodology that was used in this study to investigate the relationship between knowledge management and intellectual capital and its effect on business performance of industry in Iraq. It also provides an explanation for research framework and reliability of measurement for the methods of study. This chapter discusses the methodology that is used in this research. Analysis of Variance (ANOVA) was used according to the respective objectives of the study. Multiple regression analysis was used to examine dependent variable (Business Performance) with the independent variables (Knowledge Management and Intellectual Capital). On the other hand, the study applied regression to verify the moderation effects on the relationships between the dependent variable and independent variables (Knowledge Management and Intellectual Capital). Additionally, the research design and method, population and sampling, data collection method and the types of analysis to be used were also discussed.

115

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1 INTRODUCTION

In this chapter, the findings of the survey are based on the defined methodologies as developed from data collected from 191 respondents. The main purpose of this study is to investigate, on the one hand, the relationship between knowledge management (KM) and intellectual capital (IC) with the business performance (BP). On the other hand the study will also show the impact of moderator variables which consist of culture (C) and technology (T) on the business performance (BP). This study aims to achieve the research objectives as well as answers related to the research questions highlighted in Chapter One.

After collecting the data, the Statistical Package for Social Science (SPSS) software (ver. 17), and Analysis of Moment Structure (AMOS Ver.5) have been employed to carry out the above analysis by using the data collected from the questionnaire. Therefore, descriptive statistics have been shown to represent the general condition of the selected variables, and then a correlation matrix (Pearson's Correlation analysis) for the variables has been displayed in order to look for significant correlations among the variables. Correlation analysis is the statistical tool that can be used to describe the degree to which one variable is linearly related to another (Levin & Rubin, 1998).

The researcher has also conducted regression analysis to test the strength of association between the studied variables. Analysis of Variance (ANOVA) is used according to the

respective objectives of the study. Multiple regression analysis is used to examine the dependent variable (Business Performance) with the independent variables (Knowledge Management and Intellectual Capital). The dependent variable is regressed against each of the factor scores of the independent variables. On the other hand, the study applies regression to verify the moderation effects on the relationships between the dependent variable and independent variables (Knowledge Management and Intellectual Capital).

Moreover, AMOS Ver.5 (Analysis of Moment Structure) is used to conduct path analysis. Path analysis is a promising statistical technique for assessing co- variation. It can perform two functions. First, it can suggest which of several alternative hypotheses describing the relationships among variables is most likely to be correct (Sokal and Rohlf, 1981). Secondly, given a particular hypothesis about the causal relationship among variables, it estimates the relative strengths of direct and indirect interaction between variables (Mitchell, 1992).

However, the researcher uses AMOS to ascertain correlation results and to demonstrate graphs for path effects of independent variables. Figure 4.1 below shows the flow of data analysis processes of this chapter.

Data analysis

Interpretation of results

Discussion → Research question answered?

DATA COLLECTION

Getting data ready for analyses	Feel for data	Goodness of data	Hypotheses testing
Editing data Handling blank responses Coding data Categorizing data Creating data file Programming	1. Mean 2. Standard deviation 3. Correlations 4. Frequency distribution	Reliability	Appropriate statistical manipulations

Figure 4.1
Flow Diagram of Data Analysis Process
Source: Adapted from Sekaran, (2006).

4.2 OVERVIEW OF THE DATA COLLECTED

A total of 250 questionnaires have been distributed to respondents. The collected questionnaires are 200 giving a responses at the rate of (80%). After checking it, the researcher finds that 9 questionnaires are not usable at the rate of (4.5%). Thus, the researcher drops these questionnaires. Finally, 191 questionnaires which forms a percentage of (76.4%) are term for statistical analysis. Thus, the appropriate sample size to use SPSS and AMOS should be in the range of 150-400 (Hair et al., 2006). The 191 questionnaires are appropriate to complete the processes research in this study. Table 4.1

summarizes the result of response rate.

Table 4.1
The Study's Response Rate

Responses	Total	%
Questionnaires distributed	250	100
Collected questionnaires	200	80
Uncollected questionnaires	50	20
Unusable questionnaires	9	4.5
Validate questionnaires	191	76.4

Table (4.2) below shows more details about the responses rate based on the population.

Table 4.2
The Responses Rate Based on the Sectors

Population	No. of Companies	Distributed questionnaires (sample)	%	Validate questionnaires (sample)	Sampling rate %
Construction	83	65	26	50	
Food and Pharmaceutical	68	53	21.2	41	
Chemical and Petrochemical	46	36	14.4	27	76.4
Textile	41	32	12.8	24	
Engineering	82	64	25.6	49	
Total	320	250	100	191	

4.3 RESPONDENTS PROFILE

The survey also provides the demographic characteristics or the respondents' profile as

shown in Table 4.3 below.

119

Table 4.3
Respondents Profile

Demographic	Categories	Frequency	Percentage (%)
Gender	Male	159	83.3
	Female	32	16.7
Age Group	Under 30 years old	67	35.1
	31-39 years old	39	20.4
	More than 39	85	44.5
Education	Preparatory	0	0
	Diploma	20	10.4
	B.D.	140	73.4
	Master	25	13
	PhD	6	3.2
Years Of Experience	Less than 10	22	11.5
	11-15	56	29.3
	16-20 years	62	32.2
	21 years and above	14	27

It is found that 83.3 % of the respondents are males while the remaining of 16.7% of the respondents are females. Among these, 10.4% respondents are diploma holders, 73.4% B.D, 13% masters' and 3.2% PhD. For working experience, 11.5% are with less than 10-year experience, followed by 29.2% with 11- to 15-year experience. In addition, 32.2% are with 16- to 20-year experience, and 27% between 21 and beyond.

4.4 TESTS OF NORMALITY

The null hypothesis for this test that data is normally distributed if the chosen level of significance (α) is 0.05, but the null hypothesis is rejected if the p-value is less than or equal to 0.05. If the p-value is greater than 0.05, the null hypothesis will not be rejected. In this study, both the Kolmogorov-Smirnov and Shapiro-Wilk tests are used to test normality of questionnaire items. Table 4.4 summarizes results of normality tests for all items of questionnaire. The Shapiro-Wilk and Kolmogorov-Smirnov tests reject the null hypothesis that all items of questionnaire are normally distributed at the .01 significance

level, indicating that normality of questionnaire items is not assumed. The result is Sig. =0.000. (See Appendix. 3 for more details).

Table 4.4
Tests of Normality Summarized Results for all Items of Questionnaire

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
KC	.189	191	.000	.922	191	.000
KS	.148	191	.000	.944	191	.000
KU	.142	191	.000	.954	191	.000
EK	.194	191	.000	.915	191	.000
TK	.147	191	.000	.927	191	.000
HC	.143	191	.000	.938	191	.000
CC	.153	191	.000	.931	191	.000
SC	.147	191	.000	.958	191	.000
RC	.153	191	.000	.947	191	.000
C	.241	191	.000	.885	191	.000
T	.225	191	.000	.872	191	.000
LP	.155	191	.000	.922	191	.000
NP	.150	191	.000	.919	191	.000
CP	.151	191	.000	.893	191	.000
PP	.198	191	.000	.856	191	.000

In addition, the figure 4.2 below shows the Kolmogorov-Smirnov (Z) Normality test of studied variables.
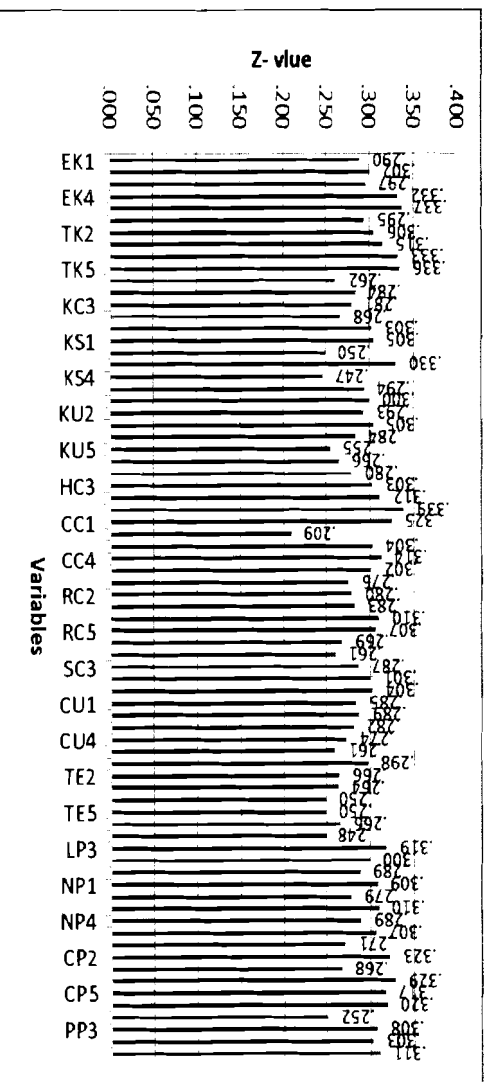
Figure 4.2
Kolmogorov-Smirnov (Z) Normality Test of Studied Variables

4.5 RELIABILITY OF THE RESEARCH

4.5.1 Item-to-total correlation

Item-to-total correlation measures the correlation of each item to the sum of the remaining items. This approach assumes that the total score is valid and thus the extent to which the item correlates with the total score is indicative of convergent validity for the item.

4.5.2 Internal Consistency Analysis (Cronbach's alpha)

Coefficient alpha is a measure of squared correlation between observed scores and true scores. Namely, reliability is measured in terms of the ratio of true score variance to observed score variance. It can test the internal consistency of each factor. According to Sekaran and Bougie (2010), the Cronbach's alpha is used to examine the internal consistency of the scales. According to them, the instrument is considered good when the alpha coefficient is .80, considered acceptable when it is .70 and poor when it is .60.

To verify the dimensionality and reliability of the research variables, purification processes, including item-to-total correlation and internal consistency analysis (Cronbach's alpha) are conducted in this study. For each research variable, item-to-total correlation, Coefficient alpha and correlation matrix are then assessed to identify the internal consistency and reliability of the variables. In the reliability analysis, the item-to-total correlation must be larger than 0.5 and at least not less than 0.35. Here, the results of the reliability for each variable are shown in the tables below:

Table 4.5 .a
Reliability Analysis of Tacit Knowledge (TK)

Variable	Items	item-to-total	Cronbach's alpha
Tacit Knowledge	TK1	0.671	0.665
	TK2	0.544	
	Tk3	0.727	
	TK4	0.620	
	TK5	0.571	

Table 4.5 .b
Reliability Analysis of Explicit Knowledge (EK)

Variable	Items	item-to-total	Cronbach's alpha
Explicit Knowledge	EK1	0.598**	0.672
	EK2	0.597**	
	Ek3	0.711**	
	EK4	0.582**	
	EK5	0.692**	

Table 4.5 .c
Reliability Analysis of Knowledge Creation (KC)

Variable	Items	item-to-total	Cronbach's alpha
Knowledge Creation	KC1	.664**	0.736
	KC2	.583**	
	KC3	.712**	
	KC4	.700**	
	KC5	.725**	

Table 4.5. d
Reliability Analysis of Knowledge Sharing (KS)

Variable	Items	item-to-total	Cronbach's alpha
Knowledge Sharing	KS1	0.621**	0.657
	KS2	0.623**	
	KS3	0.624**	
	KS4	0.629**	
	KS5	0.624**	

Table 4.5 .e.
Reliability Analysis of Knowledge Utilization (KS)

Variable	Items	item-to-total	Cronbach's alpha
Knowledge Utilization	KU1	.584**	0.624
	KU2	.614**	
	KU3	.601**	
	KU4	.677**	
	KU5	.634**	

Table 4.5 .f
Reliability Analysis of Human Capital (HC)

Variable	Items	item-to-total	Cronbach's alpha
	HC1	0.579**	0.744
Human Capital	HC2	0.680**	
	HC3	0.766**	
	HC4	0.765**	
	HC5	0.656**	

Table 4.5 .g
Reliability Analysis of Customer Capital (CC)

Variable	Items	item-to-total	Cronbach's alpha
	CC1	0.648**	0.805
Capital	CC2	0.683**	
Customer	CC3	0.781**	
	CC4	0.726**	
	CC5	0.750**	

Table 4.5 h
Reliability Analysis of Structural Capital (RC)

Variable	Items	item-to-total	Cronbach's alpha
	SC1	0.555**	0.731
Structural	SC2	0.713**	
Capital	SC3	0.745**	
	SC4	0.741**	
	SC5	0.641**	

Table 4.5. i
Reliability Analysis of Relational Capital (RC)

Variable	Items	item-to-total	Cronbach's alpha
	RC1	0.632**	0.728
Relational	RC2	0.707**	
Capital	RC3	0.667**	
	RC4	0.660**	
	RC5	0.694**	

Table 4.5 . j
Reliability Analysis of Culture (C)

Variable	Items	item-to-total	Cronbach's alpha
	C1	0.600**	0.708
Culture	C2	0.537**	
	C3	0.731**	
	C4	0.602**	
	C5	0.619**	

Table 4.5. k
Reliability Analysis of Technology (T)

Variable	Items	item-to-total	Cronbach's alpha
	T1	0.571**	0.776
Technology	T2	0.621**	
	T3	0.732**	
	T4	0.649**	
	T5	0.674**	

Table 4.5 .l
Reliability Analysis of Innovation (LP)

Variable	Items	item-to-total	Cronbach's alpha
	LP1	0.799**	0.892
Innovation	LP2	0.799**	
	LP3	0.804**	
	LP4	0.766**	
	LP5	0.809**	

Table 4.5 . m
Reliability Analysis of Product Development (NP)

Variable	Items	item-to-total	Cronbach's alpha
	NP1	0.766**	0.878
Product	NP2	0.766**	
Development	NP3	0.789**	
	NP4	0.815**	
	NP5	0.679**	

Table 4.5 .n
Reliability Analysis of Customers Satisfaction (CP)

Variable	Items	item-to-total	Cronbach's alpha
	CP1	0.787**	0.886
	CP2	0.711**	
Customers Satisfaction	CP3	0.795**	
	CP4	0.742**	
	CP5	0.793**	

Table 4.5 .o
Reliability Analysis of Customers Retention (PP)

Variable	Items	item-to-total	Cronbach's alpha
	PP1	0.671**	0.852
	PP2	0.691**	
Customers Retention	PP3	0.764**	
	PP4	0.737**	
	PP5	0.673**	

4.6   DESCRIPTIVE ANALYSIS

The responses of the 191 respondents are tabulated accordingly to each variable and the results analyzed are as follows. The following tables present the results that show interest

towards knowledge management, intellectual capital, mediators and business performance. These results are separated into four variables: first, Knowledge Management which includes Explicit knowledge (Table 4-20), Tacit knowledge (Table 4-21), knowledge Creation (Table 4-22), knowledge sharing (Table 4-23), and knowledge utilization (Table 4-24). Secondly, Intellectual Capital; it includes human capital (Table 4-25), customer's capital (Table 4-26), relational capital (Table 4-27), and structural capital (Table 4-28). Thirdly, Mediators; they includes culture (Table 4-29) and technology (Table 4-30). Fourthly, Business Performance which includes innovation (Table 4-31), rate of new product (Table 4-32), customer's satisfaction (Table 4-33) and customer's retention (Table 4-34). The results present the means and the percentage weight of respondents answering the items under each variable. The variables are measured on a five point Likert- typed scale ranging from 1 = strongly disagree to 5 = strongly agree.

1-Explicit knowledge (EK):

The results in Table 4-6 with an overall mean of 4.108 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of advance knowledge in the Iraqi industrial planets. Overall rating shows that the mean for '**My organization has excellence knowledge about the future demands** (EK1)' is the highest (4.361) but for '**My organization uses effective index for customer satisfaction and loyalty** (EK4) ', it is the lowest (4.00). All items have a mean which is higher than assumption test mean (3). The percentage weights of the five items are between (81.67% and 91.10%) ; this reveals a high agreement of respondents on item

126

contents. Evidence seems to suggest that the organization has an excellent knowledge about the future demands, has effective system which support all knowledge processes and has advances knowledge about future market change.

Table 4.6
The Mean and Percentage Weight of Respondents on Explicit Knowledge

Code	Questionnaire item	Mean	SD	Per. Wt.
EK1	My organization has excellence knowledge about the future demands.	4.361	0.657	91.10%
EK2	My organization has advances knowledge about future market change.	4.063	0.693	83.77%
EK3	My organization has excellence knowledge about existing and potential customers.	4.052	0.647	81.67%
EK4	My organization uses effective index for customer satisfaction and loyalty.	4.000	0.598	83.25%
EK5	My organization has effective system which support all knowledge processes.	4.063	0.604	86.91%
Overall Variable	Median = 4.063	4.108	0.652	85.34%

2- Tacit Knowledge (TK)

The results in Table 4-7 with an overall mean of 4.095 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of advance knowledge in the Iraqi industrial plants. Overall rating shows that the mean for 'The organization has employees with high experiences skeletal (TK5)' is the highest (4.236) but for 'The organization has capacity and patents in the work (TK4) ', it is the lowest (3.963). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (81.1% and 91.6%) ; this reveals high agreement of respondents on item contents. Evidence seems to suggest that an organization having employees with high experiences skeletal, has clear vision and strategic direction, and has excellent research and development efforts.

127

Table 4.7

The Mean and Percentage Weight of Respondents on Tacit Knowledge

Code	Questionnaire item	Mean	SD	Per. Wt.
TK1	My organization has clear vision and strategic direction.	4.147	0.657	85.8%
TK2	My organization has excellence research and development efforts.	4.120	0.658	86.4%
TK3	The organization is making outstanding efforts in research and development.	4.010	0.641	82.2%
TK4	The organization has capacity and patents in the work.	3.963	0.683	81.1%
TK5	The organization has employees with high experiences skeletal.	4.236	0.591	91.6%
Overall Variable	Median = 4.107	4.095	0.653	85.4%

3-Knowledge Creating (KC)

The results in Table 4-8 with an overall mean of 3.969 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of advance knowledge creating in the Iraqi industrial planets. Overall rating shows that the mean for: **My organization: Has processes for acquiring knowledge about our customer.** (KC1)' is the highest (4.079) and the mean for 'Has processes for acquiring knowledge about its competitive industry environment. (KC3) ' is the lowest (3.859). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (70.16% and 81.1%) ; this reveals high agreement of respondents on item contents. Evidence seems to suggest that the organization has processes for acquiring knowledge about customers, has processes for generating new knowledge from existing knowledge, and has processes for observing knowledge from individual and other partners.

Table 4.8

The Mean and Percentage Weight of Respondents on Knowledge Creating

Code	Questionnaire item	Mean	SD	Per. Wt.
KC1	My organization: Has processes for acquiring knowledge about our customer.	4.079	0.703	80.1%
KC2	Has a process for generating new knowledge from existing knowledge.	4.042	0.664	80.1%
KC3	Has a process for acquiring knowledge about its competitive industry environment.	3.859	0.708	70.16%
KC4	Has a process for acquiring knowledge about new product/services within our industry.	3.927	0.843	73.29%
KC5	Has a process for observing knowledge from individual and other partners.	3.937	0.751	76.96%
Overall Variable	Median = 3.937	3.969	0.734	76.12%

4-Knowledge Sharing (KS)

The results in Table 4-9 with an overall mean of 4.069 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of knowledge sharing in the Iraqi industrial planets. Overall rating shows that the mean for '**My Organization has processes for exchanging knowledge between individual (employees).** (KS2)' is the highest (4.173) but the mean for 'My **Organization has processes for exchanging knowledge with our business partners...** (KS3)' is the lowest (3.953). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (80.10% and 83.77%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that the organization has processes for exchanging knowledge between individual (employees), has processes for distributing knowledge throughout the organization, and has processes for Knowledge sharing, i.e. skills and competences are appreciated, appropriately recognized and rewarded.

129

Table 4.9
The Mean and Percentage Weight of Respondents on Knowledge Sharing

Code	Questionnaire item	Mean	SD	Per. Wt.
KS1	My Organization: Has a process for distributing knowledge throughout the organization.	4.073	0.636	83.25%
KS2	Has a processes for exchanging knowledge between individual (employees)	4.173	0.716	83.77%
KS3	Has a process for exchanging knowledge with our business partners.	3.953	0.643	80.10%
KS4	Has a process for integrating different sources and types of knowledge.	4.115	0.773	80.63%
KS5	In my Organization Knowledge sharing, skills and competences are appreciated, appropriately recognized and rewarded.	4.031	0.656	81.15%
Overall Variable	Median = 4.073	4.069	0.685	81.78%

5-Knowledge Utilization (KU)

The results in Table 4-10 with an overall mean of 3.950 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of knowledge sharing in the Iraqi industrial planets. Overall rating shows that the mean for '**My organization: Has processes for applying knowledge learned from past experiences, success, stories and mistake** (KU1)' is the highest (4.047) but the mean for '**Is able to locate and apply Knowledge to achieve competitive advantage** (KU5)' is the lowest (3.923). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (71.73% and 82.72%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that the organization has processes for applying knowledge learned from past experiences, success, stories and mistake, has processes for using knowledge in development of new product and services, and the organization uses knowledge to adjust vision, mission and strategic direction.

130

Table 4.10

The Mean and Percentage Weight of Respondents on Knowledge Utilization

Code	Questionnaire item	Mean	SD	Per. Wt.
KU1	My organization: Has processes for applying knowledge learned from past experiences, success, stories and mistake.	4.047	0.690	82.72%
KU2	Has a process for using knowledge in development of new product and services.	3.948	0.724	76.44%
KU3	Uses knowledge to adjust vision, mission and strategic direction.	3.932	0.665	76.44%
KU4	Is seeking to apply knowledge to respond of competition demands and market changed?	3.890	0.706	72.25%
KU5	Is able to locate and apply Knowledge to achieve competitive advantage.	3.932	0.719	71.73%
Overall Variable	Median = 3.932	3.950	0.701	75.20%

6-Human Capital (HC)

The results in Table 4-11 with an overall mean of 3.955 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of Human Capital in the Iraqi industrial planets. Overall rating shows that the mean for **my organization has a highly component management team** (HC1)' is the highest (4.073) but the mean for '**On-the-job training and Learning are valued, factory management is concerned with programs and teaching employee** (HC3)' is the lowest (3.864). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (72. 3% and 80.7%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that the organization **has a highly component management team, employees are brilliant, innovative and creative, experts in their jobs and quickly adapt to changes made by management.**

131

Table 4.11

The Mean and Percentage Weight of Respondents on Human Capital

Code	Questionnaire item	Mean	SD	Per. Wt.
HC1	My organization has a highly component management team.	4.073	0.722	80.7
HC2	Employees can quickly adapt to changes made by management	3.953	0.728	75.4
HC3	On-the-job training and Learning are valued; factory management is concerned with programs and teaching employee.	3.864	0.667	72.3
HC4	Employees are experts in their jobs.	3.953	0.698	78.6
HC5	Employees are brilliant, innovative and creative.	3.932	0.719	80.1
Overall Variable	Median = 3.953	3.955	0.707	77.42

7-Customer Capital (CC)

The results in Table 4-12 with an overall mean of 3.869 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of Customer Capital in the Iraqi industrial planets. Overall rating shows that the mean for **my organization key values; Total commitment to customers.** (CC2)' is the highest (3.995) but the mean for 'In my opinion, my organization new vision focuses on delivering exceptional value to our customer (CC3)' is the lowest (3.764). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (69.7% and 78.1%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that the organization's **key values; total commitment to customers, and uses customer feedbacks electively in our effort to provide quality products and services to our customer. It is also seeking to translate knowledge about the customer to design products, and has programs to update knowledge and information about our customers.**

132

Table 4.12

The Mean and Percentage Weight of Respondents on Customer Capital

Code	Questionnaire item	Mean	SD	Per. Wt.
CC1	My organization uses customer feedbacks electively in our afford to provide quality products and services to our customer	3.942	0.666	78.1
CC2	My organization key values; Total commitment to customers.	3.995	0.818	70.7
CC3	In my opinion, my organization new vision focuses on delivering exceptional value to our customer	3.764	0.866	69.7
CC4	My organization has programs to update a knowledge and information about our customers.	3.780	0.810	70.7
CC5	My organization is seeking to translate knowledge about the customer to design products.	3.864	0.783	73.3
Overall Variable	Median = 3.864	3.869	0.789	72.5

8-Relational Capital (RC)

The results in Table 4-13 with an overall mean of 3.916 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of Relational Capital in the Iraqi industrial planets. Overall rating shows that the mean for **our suppliers have performed extremely well in supporting my organization to achieve our targets** (RC1)' is the highest (4.037) but the mean for '**My organization always considers environmental health and public social benefits in any planning, development and implementation of our project** (RC4)' is the lowest (3.853). All items have a mean which is higher than assumption test mean (3). The percentage weights of the five items are between (71.2% and 79.6%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that organization **suppliers have performed extremely well in supporting my organization to achieve our targets**, the **organization uses feedback and recommendations from vendors to produce better products and services to our customer** and it is **interested in the competitiveness of its competitors in the market.**

Table 4.13

The Mean and Percentage Weight of Respondents on Relational Capital

Code	Questionnaire item	Mean	SD	Per. Wt.
RC1	Our suppliers have performed extremely well in supporting my organization to achieve our targets	4.037	0.757	79.6
RC2	My organization uses feedback and recommendations from vendors to produce better products and services to our customer	3.906	0.712	72.8
RC3	Government agencies provide good support to us in our effort to serve the people better.	3.869	0.732	71.2
RC4	My organization always considers environmental health and public social benefits in any planning, development and implementation of our project.	3.853	0.703	72.8
RC5	My organization always interested in the competitiveness of its, competitors in the market.	3.916	0.698	75.9
Overall Variable	Median = 3.906	3.916	0.720	74.46

9- Structural Capital (SC)

The results in Table 4-14 with an overall mean of 3.984 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of Structural Capital in the Iraqi industrial plants. Overall rating shows that the mean for **Policies, procedures and instructions in my organization are contained in manuals and databases** (SC1)' is the highest (4.099) but the mean for '**My origination has batter system to improve customer service** (RC4)' is the lowest (3.890). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (82.2% and 73.8%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that, **Policies, procedures and instructions in organization are contained in manuals and databases, Knowledge and information in the organization are embedded in our employees system and procedures, and the organization has an information system compatible with the supplying system, selling and buying.**

134

Table 4.14
The Mean and Percentage Weight of Respondents on Structural Capital

Code	Questionnaire item	Mean	SD	Per. Wt.
SC1	Policies, procedures and instructions in my organization are contained in manuals and databases.	4.099	0.700	82.2
SC2	Knowledge and information in my organization are embedded in our employees, system and procedures.	4.026	0.750	77.5
SC3	My organization has a good information system utilized staff to improve their performance.	3.932	0.704	74.9
SC4	My organization has an information system compatible with the supplying system, selling and buying.	3.974	0.684	78.5
SC5	My organization has batter system to improve customer service	3.890	0.668	73.8
Overall Variable	Median =0. 964	3.984	0.701	77.38

10-Culture

The results in Table 4.15 with an overall mean of 4.268 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the importance of Culture in the Iraqi industrial plants. Overall rating shows the mean **in my organization: Employees understand the importance of knowledge and intellectual capabilities to corporate success (C1)'** is the highest (4.361) but for '**Overall organizational vision, mission and objectives are clearly stated** (C5)', it is the lowest (4.152). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (83.8% and 92.1%) ; this reveals high agreement of respondents on item contents. Evidence seems to suggest that, **employees understand the importance of knowledge and intellectual capabilities to corporate success. The benefits of sharing knowledge and experience outweigh the costs, and high levels of participation are expected in capturing and sharing knowledge and experience.**

135

Table 4.15
The Mean and Percentage Weight of Respondents on Culture

Code	Questionnaire item	Mean	SD	Per. Wt.
	In my organization :			
C1	Employees understand the importance of knowledge and intellectual capabilities to corporate success	4.361	0.657	92.1
C2	High levels of participation are expected in capturing and sharing knowledge and experience	4.257	0.642	89.0
C3	The benefits of sharing knowledge and experience outweigh the costs.	4.319	0.694	88.0
C4	Senior management clearly support the role of knowledge and intellectual capabilities in our firm's success	4.251	0.673	89.0
C5	Overall organizational vision, mission and objectives are clearly stated	4.152	0.706	83.8
Overall Variable	Median = 4.257	4.268	0.674	88.83

11-Technology

The results in Table 4.16 with an overall mean of 4.169 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the importance of Technology in the Iraqi industrial plants. Overall rating shows that the mean for **Uses technology that allows employees to search for new knowledge** (T4)' is the highest (4.257) but the mean for 'Uses **technology that allows employees to collaborate with other person inside and outside in order to acquire and share knowledge** (T3)' is the lowest (4.163). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (84% and 88%) ; this reveals high agreement of respondents on item contents. Evidence seems to suggest that, **Uses of technology allows employees to search for new knowledge, allows it to monitor its industry environment and competition, and allows it to retrieve and use knowledge in its today's operations.**

Table 4.16
The Mean and Percentage Weight of Respondents on Technology

Code	Questionnaire item	Mean	SD	Per. Wt.
T1	My organization : Have clear rules for formatting or categorizing its product/processes knowledge.	4.178	0.657	88
T2	Uses technology that allows it to monitor its industry environment and competition.	4.199	0.705	87.5
T3	Uses technology that allows employees to collaborate with other person inside and outside in order to acquire and share knowledge.	4.163	0.720	85.4
T4	Uses technology that allows employees to search for new knowledge.	4.257	0.712	87.4
T5	Uses technology that allows it to retrieve and use knowledge in its today's operations.	4183	0.735	84.
Overall Variable	Median = 4.183	4.196	0.706	86.62

12-Innovation Performance

The results in Table 4.17 with an overall mean of 3.909 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of Innovation Performance in the Iraqi industrial planets. Overall rating shows that the mean for **"My organization has improved its ability to innovate new products\services (LP1)"** is the highest (4.068) but the mean for '**My organization has improved its ability to achieve long term customer value creation (LP5)**' is the lowest (3.832). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (69.10% and 80.10%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that, **our" Employee Satisfaction Index" is high, my organization has improved its ability to identify new market growth opportunities, my organization has improved its ability to coordinate the research and development activities with products and services.**

Table 4.17

The Mean and Percentage Weight of Respondents on Innovation

Code	Questionnaire item	Mean	SD	Per. Wt.
	Over the past three year:			
LP1	My organization has improved its ability to innovate new products\services	4.068	0.782	80.10
LP2	Our" Employee Satisfaction Index" is high	3.880	0.834	69.10
LP3	My organization has improved its ability to identify new market growth opportunities.	3.869	0.800	75.30
LP4	My organization has improved its ability to coordinate the research and development activities with products and services.	3.895	0.814	74.90
LP5	My organization has improved its ability to achieve long term customer value creation.	3.832	0.860	71.20
Overall Variable	Median = 3.88	3.909	0.818	74.12

13-Rate of new Product Development

The results in Table 4.18 with an overall mean of 3.867 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of Rate of new Product Development in the Iraqi industrial plants. Overall rating shows that the mean for ' **my organization has achieved better profitability of our competitors (NP5)'** is the highest (3.979) but the mean for 'my organization achieved high-level creativity to improve the product (NP3)' is the lowest (3.712). All items have a mean which higher than assumption test mean (3); the percentage weights of the five items are between (67.50% and 79.60%) that reveal to high agreement of respondents on item contents. Evidence seems to suggest that, **my organization adopted new development programs to raise employees efficiency and improve production, rate of sales over competitors, my organization adopted new technology to improve and development the production.**

138

Table 4.18

The Mean and Percentage Weight of Respondents on of New Product Development

Code	Questionnaire item	Mean	SD	Per. Wt.
	Over the past three year :			
NP1	My organization adopted new development programs to raise employee's efficiency and improve production.	3.932	0.802	77.50
NP2	Rate of sales over competitors.	3.806	0.827	68.50
NP3	My organization achieved high-level creativity to improve the product.	3.712	0.837	67.50
NP4	My organization adopted new technology to improve and development the production.	3.906	0.815	74.30
NP5	My organization has achieved better profitability of our competitors.	3.979	0.761	79.60
Overall Variable	Median = 3.906	3.867	0.808	73.48

14-Customers Satisfaction

The results in Table 4.19 with an overall mean of 3.920 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of Customers Satisfaction in the Iraqi industrial plants. Overall rating shows that the mean for ' **my organization has improved its "Customer Satisfaction Index (CP1)'** is the highest (4.063) but the mean for 'my **organization has improved its ability to decrease customer response time (CP2)'** is the lowest (3.859). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (71.20% and 80.10%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that, **our organization has improved service to customers, my organization has improved its customer Retention Index, and in my organization customers growth Index has exceeded our competitors.**

Table 4.19
The Mean and Percentage Weight of Respondents on Customers Satisfaction

Code	Questionnaire item	Mean	SD	Per. Wt.
	Over the past three years:			
CP1	My organization has improved its "Customer Satisfaction Index"	4.063	0.844	80.10
CP2	My organization has improved its ability to decrease customer response time.	3.859	0.758	74.80
CP3	Our organization has improved service to customers.	3.885	0.813	71.20
CP4	My organization has improved its "customer Retention Index"	3.869	0.739	75.90
CP5	In my organization customers growth Index has exceeded our competitors.	3.927	0.785	78.00
Overall Variable	Median = 3.865	3.920	0.788	76.00

15-Customers Retention

The results in Table 4.20 with an overall mean of 4.939 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of Customers Retention in the Iraqi industrial plants. Overall rating shows that the mean for ' **my organization is seeking to improve the productivity index (PP5)**' is the highest (4.010) but the mean for '**my organization has improved its ability to minimize cost and improved the relationship with the customers (PP3)**' is the lowest (3.853). All items have a mean which is higher than assumption test mean (3) the percentage weights of the five items are between (71.70% and 81.70%) ; this reveals high agreement of respondents on item contents. Evidence seems to suggest that, **my organization has achieved an improvement in the effectiveness and operational efficiency, my organization is seeking to improve their ability to develop competitive products and services, my organization is seeking to increase economic value added (to improve the utility customer).**

Table 4-20
The Mean and Percentage Weight of Respondents on Customers Retention

Code	Questionnaire item	Mean	SD	Per. Wt.
	Over the past three year:			
PP1	My organization has achieved an improvement in the effectiveness and operational efficiency.	3.953	0.783	79.60
PP2	My organization is seeking to improve their ability to develop competitive products and services.	3.927	0.849	71.70
PP3	My organization has improved its ability to minimize cost, and to improve the relationship with the customers.	3.853	0.774	73.30
PP4	My organization is seeking to increase economic value added (to improve the utility customer).	3.953	0.803	78.00
PP5	My organization is seeking to improve the productivity index.	4.010	0.775	81.70
Overall Variable	Median = 3.953	3.939	0.797	76.86

4.7 HYPOTHESES TEST

Hypothesis 1: There is positively a relationship between knowledge management process and business performance

1. Correlation Analysis:

A correlation coefficient measures the strength of linearity between the studied variables. The knowledge management process comprises knowledge creation, knowledge sharing, and knowledge utilization, and business performance. The correlation results are shown in the Table (4-21).

Table 4-21

Pearson Correlation between Variables of Knowledge Management Process and Business Performance (N=191)

	knowledge creation	knowledge sharing	knowledge utilization
Pearson Correlation	0.484**	0.176*	0.479**
Sig. (2-tailed)	0.000	0.015	0.000

Note: * P≤0.05, ** P≤0.01

The correlations between knowledge creation, and knowledge utilization and Business performance are positive and are significant at the 0.01 level (2-tailed) whereas correlations between knowledge sharing and Business performance are positive and are significant at the 0.05 level (2-tailed). Therefore, the study indicates that the correlations between knowledge creation, and knowledge utilization and Business performance are higher than that between knowledge sharing and Business performance. However, these results support hypothesis 1.

2. Multiple Regression Analysis

The factors that influence Business performance, the three variables of Knowledge management process are used in a multiple regression analysis. The multiple regression procedure is employed because it provides the most accurate interpretation of the independent variables. The three independent variables are expressed in terms of the standardized factor scores (beta coefficients). The significant factors that remain in the regression equation are shown in order of importance based on the beta coefficients. You may consider the following Business performance equation:

$Ys = \beta_0 + B_1X_1 + B_2X_2 + B_3X_3$ Where,

Ys = Business performance

142

β_0 = constant (coefficient of intercept)

X_1 = knowledge creation

X_2 = knowledge sharing

X_3 = knowledge utilization

$B1$, $B2$, $B3$ = regression coefficient of three variables.

Table (4-22) shows the results of the regression analysis. To predict the good-of-fit of the regression model, the multiple-correlation coefficient (R), coefficient of determination (R^2), and F ratio are examined. First, the R of independent variables (Three factors, X_1 to X_3) on the dependent variable (Business performance, or Ys) is 0.556, which shows that the Business performance has positive and high overall association with the three attributes. Second, the R^2 is 0.310, suggesting that more than 30% of the variation of Business performance is explained by the three attributes.

Last, the F ratio, which explained whether the results of the regression model could have occurred by chance, has a value of 27.948 (p =0.00) and is considered significant. The regression model achieves a satisfactory level of good-of-fit in predicting the variance of Business performance in relation to the five attributes, as measured by the below – mentioned R, R^2, and F ratio. In other words, at least one of the three attributes is important in contributing to Business performance. In the regression analysis, the beta coefficients could be used to explain the relative importance of the five attributes (independent variables) in contributing to the variance in Business performance (dependent variable).

As far as the relative importance of the three knowledge management process attributes is concerned, knowledge creation, B_1=0.358, p=0.000) carried the heaviest weight for Business performance, followed by knowledge utilization, B_3=0.347, p=0.000 and knowledge sharing, B_2=-0.170, p=0.021. Results show that a one-unit increase in knowledge creation would lead to a 0. 358 unit increases in Business performance, one-unit increase in knowledge utilization would lead to a 0.347unit increases in Business performance; one-unit increase in knowledge sharing would lead to a 0. 170 unit decreases in Business performance.

In conclusion, all underlying dimensions are significant. Thus, the results of multiple regression analysis will not be rejected hypothesis 1, that there is a relationship between the selected knowledge management process attributes and Overall Business performance. So, there is a relationship, which is what you have expect. In order to further support for hypothesis 1,

Table 4.22
*Regression Results of Business performance Based on the Dimensions
(N=191)
Dependent variable: Business performance independent variable: Three knowledge management Process attributes*

Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	21.058	3	7.019	27.948	0.000
Residual	46.967	187	0.251		
Total	68.025	190			

Regression Analysis

Independent variables	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.327	0.385		3.443	0.001
KC	0.417	0.092	0.358	4.526	0.000**
KS	-0.228	0.097	-0.170	-2.336	0.021*
KU	0.469	0.107	0.347	4.373	0.000**

Note: * p < 0.05, ** p < 0.0
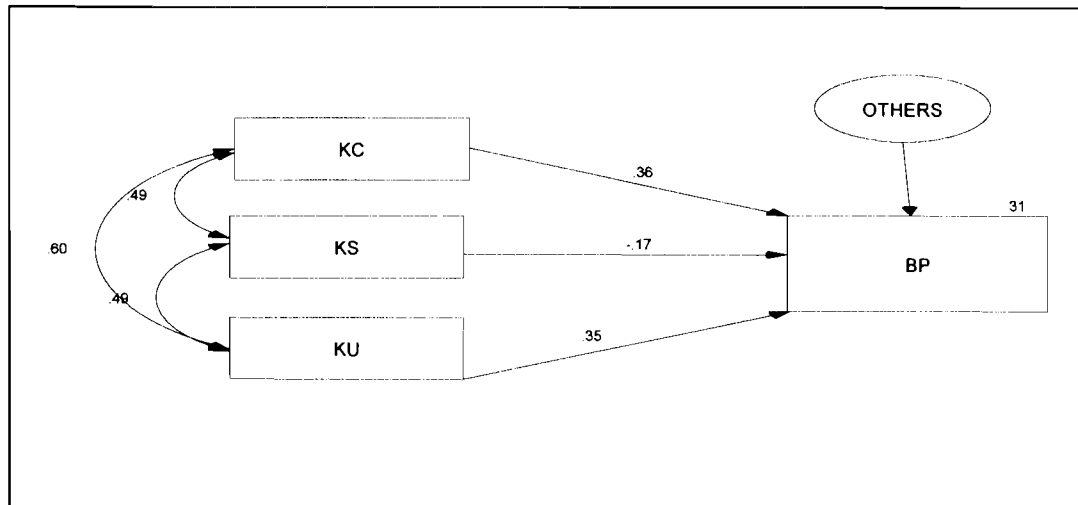
Figure 4.3

Path Diagram Estimating the Relative Importance of Direct Effect of Knowledge Management Process Attributes on Business Performance.

Two head arrows designate relationship (number adjacent to these arrows represents correlation coefficient value); one head arrow designates the direction of causality (number adjacent to these arrows represents size of effect (path coefficient).

Hypothesis 2: There is a positive relationship between knowledge management content and business performance

1-Correlation Analysis:

In Table (4-23) below, there appears the correlation Coefficient between the two variables of knowledge management content, namely (Explicit knowledge & Tacit

145

knowledge) and Business performance.

Table 4.23

Pearson Correlation between Variables of Knowledge Management Content and Business Performance (N=191)

	Explicit knowledge	**Tacit knowledge**
Pearson Correlation	0.148*	0.274**
Sig. (2-tailed)	0.041*	0.000

Note: * NS=not significant, ** P≤0.01

The correlations between Explicit knowledge and Business performance are positive and significant at the 0.01 level (2-tailed) whereas correlation between tacit knowledge and Business performance is positive but not significant at the 0.05 level (2-tailed). Therefore, the study indicates that the correlations between (Tacit knowledge and Business performance), are higher than that between (Explicit knowledge and Business performance). However, these results support hypothesis 2 when there is a relationship between (Tacit knowledge and Business performance), but reject hypothesis 1 when there is a relationship between (Explicit knowledge and Business performance).

2-Multiple Regression Analysis

Business performance regresses against two variables Knowledge management content, namely (Explicit knowledge and Tacit knowledge).The equation for Business performance is expressed in the following equation:

$Ys = \beta_0 + B_1X_1 + B_2X_2$, Where,

Ys = Business performance

β_0 = constant (coefficient of intercept)

X_1 = Explicit knowledge

X_2 = Tacit knowledge

B1, B2 = regression coefficient of Knowledge management content variables.

Table (4-24) shows the results of the regression analysis. To predict the good-of fit of the regression model, the multiple-correlation coefficient (R), coefficient of determination (R^2), and F ratio are examined. First, the R of independent variables (two factors, X_1 and X_2) on the dependent variable (Business performance, or Ys) is 0.274, which shows that the Business performance has positive but low overall association with the two attributes. Second, the R^2 is 0.074, suggesting that only 7.4% of the variation of Business performance is explained by the two attributes. Finally, the F ratio, which explains whether the results of the regression model could have occurred by chance, has a value of 7.635 (p =0.001) and is considered significant. The regression model achieves a satisfactory level of good-of-fit in predicting the variance of Business performance in relation to the four attributes, as measured by R, R^2, and F ratio below. In other words, at least one of the two attributes is important in contributing to Business performance.

In the regression analysis, beta coefficients could be used to explain the relative importance of the two attributes (independent variables) in contributing to the variance in Business performance (dependent variable). As far as the relative importance of the two Knowledge management content attributes is concerned, Tacit knowledge, B_2=0.285, p=0.001) carries the heaviest weight for Business performance, followed by Explicit knowledge, B_1=-0.019, p=0.289.The results show that a one-unit increase in Tacit

knowledge would lead to a 0.285 unit increase in Business performance, one-unit increase in Explicit knowledge would lead to a 0.019 unit decrease in business performance. In conclusion, the results of multiple regression analysis agrees with hypothesis 2 that there is relationship between the selected knowledge management content and Overall business performance. So, there is a relationship, which is what you have expected.

Table 4.24
Regression Results of Business performance Based on the Dimensions (N=191)
Dependent variable: Business performance
Independent variable: Two Knowledge Management Content Attributes.

Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	5.110	2	2.555	7.635	0.001
Residual	62.915	188	0.335		
Total	68.025	190			

Regression Analysis

Independent variables	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.369	0.460		5.150	0.000
EK	-0.026	0.123	-0.019	0.216	0.829NS
TK	0.403	0.122	0.285	3.291	0.001**

Note: * $p < 0.05$, ** $p < 0.01$
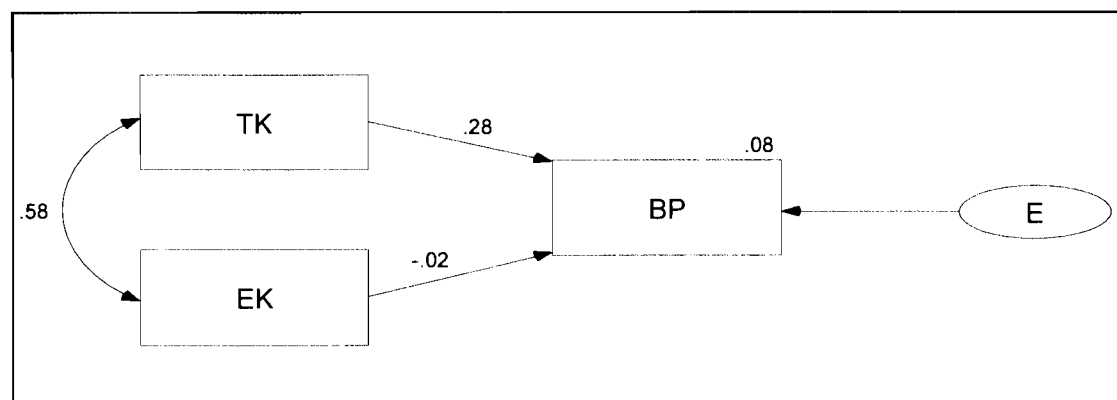
Figure 4.4
Path Diagram Estimating the Relative Importance of Direct Effect of Knowledge Management Content Attributes on Business Performance.

148

Two head arrows designate relationship (number adjacent to these arrows represents correlation coefficient value); one head arrows designate the direction of causality (number adjacent to these arrows represents size of effect (path coefficient).

Hypothesis 3: There is a positive relationship between intellectual capital and business performance.

1-Correlation Analysis:

In Table (4.25) there is shown a correlation Coefficient between the fourth elements of the intellectual capital (Human capital, Customers capital, Relational capital and Structural capital), on the one hand, and Business performance, on the other:

Table 4.25
Pearson Correlation between Variables of Intellectual Capital and Business Performance (N=191)

	Human capital	Customers capital	Relational capital	Structural capital
Pearson Correlation	0.391**	0.612**	0.551**	0.255**
Sig. (2-tailed)	0.000	0.000	0.000	0.000

Note: * $P \leq 0.05$, ** $P \leq 0.01$

The correlations between all attributes of intellectual capital and Business performance are positive and are significant at the 0.01 level (2-tailed). These results support hypothesis 3.

149

2-Multiple Regression Analysis

Business performance is regressed against four variables of intellectual capital, namely Human capital, Customers capital, Relational capital and Structural capital. The equation for Business performance is expressed in the following equation:

$Ys = \beta_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4$, Where,

Ys = Business performance

β_0 = constant (coefficient of intercept)

X_1 = Human capital

X_2 = Customers capital

X_3 = Relational capital

X_4 = Structural capital

$B1, ..., B4$ = regression coefficient of four variables.

Table (4.26) shows the results of the regression analysis. To predict the good-of-fit of the regression model, the multiple-correlation coefficient (R), coefficient of determination (R^2), and F ratio are examined. First, the R of independent variables (five factors, X_1 to X_5) on the dependent variable (Business performance, or Ys) is 0.654; it shows that the Business performance has positive and high overall association with the four attributes. Second, the R^2 is 0.428, suggesting that more than 40% of the variation of business performance is explained by the four attributes. Lastly, the F ratio, which explains whether the results of the regression model could have occurred by chance, has a value of 34.739 (p =0.00) and is considered significant. The regression model achieves a satisfactory level of good-of-fit in predicting the variance of Business performance in

150

relation to the four attributes, as measured by the below – mentioned R, R^2, and F ratio. In other words, at least one of the four attributes is important in contributing to Business performance. In the regression analysis, the beta coefficients could be used to explain the relative importance of the four attributes (independent variables) in contributing to the variance in Business performance (dependent variable).

As far as the relative importance of the four intellectual capital attributes is concerned, customer capital, B_2=0.435, p=0.000) carries the heaviest weight for Business performance, followed by relational capital, B_3=0.339, p=0.000, human capital, B_1=0.005, p=0.943, and structural capital, B_4=-0.167, p=0.130. The results show that a one-unit increase in customer capital leads to a 0.435 unit increase in Business performance, one-unit increase in relational capital leads to a 0.339 unit increase in Business performance, one-unit increase in human capital leads to a 0.005 unit increase in Business performance, and one-unit increase in structural capital leads to a 0.167 unit decrease in Business performance. In conclusion, the results of multiple regression analysis agree to hypothesis 3 that there is a relationship between intellectual capital attributes and Overall Business performance. So, there is a relationship, which is what you have expected.

Table 4.26

Regression Results of Business performance Based on the Dimensions (N=191)

Dependent variable: Business performance

Independent variable: Four intellectual capitals attribute

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	29.088	4	7.272	34.739	0.000
Residual	38.937	186	0.209		
Total	68.025	190			

Regression Analysis

Independent variables	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.122	0.328		3.423	0.001**
HC	0.006	0.086	0.005	0.072	0.943
CC	0.438	0.079	0.435	5.546	0.000**
RC	0.406	0.100	0.339	4.059	0.000**
SC	-0.131	0.086	-0.107	1.522	0.130

Note: * $p < 0.05$, ** $p < 0.01$

Hypothesis 4: culture moderates the relationship between (knowledge management process, knowledge management content, and intellectual capital) and business performance.

Two models of regression analysis are applied to test the interacting terms between knowledge management and intellectual capital with the culture. It can be found from Model I and Model II in table (4.27) that independent variables knowledge management content, knowledge management process and intellectual capital have significantly positive relationships with business performance. Moreover, the interaction term (culture as moderator) increased the R value to o.667, so it has an obvious moderation effect on the relationships between independent variables and dependent variable, i.e. business performance.

Table 4.27

Empirical Results of Regression

Variables	Model I B (t-value)	Model II B (t-value)
Business Performance	0.474(1.081)	0.418(0.950)
Knowledge Management Content	0.331(2.711)**	0.245(2.133)*
Knowledge Management Process	0.162(1.449)	0.601(4.542)**
Intellectual Capital	0.706(6.454)**	0.572(5.442)**
Interaction term		
Culture		0.426(5.399)**
R	0.598	0.667
R^2	0.358	0.445
Adjusted R^2	0.348	0.433
N	191	191
F	34.750**	37.274**

With respect to the variance explained (R^2) of the endogenous variables, the research model has shown an adequate predictive power. The proportion of variance of the dependent variable explained in the complete model that includes the interaction effect (Model II) is 43.3%, superior to that of the model that does not include the interaction effect (Model I; R^2 = 35.8%). Taken together, the above results support hypothesis 4. Amos graphs (Fig.4-5 & Fig.4-6) represented the direct and indirect effects of independent variables, since culture act as moderator.
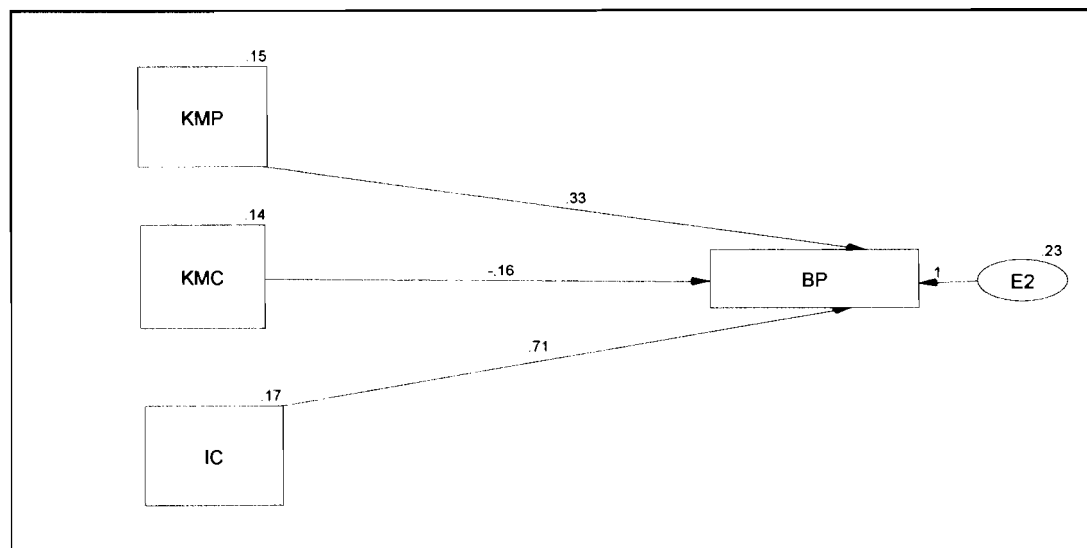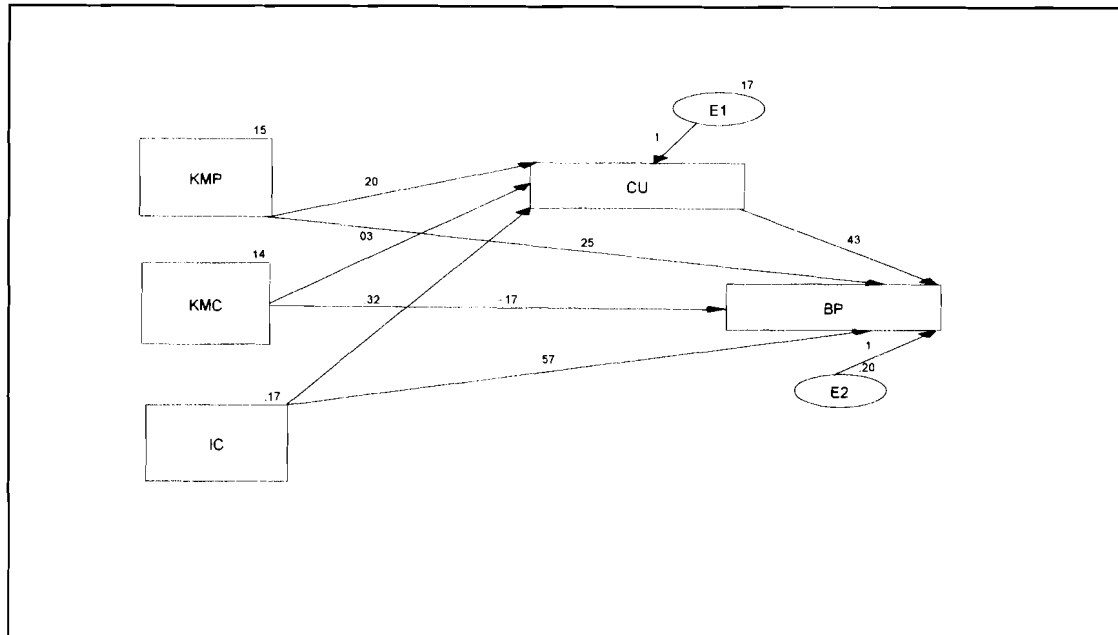
Figure 4.5
Direct Effect of Independent Variables (Multiple regressions, Model I
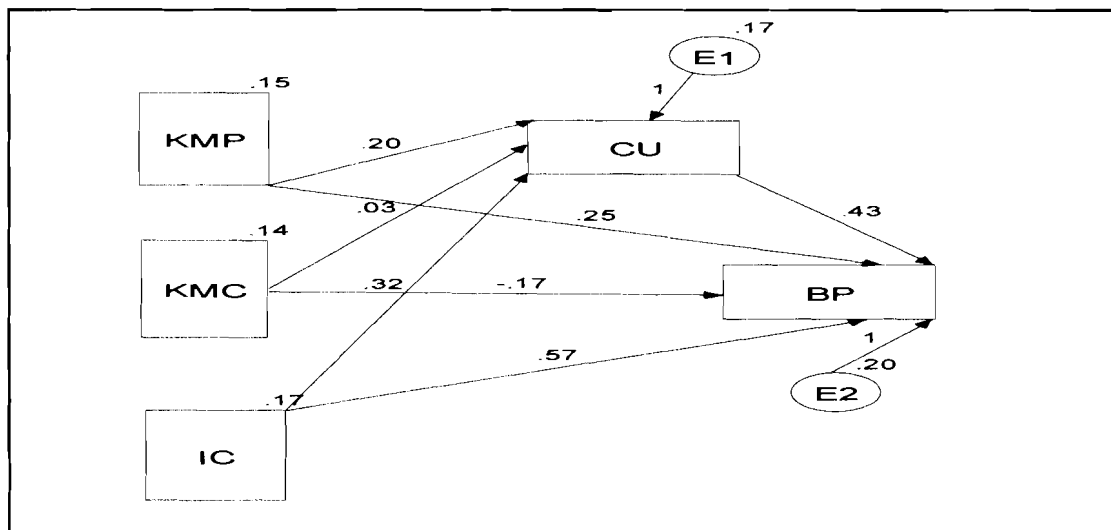
Figure 4.6
Indirect Effect of Independent Variables (Multiple Regressions, Model II), Culture Concern as Modulator.

Hypothesis 5: Technology moderates the relationship between (knowledge management process, knowledge management content, and intellectual capital) and business performance.

Two models of regression analysis were applied to test the interaction terms between knowledge management and intellectual capital with the Technology. It can be found from Model I and Model II in table (4-28) that independent variables, i.e. knowledge management content and intellectual capital have significantly positive relationships with business performance. Moreover, the interaction term (technology as moderator) increases the R value to o.654, so it has an obvious moderation effect on the relationships between independent variables and dependent variable, i.e. business performance.

Table 4.28
Empirical Results of Regression

Variables	Model I B(t-value)	Model II B (t-value)
business performance	0.474(1.081)	0. 197(0.470)
knowledge management content	-0.162(1.449)	-0.218(2.048)*
knowledge management process	0.331(2.711)**	0.182(1.519)
intellectual capital	0.375(4.671)**	0.421(5.647)**
Interaction term		
Technology		0.377(4.787)**
R	0.598	0.654
R^2	0.358	0.428
Adjusted R^2	0.348	0.416
N	191	191
F	34.750**	34.846**

With respect to the variance explained (R^2) of the endogenous variables, the research model has shown an adequate predictive power. The proportion of variance of the dependent variable explained in the complete model that includes the interaction effect (Model II) is 41.6%, superior to that of the model which does not include the interaction effect (Model I; R^2 = 34.8%). Taken together, the above results support hypothesis (5). Amos graphs (Fig.4-7 & Fig.4-8) represent the direct and indirect effects of independent variables, since technology act as moderator.
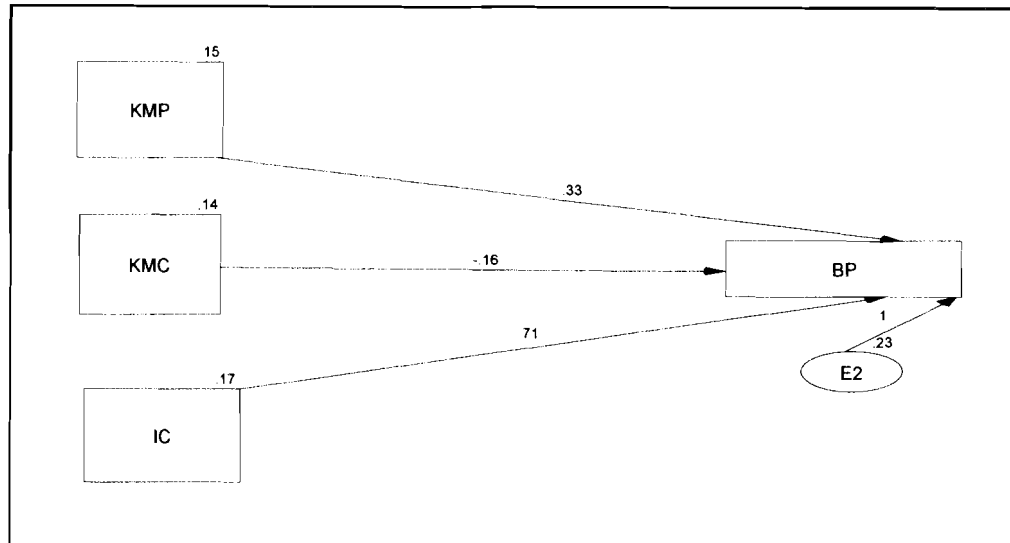
Figure 4.7
Direct Effect of Independent Variables (Multiple regressions, Model I)
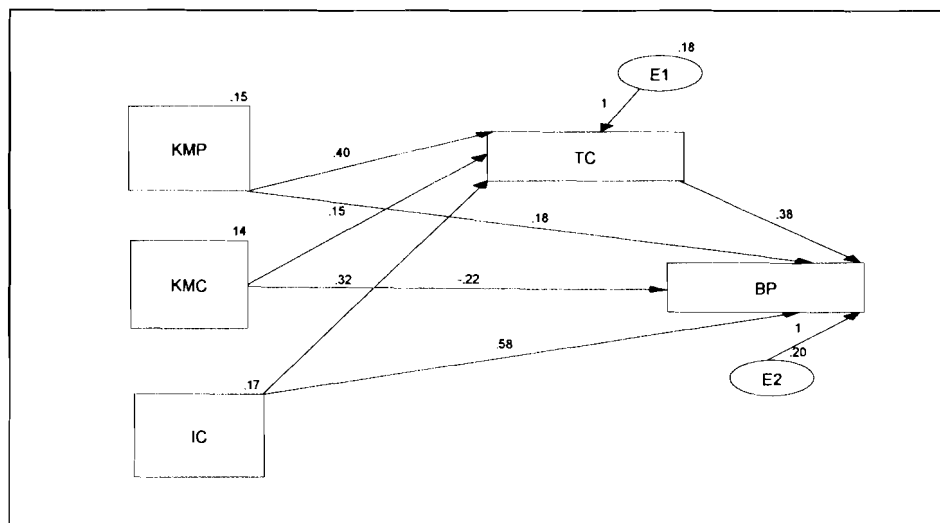
Figure 4.8
Indirect Effect of Independent Variables (Multiple Regressions, Model II), Technology Concern as Modulator

4.8 CONCLUSION

Based on the theoretical and empirical results as described in this chapter, the latter part of this research should be supported by the hypotheses testing. The responses from 191 respondents are tabulated accordingly to each variable and the results are analyzed. The results are separated to four variables, the Knowledge Management, the Intellectual

Capital, the Moderators which includes culture and technology. The results present the means and the percentage weight of respondents answering the items under each variable. The variables are measured on a five point Likert- typed scale ranging from 1 = strongly disagree to 5 = strongly agree.

The results of the regression analysis showed that the R of independent variables of intellectual capital on the dependent variable (Business performance, or Ys) is 0.654, which showed that the Business performance had positive and high overall association with the four attributes of intellectual capital. The R2 is 0.428, suggesting that more than 40% of the variation of Business performance was explained by the four attributes. The F ratio, which explained whether the results of the regression model could have occurred by chance, had a value of 34.739 (p =0.00) and was considered significant.

Two models of regression analysis were applied to test the interaction terms between knowledge management and intellectual capital with the culture. The interaction term (culture as moderator) increased the R value to o.667, so it had an obvious moderation effect on the relationships between independent variables and dependent variable, i.e. business performance. (R2) which explains the variance of the endogenous variables, is 43.3%, in (Model II) superior to that of the model that does not include the interaction effect (Model I; R2 = 35.8%).

The interaction term (technology as moderator) increased the R value to o.654, so it had an obvious moderation effect on the relationships between independent variables and

dependent variable, i.e. business performance. (R2) which explains the variance of the endogenous variables, is 41.6%, in (Model II) superior to that of the model that does not include the interaction effect (Model I; R2 = 34.8%). To supports results of the two models of regression analysis Amos graphs were represented the direct and indirect effects of independent variables on dependent variable in the presence of culture and technology as moderators

4.9 SUMMARY

In summary, a good response rate was achieved (76.4%). For the survey, the test of non-response bias also demonstrated that there is no statistically significant difference between early and late response. As a result of that, the issue of non response bias did not significantly affect the generalization of the findings of this study. Factor analysis was conducted in order to test the construct validity of for all interval scale variables; Reliability was also tested for all interval scale variables to see how free it is from random error. Further, the researcher tested the assumptions of normality, linearity, and homoscedasticity and the results show that the assumptions were generally met. Standard multiple regression was conducted in order to investigate the relationships between Business Performance and sophistication of KM , and linear regression was conducted to investigate the relationship between Business Performance and IC benefits. All independent variables except environmental conditions were found to positively contribute to the sophistication of KM design.

Analysis of Variance (ANOVA) is used according to the respective objectives of the study.

Multiple regression analysis is used to examine dependent variable (Business Performance) with the independent variables (Knowledge Management and Intellectual Capital). On the other hand, the study applies regression to verify the moderation effects of (Culture and Technology) on the relationships between the dependent variable and independent variables .

.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.1 INTRODUCTION

This chapter includes five sections to examine the results further. They are: 1) summary of main findings; 2) implications for study; 3 limitation of the study; (4) recommendation for future research and; 5) conclusion.

5.2 SUMMARY OF MAIN FINDINGS

In general, this study has focused on the following questions:

1. Is there any relationship between knowledge management process (creation, sharing, and utilization) and business performance?

2. Is there any relationship between knowledge management content (tacit and explicit knowledge) and business performance?

3. Is there any relationship between intellectual capital (customer capital, human capital, structural capital, and relational capital) and business performance?

4. Does culture serve as moderat of the relationship between knowledge management process, knowledge management content, and intellectual capital and business performance?

5. Does technology moderate the relationship between knowledge management process, knowledge management content, and intellectual capital and business performance?

In the following section, each of these issues is discussed elaborately in terms of existing knowledge and the contribution of the findings in further understanding of this area. To sum up, the responses from 191 respondents are tabulated according to each variable, and the results are analyzed. The results are separated to four variables, the Knowledge Management, the Intellectual Capital, the moderates, which include (culture, technology), and the Business Performance. The results present the means and the percentage weight of respondents answering the items under each variable. Variables are measured on a five point Likert- typed scale ranging from 1 =Vstrongly disagree to 5 = strongly agree.

1) Explicit knowledge

Explicit knowledge (EK) has an overall mean of 4.108 which shows that the majority of respondents seem to indicate that they quite agree while expressing their opinion in the presence of advance knowledge in the Iraqi industrial plants. Overall rating shows that the mean for (EK1) is the highest (4.361) but the mean for (EK4) is the lowest (4.00). All items have a mean which is higher than the assumption test mean (3). The percentage weights of the five items of explicit knowledge are between (81.67% and 91.10%); this reveals high agreement of respondents on item contents.

2) Tacit Knowledge

Tacit Knowledge (TK) has an overall mean of 4.095. Overall rating shows that the mean for (TK5) is the highest (4.236) but the mean for (TK4) is the lowest (3.963). All items have a mean which is higher than the assumption test mean (3); the percentage weights of the five items of tacit Knowledge are between 81.1% and 91.6%. This reveals a high

agreement of respondents on item contents. Evidence seems to suggest that an organization has employees with high experiences, skills, has clear vision and strategic direction, and has excellence research and development efforts.

3) Knowledge Creating

Knowledge Creating (KC) has an overall mean of 3.969. Overall rating shows that the mean for (KC1) is the highest (4.079) but the mean for (KC3) is the lowest (3.859). All items have a mean which is higher than the assumption test mean (3). The percentage weights of the five items of Knowledge Creating are between (70.16% and 81.1%); this reveals the high agreement of respondents on item contents. Evidence seems to suggest that the organization has processes for acquiring knowledge about customers, has processes for generating new knowledge from existing knowledge, and has processes for observing knowledge from individual and other partners.

4) Knowledge Sharing

The results show that Knowledge Sharing (KS) has an overall mean of 4.069 which shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of knowledge sharing in the Iraqi industrial plants. Overall rating shows that the mean for (KS2) is the highest (4.173) but the mean for (KS3) is the lowest (3.953). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items of Knowledge Sharing are between (80.10% and 83.77%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that the organization has processes for exchanging

knowledge between individual (employees) and for distributing same throughout the organization, and knowledge sharing, skills and competences are appreciated, appropriately recognized and rewarded.

5) Knowledge Utilization

Knowledge Utilization (KU) with an overall mean of 3.950 shows that the majority of respondents seem to indicate that they are quite agree when expressing their opinion in the presence of knowledge Sharing in the Iraqi industrial plants. Overall rating shows that the mean for (KU1)' is the highest (4.047) but the mean for (KU5) is the lowest (3.923). All items have a mean which higher than assumption test mean (3); the percentage weights of the five items are between (71.73% and 82.72%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that the organization has processes for applying knowledge learned from past experiences, success, stories and mistakes and has processes for using knowledge in development of new product and services. Thus, organization uses knowledge to adjust vision, mission and strategic direction.

6) Human Capital

The results indicate that Human Capital (HC) has an overall mean of 3.955 showing that the majority of respondents seem to indicate that they agree while expressing their opinion in the presence of Human Capital in the Iraqi industrial plants. Overall rating shows that the mean for (HC1) is the highest (4.073) and the mean (HC3) is the lowest (3.864). All items have a mean which is higher than assumption test mean (3); the

percentage weights of the five items of Human Capital are between (72. 3% and 80.7%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that the organization has a highly component management team, employees are brilliant, innovative and creative, experts in their jobs and quickly adapt to changes made by management.

7) Customer Capital

The five items of Customer Capital (CC) have an overall mean of 3.869, showing that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of Customer Capital in the Iraqi industrial plants. Overall rating shows that the mean for (CC2) is the highest (3.995) but the mean for (CC3) is the lowest (3.764). All items have a mean which is higher than assumption test mean (3); the percentage weights of Customer Capital items are between (69.7% and 78.1%) that reveal higher agreement of respondents on item contents. Evidence seems to suggest that the organization key values and provides total commitment to customers and uses customer feedbacks electively in effort to provide quality products and services to our customer. It is also seeking to translate knowledge about the customer to design products and has programs to update knowledge and information about our customers.

8) Relational Capital

Relational Capital (RC) has an overall mean of 3.916 which shows that the majority of respondents seem to indicate that they quite agree while expressing their opinion in the presence of Relational Capital in the Iraqi industrial plants. Overall rating shows that the

mean for (RC1) is the highest (4.037) but the mean for (RC4) is the lowest (3.853). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items of Relational Capital are between (71.2% and 79.6%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that the organization suppliers have performed extremely well in supporting my organization to achieve our targets; the organization uses feedbacks and recommendations from vendors to improve products and services for our customer and to maintain competitiveness in the market.

9) Structural Capital

Results show that an overall mean of Structural Capital (SC) is 3.984, showing that the majority of respondents seem to indicate that they quite agree while expressing their opinion in the presence of Structural Capital in the Iraqi industrial plants. Overall rating shows that the mean for (SC1) is the highest (4.099) but the mean for (RC4) is the lowest (3.890). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items of Structural Capital are between (82.2% and 73.8%); this reveals high agreement of respondents on item contents. Evidence seems to suggest that policies, procedures and instructions are stored in manuals and databases in the organization. Knowledge and information in the organization are embedded in our employee's system and procedures, and the organization has an information system compatible with the supplying system, selling and buying.

10) Culture

The results show that Culture has an overall mean of 4.268 showing that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the importance of Culture in the Iraqi industrial plants. Overall rating shows that the mean for (C1) is the highest (4.361) but the mean for (C5) is the lowest (4.152). All items have a mean which is higher than assumption test mean (3) and the percentage weights of the culture five items are between (83.8% and 92.1%) ; this reveals high agreement of respondents on item contents. Evidence seems to suggest that employees understand the importance of knowledge and intellectual capabilities to corporate success, the benefits of sharing knowledge and experience outweigh the costs, and high levels of participation are expected in capturing and sharing knowledge and experience.

11) Technology

The results show that technology has an overall mean of 4.169 shows that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the importance of Technology in the Iraqi industrial plants. Overall rating shows that the mean for Uses technology that allows employees to search for new knowledge (T4)' is the highest (4.257) but the mean for 'Uses technology that allows employees to collaborate with other person inside and outside in order to acquire and share knowledge (T3)' is the lowest (4.163). All items have a mean which is higher than assumption test mean (3); the percentage weights of the five items are between (84% and 88%) ; this reveals high agreement of respondents on item contents. Evidence seems to suggest that, Uses of technology allows employees to search for new knowledge, allows it to monitor

166

its industry environment and competition, and allows it to retrieve and use knowledge in its today's operations.

12) Innovation Performance

Innovation Performance has an overall mean of 3.909 showing that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of Innovation Performance in the Iraqi industrial plants. Overall rating shows that the mean for (LP1) is the highest (4.068) but the mean for (LP5) is the lowest (3.832). All items have a mean which is higher than the assumption test mean (3). The percentage weights of the five items are between (69.10% and 80.10%); this reveals the majority of respondents agreeing on item contents.

13) Rate of new product development

The results assume that the rate of new product development has an overall mean of 3.867, showing that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of the rate of new product development in the Iraqi industrial planets. Overall rating shows that the mean for (NP5) is the highest (3.979) but the mean for (NP3) is the lowest (3.712). All items have a mean which is higher than the assumption test mean (3). The percentages weights of the five items are between (67.50% and 79.60%); this reveal high agreement of respondents on item contents.

14) Customers Satisfaction

Customers Satisfaction has an overall mean of 3.920 showing that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of Customers Satisfaction in the Iraqi industrial plants.

Overall rating shows that the mean for (CP1) is the highest (4.063) but the mean for (CP2) is the lowest (3.859). All items have a mean which is higher than the assumption test mean (3). The percentage weights of the five items of customer satisfaction are between (71.20% and 80.10%); this reveals to the high agreement of respondents on item contents.

15) Customer's Retention

The results show that customer's retention has an overall mean of 4.939 showing that the majority of respondents seem to indicate that they quite agree when expressing their opinion in the presence of customers' retention in the Iraqi industrial plants. Overall rating shows that the mean for (PP5) is the highest (4.010) but the mean for (CP3) is the lowest (3.853). All items have a mean which is higher than the assumption test mean (3). The percentage weights of the five items are between (71.70% and 81.70%); this reveals the high agreement of respondents on item contents.

The correlations between knowledge creation, and knowledge utilization and Business performance are positive and are significant at the 0.01 level (2-tailed), whereas the correlations between knowledge sharing and Business performance are positive and

significant at the 0.05 level (2-tailed). These results support hypothesis (1). The results of the regression analysis confirm the above correlation results; the R of independent variables (Three factors, X_1 to X_3) on the dependent variable (Business performance, or Ys) is 0.556, which shows that the Business performance has a positive and overall high association with the three attributes. The R^2 is 0.310, suggesting that more than 30% of the variation of Business performance is explained by the three attributes of the knowledge management process. The F ratio, has a value of 27.948 (p =0.00) and is considered significant. As far as the relative importance of the three knowledge management process attributes is concerned, knowledge creation, B_1=0.358, p=0.000) carries the heaviest weight for Business performance, followed by knowledge utilization, B_3=0.347, p=0.000 and knowledge sharing, B_2=-0.170, p=0.021. Thus, the results of multiple regression analysis agree to hypothesis 1.

The correlations between explicit knowledge and Business performance are positive and significant at the 0.01 level (2-tailed), whereas the correlation between tacit knowledge and Business performance is positive but not significant at the 0.05 level (2-tailed). However, these results support hypothesis 2 wherein a relationship is there between tacit knowledge and Business performance, but rejected for hypothesis 1 in case of relationship between explicit knowledge and Business performance. The results of the regression analysis indicate that the R of independent variables (two factors, X_1 and X_2) on the dependent variable (Business performance, or Ys) is 0.274, which shows that the Business performance has a positive but overall low association with the two attributes.

The R^2 is 0.074, suggesting that only 7.4% of the variation of Business performance is explained by the two attributes. The F ratio, has a value of 7.635 (p =0.001) and is considered significant. As far as the relative importance of the two Knowledge management content attributes is concerned, Tacit knowledge, B_2=0.285, p=0.001) carries the heaviest weight for Business performance, followed by Explicit knowledge, B_1=-0.019, p=0.289. In conclusion, the results of multiple regression analysis agree to hypothesis 2, that there is a relationship between the selected knowledge management content and Overall Business performance.

The results of the regression analysis shows that the R of independent variables of intellectual capital on the dependent variable (Business performance, or Ys) is 0.654, which shows that the Business performance has a positive and overall high association with the four attributes of intellectual capital. The R^2 is 0.428, suggesting that more than 40% of the variation of Business performance is explained by the four attributes. The F ratio, which explains whether the results of the regression model could have occurred by chance, has a value of 34.739 (p =0.00) and is considered significant.

As far as the relative importance of the four intellectual capital attributes is concerned, customer capital, B_2=0.435, p=0.000) carries the heaviest weight for Business performance, followed by relational capital, B_3=0.339, p=0.000, human capital, B_1=0.005, p=0.943, and structural capital, B_4=-0.167, p=0.130. In conclusion, the results of multiple regression analysis agree to hypothesis 3, that there is a relationship between intellectual capital attributes and Overall Business performance.

Two models of regression analysis are applied to test the interaction terms between knowledge management and intellectual capital with culture. The interaction term (culture as moderator) increases the R value to o.667, so it has an obvious moderation effect on the relationships between the independent variables and dependent variable, i.e. business performance. (R^2) which explains the variance of the endogenous variables, is 43.3%, in (Model II) superior to that of the model that does not include the interaction effect (Model, I; $R^2 =$ 35.8%). These results support hypothesis 4.

The interaction term (technology as moderator) increases the R value to o.654, so it has an obvious moderation effect on the relationships between the independent variables and the dependent variable, i.e. the business performance (R^2), which explains the variance of the endogenous variables, is 41.6%, in (Model II) superior to that of the model that does not include the interaction effect (Model I; $R^2 =$ 34.8%).These results support hypothesis 5.

To support results of the two models of regression analysis, Amos graphs are used to represent the direct and indirect effects of independent variables on dependent variable in the presence of culture and technology as moderators. In the following discussion, results of each objective are reviewed and compared with previous literature.

Objective 1: To investigate the relationship between knowledge management process (creation, sharing, and utilization) and business performance.

This study shows that knowledge management process has been considered as one of the

important factors that have an impact on the business performance; it explains that knowledge management process may affect business performance through creation, sharing, and utilization, which can be led to use the organizational knowledge accomplishing the organizational goals. In another word, knowledge management process has a positive effect on business performance due to the impact it has on the creation, sharing, and utilization on the innovation and also for the rate of new product development, customer satisfaction and customer's retention.

Objective 2: To investigate the relationship between knowledge management content (tacit and explicit knowledge) and business performance.

This study shows that knowledge management content leads to better business performance and has been considered one of the important factors which have an impact on business performance. Also, it explains that knowledge management content may affect business performance through converting the tacit knowledge to explicit knowledge and affect positively business performance by improving the innovation, rate of new product development, customer's satisfaction and customer's retention.

Objective 3: To investigate the relationship between intellectual capital (customer capital, human capital, structural capital, and relational capital) and business performance.

The study shows that intellectual capital has a potential to improve the business performance. It affects the skills, abilities and attitude of employees which, in turn, affects the performance of the organization. Intellectual capital which includes customer

172

capital, human capital, structural capital, and relational capital has a strong impact on the business performance by improving the innovation, rate of new product development, customer satisfaction, customer retention and operating cost.

Objective 4: To investigate the moderator effect of culture on the relationship between (knowledge management process, knowledge management content, and intellectual capital) and business performance.

A positive relation is shown between knowledge management (processes and content) and business performance as well as between intellectual capital and business performance. According to previous studies, there is little known about the culture moderator role in the relationships above. So this study suggests that culture as moderator in the relationships among knowledge management (processes and content), and intellectual capital and business performance, make this relation clearer. And this study shows that culture can be put forward firmly to achieve its organizational goals.

Objective 5: To investigate the moderator effect of technology on the relationship between (knowledge management process, knowledge management content, and intellectual capital) and business performance.

A positive relationship is shown between knowledge management (processes and content) and business performance as well as between intellectual capital and business performance. According to previous studies, there is little known about the technology moderator role in the relationships above. So this study suggests that technology as

moderator and the knowledge interrelationships make this relation clearer. Moreover, the study shows that technology can be put forward to achieve its organizational goals.

5.3 IMPLICATIONS FOR RESEARCH

The implications of this research for the sake of current and continuous research efforts within knowledge management and intellectual capital are that the large size of companies can be divided into methodological issues and theoretical issues. Methodological issues are concerned with the implications of the research design for future empirical efforts, while theoretical issues are concerned with the specific implications of the research's findings for existing theory related to Knowledge -based theory, and large sized companies.

5.3.1 Methodological Issues

Apart from a theoretical contribution, this study also contributes to the methodological perspective. These methodological contributions are discussed below:

5.3.2 Validation of the Measurement of Knowledge Management

Many previous studies have examined the KM sophistication maturity with performance by using the knowledge process and content in order to reflect the KM sophistication. Nonaka (1994) uses two dimensions of KM a namely the process and content sophistication. In this study, large-sized companies of Iraq have rendered a methodological contribution to this study in validation of the KM instrument for developing countries and large-size context. The Cronbach's alpha statistic for overall scale of knowledge management is (0.784), which is generally accepted as representing

high reliability (Sekaran& Bougie., 2010). As hypothesized, results of this study reveal that all KM dimensions are important to improve business performance.

5.3.3 Validation of the Measurement of Intellectual Capital

Many studies have adopted instruments to examine the effect of the intellectual capital elements (Human capital, Customer capital, Structural capital and Relation capital) on business performance (Bontis et al., 2000; Roos & Edvinsson, 1997). In this study, the instrument tested is large companies of a developing country. The Cronbach's alpha statistic for overall scale of intellectual capital variable is 0.748, (Sekaran& Bougie., 2010). This instrument can be used for further studies in support of the relationship between intellectual capital and business performance design in Iraqi companies.

5.3. 4 Validation of the Measurement of Business Performance

Many studies have adopted typology to identify business performance. The respondents are asked to choose a case that suits their company (Carmeli, 2004). Others use Likert-type or semantic differential scale to identify the strategic choice. This study chooses Likert-type scale to identify the 181 popular of the sample companies, which are industry companies in Iraq.

After pre-testing the instrument with listed companies' managers, the innovation, rate of new product development, customer's satisfaction and customer's retention are used to measure business performance. After pre-testing the instrument with Iraqi companies', respondents are asked five questions in relation to measuring business performance to indicate using a five-point scale to measure the extent to which their companies' business

strategies incline to one or the other statements. The Cronbach's alpha statistic for overall scale of business performance is 0.858, and generally accepted as representing high reliability (Sekaran& Bougie., 2010). Results of this study indicate the important of the culture as a moderator in relating between Knowledge Management, Intellectual Capital and Business Performance. The instruments can be used in further studies in other developing countries.

5.3 4 Validation of the Measurement of organization culture

Many studies have been adopted to measure the effect of organization culture on business performance in developed countries at large business context. However, the instruments used to measure business performance in the context of developing countries such as Iraq are limited and often restricted to conventional financial statement frameworks. After pre-testing the instrument with Iraqi companies', respondents are asked five questions in relation to measuring business performance to indicate using a five-point scale to measure the extent to which their companies' business strategies incline to one or the other statements.

The Cronbach's alpha statistic for overall scale of organization culture is 0.703, and generally accepted as representing high reliability (Sekaran& Bougie, 2010). Results of this study indicate the importance of the culture as a moderator in relating between knowledge management process, knowledge management content, and intellectual capital and business performance. The instruments can be used in further studies in other developing countries.

5.3. 5 Validation of the Measurement of Technology

A number of researchers have adopted (Nonaka, Ikujiro & Takeuchi, Hirotaka (1994) and Stewart's (1997) model to examine to what extent technology moderators the relationship between knowledge management process, knowledge management content, intellectual capital and business performance. The results of the study indicate that the model is valid, to represent perceived technology benefits among Iraqi companies, and this can be considered as a methodological contribution for future studies. The Cronbach's alpha statistic for overall Technology benefits variable is 0.722, and generally accepted as representing high reliability (Sekaran& Bougie, 2010). The instruments can be used in further studies in other developing countries.

5.4 LIMITATION OF THE STUDY

There are many limitations that need to be addressed in this research. Firstly, the sample is only from the Iraqi industrial companies in Iraq and thus may not represent all the companies in the country. Furthermore, 191 companies that have responded to the survey, and this may affect generalizing findings. However, in this study, the response rate of 95 per cent obtained is relatively good for survey studies, and all observed findings are consistent with the results from previous studies involving larger-sized samples. Such a consistency apparently suggests that validity and reliability of these findings are not adversely affected by the size of the sample and hence there is no reason to believe that the generalization is serious. Furthermore, future studies could examine the relationship presented in this study to see if it is also applicable to the other developing countries.

Secondly, it is important to note that this study is co-relational in nature. This means that causality should not be inferred. The study suggests that, for example, KM is "caused" to improve business performance. Indeed, it is also possible that KM design affects managerial sophistication. However, since the time order of events has been established through literature, the influence of knowledge management on business performance is acceptable. Thirdly, this study is cross-sectional in nature; longitudinal studies may be adopted by future studies to fill up the unexplored research gap by exploring the fundamental issue of how knowledge management and intellectual capital could affect business performance in Iraqi industry. Fourthly, this study only examines the relationships between knowledge management, intellectual capital and business performance, and should examine other factors that may affect the sophistication of business performance such as culture and technology. The fifth limitation relates to potential "self-reporting bias". This is a common problem when data are collected from the companies regarding their assets or other confidential information such as business strategies. Furthermore, most of the existing literatures on IT are only confined to a specific technological sophistication but not in other disciplines. This limitation may have affected the findings since it is based on survey data and may be subject to disclosure desirability bias. However, disclosure desirability bias (consciously or unconsciously) creates a favorable impression), agreement bias (the respondent tends to agree with all questions), and deliberate falsification which are common types of respondent error in survey studies. The researcher considers the present study an attempt to shed light on the nature of the relationship between knowledge management and intellectual capital and

the effect of this relationship on business performance on Iraqi companies.

The researcher considers that the results of this study have provided useful insight into the evaluation of the relationship between knowledge management, intellectual capital and business performance of industry in Iraq that provide a starting point for future research. Eventually, understanding the importance of studying the nature of the relationship between knowledge management and intellectual capital and the effect of this relationship on business performance on Iraqi companies, it appears that findings of this study along with its limitation pave the way for future research in knowledge management areas. Other related issues still require to be investigated.

Future research in the area of knowledge management can be extended in a number of directions. Firstly, it can investigate other factors that may affect on business performance in Iraqi companies and other countries as well. Secondly, it can investigate other factors that may affect business performance. Thirdly, it can investigate the direct impact of sophistication by its four dimensions of companies' performance of Iraq companies and other countries. So it would be interesting to conduct the research using other approaches such as qualitative as it may give better in-depth knowledge of the issues discussed in this study. In addition, it would be interesting to conduct the research in other countries. Longitudinal approach is also important as the perception and management of benefits and constraints is likely to change over time. Alternatively, this study could be replicated in a few years' time to examine how understanding the importance of studying the relationships between the nature of the relationship between

knowledge management, intellectual capital and the effect of this relationship on business performance on Iraqi companies benefits. Findings of this study along with its limitation have paved the way for future research in knowledge management areas.

5.5   RECOMMENDATION FOR FUTURE RESEARCH

This study has provided only a small portion of an idea regarding business performance in the Iraqi industry. Hence, it would be beneficial for future research to consider the following suggestions:

1. Expand the study into another sector to enhance the consistency of results.

2. Include other drivers to measure business performance so that this increases the accuracy of understanding the drivers that could impact the business performance.

5.6 CONCLUSIONS

The five objectives in this study have been achieved whereby the results have shown that knowledge management process (creation, sharing, and utilization), knowledge management content (tacit and explicit knowledge) and intellectual capital (customer capital, human capital, structural capital, and relational capital) have a strong influence on the business performance of Iraqi industry. However, the researcher hopes that more research will be conducted in the future in order to gain a whole understanding of knowledge management (content and processes) and intellectual types as other practices may also contribute to organization performance by using other moderator variables such as organizational structure, leadership, and human recourse management.

This thesis has examined five main hypotheses concerning the relationship between knowledge management and intellectual capital and the effect of this relationship on business performance on Iraqi companies. It has made an important contribution by providing an increased understanding about the role of knowledge management to improve business performance in large-sized companies and the effect of culture and technology, which has received little attention in the literature. It has used multiple analyses in this study, and a correlation coefficient which measures the strength of a line between the five variables as well as a correlation coefficient measuring the strength of a line between two variables. In the knowledge management process, namely (knowledge creation, knowledge sharing and knowledge utilization) and business performance, the correlations between knowledge creation, and knowledge utilization and Business performance are positive and also significant at the 0.01 level. A correlation between knowledge sharing and business performance are positive and are significant at the 0.05 level. Therefore, the study indicates that the correlations between knowledge creation, and knowledge utilization and Business performance are higher than knowledge sharing and business performance.

In order to further support hypothesis 1 the correlations between knowledge creation, and knowledge utilization and business performance are positive and significant at the 0.01, whereas correlations between knowledge sharing and business performance are positive and significant at the 0.05 level. Therefore, the study indicates that the correlations between knowledge creation, and knowledge utilization and Business performance are higher than that between knowledge sharing and Business performance. However, these

results revealed support for hypothesis 1. The correlations between explicit knowledge and business performance were positive and significant at the 0.01 level, whereas the correlation between tacit knowledge and business performance was positive but not significant at the 0.05 level.

However, these results revealed support for hypothesis 2 in case of relationship between tacit knowledge and Business performance, but reject for hypothesis 1 in case of relationship between explicit knowledge and Business performance. The correlations between all attributes of intellectual capital and Business performance were positive and were significant at the 0.01 level. These results support hypothesis 3. Moreover, the interaction term (culture as moderator) increases the R value to 0.667, so it has an obvious moderation effect on the relationships between the independent variables and dependent variable, i.e. business performance. Moreover, the interaction term (technology as moderator) increases the R value to 0.654, so it has an obvious moderation effect on the relationships between the independent variables and dependent variable, i.e. business performance. Overall, the evidence suggests that the factors identified in the present study have effect on business performance. So, more research requires to be carried out to examine other factors that can possibly have an effect on business performance.

5.7 SUMMARY

This chapter summarizes findings that have been obtained from the data analysis. The Statistical Package for Social Science (SPSS) software (ver. 17), and Analysis of Moment

Structure (AMOS Ver. 5.) have been employed to carry out the analysis using the data collected from the questionnaire. The results of the regression analysis show that the R of independent variables of knowledge management and intellectual capital on the dependent variable business performance has a strong relationship. Two models of regression analysis are applied to test the interaction terms between knowledge management and intellectual capital with culture and technology. These results support all research hypotheses to support results of the two models of regression analysis (AMOS) graphs which represent the direct and indirect effects of independent variables on dependent variable in the presence of culture and technology as moderators.

REFERENCES

AL-Ani, M. (2004). The reality of Iraq's industry. *The International Arab Journal of Information Technology*, 3(1), 24-45.

Alavi, M. (2000). Managing organizational knowledge *Framing the domains of IT management research: Glimpsing the future through the past* (pp. 15-28): Pinnaflex Educational Resources, Cincinatti, OH.

Alavi, M., & Leidner, D. E. (1999). Knowledge management systems: issues, challenges, and benefits. *Communications of the Association for Information Systems*, 1(7), 1-37.

Alavi, M., & Leidner, D. E. (2001). Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS quarterly*, 25(1), 107-136.

Alessandria, G. (2004). International deviations from the law of one price: the role of search frictions and market share. *International Economic Review*, 45(4), 1263-1291.

Allee, V. (2000). The value evolution: addressing larger implications of an intellectual capital and intangibles perspective. *Journal of Intellectual Capital*, 1(1), 17-32.

Allee, V. (2003). *The future of knowledge: Increasing prosperity through value networks.* US: Butterworth-Heinemann.

AL-Mayali, H. (2009). Investment in intellectual capital. *Journal the AL-Qadisiyah of the administrative & economic science*, 9(4), 30-45.

Amir, E., & Lev, B. (1996). Value-relevance of nonfinancial information: The wireless communications industry. *Journal of accounting and economics*, 22(1-3), 3-30.

Ancori, B., Bureth, A., & Cohendet, P. (2000). The economics of knowledge: the debate about codification and tacit knowledge. *Industrial and Corporate Change*, 9(2), 255.

Andersen, T. J., & Foss, N. J. (2005). Strategic opportunity and economic performance in multinational enterprises: The role and effects of information and communication technology. *Journal of International Management*, 11(2), 293-310.

Andriessen, D. (2001). Weightless wealth: four modifications to standard IC theory. *Journal of Intellectual Capital*, 2(3), 204-214.

Andriessen, D., Tissen, R., & Tissen, R. J. (2000). *Weightless Wealth: Finding your real value in a future of intangible assets.* Londan: Financial Times/Prentice Hall.

Anthony, R. N. (1998). *Management control systems.* Irwin: McGraw-Hill.

Arkolakis, C. (2008). Market penetration costs and the new consumer's margin in international trade: National Bureau of Economic Research Cambridge, Mass., USA.

Arrow, K. (1971). *Essays in the Theory of Risk Bearing.* Markham: Chicago-IL.

Arrow, K. J. (1984). *Collected papers of Kenneth J. Arrow: 'Information and economic behavior*: Cambridge University Press.

Atkins, J. R., & Turner, D. S. (2006). Upgrade stakeholder service by changing your agency's organizational culture. *ITE journal*, 76(12), 30.

Bansler, J. P., & Havn, E. (2004). Technology-use mediation: Making sense of electroniccommunication in an organizational context. *Scandinavian Journal ofInformation System, 16* 57-84.

Barclay, R. & Murray P. (1997), What is knowledge management? Knowledge Praxis. Retrieved April 16, 2008, from http://www.media-access.com/whatis.html.

Barley, S. R. (1990). The alignment of technology and structure through roles and networks. *Administrative science quarterly, 35*(1), 61-103.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management, 17*(1), 99.

Barney, J. B. (1986). Strategic factor markets: expectations, luck, and business strategy. *Management Science, 32*(10), 1231-1241.

Barney, J. B. (1997). *Gaining and Sustaining Competitive Advantage*. MA: Addison b Wesley.

Barney, J. B. (2002). *Gaining and sustaining competitive advantage*. NJ: Prentice Hall.

Bartlett, C. A., & Ghoshal, S. (1998). *Managing across borders: The transnational solution (2nd Ed.)*. London: Random House.

Bennet, D., & Bennet, A. (2008). Engaging tacit knowledge in support of organizational learning. *VINE, 38*(1), 72-94.

Bhardwaj, M., & Monin, J. (2006). Tacit to explicit: an interplay shaping organization knowledge. *Journal of Knowledge Management, 10*(3), 72-85.

Bils, M. (1989). Pricing in a customer market. *The Quarterly Journal of Economics, 104*(4), 699-718.

Block, L. (2003). The leadership-culture connection: an exploratory investigation. *Leadership & Organization Development Journal, 24*(6), 318-334.

Bohn, J. G. (2002). The relationship of perceived leadership behaviors to organizational efficacy. *Journal of Leadership & Organizational Studies, 9*(2), 65.

Boisot, M. (2002). The creation and sharing of knowledge. *The strategic management of intellectual capital and organizational knowledge*, 65-79.

Bontis, N. (1996). There's a price on your head: managing intellectual capital strategically. *Business Quarterly, 60*, 40-78.

Bontis, N. (1999). Managing organizational knowledge by diagnosing intellectual capital: framing and advancing the state of the field. *International Journal of Technology Management, 18*(5), 433-462.

Bontis, N. (2001). CKO wanted-evangelical skills necessary: A review of the chief knowledge officer position. *Knowledge and Process Management, 8*(1), 29-38.

Bontis, N. (2001b). Assessing knowledge assets: a review of the models used to measure intellectual capital. *International Journal of Management Reviews, 3*(1), 41-60.

Bontis, N. (2002). *World congress on intellectual capital readings*. Boston: Butterworth-Heinemann.

Bontis, N., Chua, W., & Richardson, S. (2000). Intellectual capital and the nature of business in Malaysia. *Journal of Intellectual Capital, 1*(1), 85-100.

Bose, R. (2002). Knowledge Management Capabilities & Infrastructure for ECommerce. *Journal of Computer Information Systems, 42*(5), 40 -50.

Broohing, A. (1996). *Intellectual capital: Core asset for the third millennium enterprise*. New York: International Thomson Business Press.

Brooking, A., & Motta, E. (1996). *A taxonomy of intellectual capital and a methodology for auditing it*. Paper presented at the 17th Annual National Business Conference, Hamilton, Ontario.

Caddy, I. (2000). Intellectual capital: recognizing both assets and liabilities. *Journal of*

Intellectual Capital, 1(2), 129-146.

Cameron, K. S., & Quinn, R. E. (1999). *Diagnosing and changing organizational culture*. New York: Addison-Wesley Publishing Company, Inc.

Cameron, K. S., & Quinn, R. E. (2006). *Diagnosing and changing organizational culture: Based on the competing values framework (Revised ed.)*. Reading, MA: Addison-Wesley.

Canibano, L., Garcia-Ayuso, M., & Sǔnchez, P. (2000). Accounting for intangibles: a literature review. *Journal of Accounting Literature, 19*, 102-130.

Carlsson, S., El Sawy, O., Eriksson, I., & Raven, A. (1996). *Gaining competitive advantage through shared knowledge creation: in search of a new design theory for strategic information systems*. Paper presented at the Proceedings of the Fourth European Conference on Information Systems, Lisbon, Portugal.

Carlucci, D., Marr, B., & Schiuma, G. (2004). The knowledge value chain: how intellectual capital impacts on business performance. *International Journal of Technology Management, 27*(6), 575-590.

Celaya, L. A. (1996). *The Relationship between Technophobia among the Manufacturing Workforce and the Age and Gender of Selected Workers*. Walden University.

Chehade, G., Mendes, D., & Mitchell, D. (2006). *Culture change for the analytical mind*. Strategic Finance, *87*(12), 11-14.

Choo, C. W., & Bontis, N. (2002). *The strategic management of intellectual capital and organizational knowledge*: Oxford University Press, USA.

Choo, C. W., & Bontis, N. (2002). *The strategic management of intellectual capital and organizational knowledge*: Oxford University Press, USA.

Christensen, C., Horn, M., & Johnson, C. (2008). *Disrupting class: How disruptive innovation will change the way the world learns*. New York: McGraw-Hill.

Coakes, E. (2003). *Knowledge Management: Current issues and challenges*. London: Idea Group Publishing.

Coelho, C., Ylvisaker, M., & Turkstra, L. (2005). *Nonstandardized assessment approaches for individuals with traumatic brain injuries*. Seminars in Speech & Language. *26*(4):223-241.

Coelho, G. M. (2005). *Sustainability of performance evaluation management systems model for individual organizations and supply chain*. Central Queensland University.

Cohen, W. & Levinthal, D. (1990). *Absorptive capacity: A new perspective on learning and innovation*. Administration Science Quarterly, *35*,128-152.

Collins, J., & Porras, J. I. (1997). *Built to last*. New York: HarperCollins.

Coogan, & Partners. (2006). . Business Wire. Retrieved June 21, 2007, from HighBeam Research at http://www.highbeam.com.

Cooke, R. A., & Rousseau, D. M. (1988). Behavioral norms and expectations. *Group & Organization Management, 13*(3), 245.

Cooke, R., & Lafferty, J. (1983). Level V: Organizational culture inventory (form I). *Plymouth, MI: Human Synergistics*.

Cross, R., Parker, A., Prusak, L., & Borgatti, S. P. (2001). Knowing what we know:- Supporting knowledge creation and sharing in social networks. *Organizational Dynamics, 30*(2), 100-120.

Curado, C. (2008). Perceptions of knowledge management and intellectual capital in the

banking industry. *Journal of Knowledge Management, 12*(3), 141-155.

Daft, R. I., & Marcic, D. (2001). *Understanding management (3rd ed.)*. Fort worth, USA: Harcourt College Publishers.

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science, 32*(5), 554-571.

Daft, R. L., & Macintosh, N. B. (1981). A tentative exploration into the amount and equivocality of information processing in organizational work units. *Administrative science quarterly, 26*(2), 207-224.

Davenport, T. H., & Glaser, J. (2002). Just-in-time delivery comes to knowledge management. *Harvard Business Review, 80*(7), 107.

Davenport, T. H., & Klahr, P. (1998). Managing customer support knowledge. *California Management Review, 40*(3), 195-208.

Davenport, T. H., & Prusak, L (1998). *Working Knowledge*. BA: Harvard Business School Press.

Davenport, T. H., and De Long, D. W. (1998). Successful knowledge management projects. *Sloan Management Review, 39*(2): 43-57.

Davis, A. (2002). Knowledge management: The four pillars of success. *Biopharm, 15*(7), 44-46.

De Gooijer, J., (2000). Designing a KM performance framework. *Journal of Knowledge Management 4*(4), 303–310.

Deal, T., & Kennedy, A. (1982). *Corporate cultures: The rites and rituals of corporate life*. Reading: Addison-Wesley Publishing Co.

Deloitte Consulting LLP. (2008). Gen Y-ers, baby boomers & technology: Worlds apart? Survey of Generational Differences around the Globe, 2008, International Association of Business Communicators.

Denise Hung et al (2007). Exploring the Intellectual, Social and Organizational Capitals at LA's BEST. *CRESST/University of California*, Los Angeles, 8(2),4.

Denison, D. R. (1983). Bringing corporate culture to the bottom line. *Organizational Dynamics, 13*(2), 98-109.

Denison, D. R. (2000). Organizational Culture. Can it be a Key Lever for Driving OrganizationalChange. Retrieved july 5, 2008 from: http://www.denisonconsulting. com/Libraries/Resources/Denison-2000-Key Lever.sflb.ashx

Denison, D. R. (2009). The consistency trait: Can organizations have too much of a good thing? *Denison Research Notes, 3*(2), 1-4.

Denison, D. R., & Mishra, A. K. (1995). Toward a theory of organizational culture and effectiveness. *Organizational Science, 6*(2), 204-223.

Dhanaraj, C, Lyles, M, Steensma, H., & Tihanyi, L. (2004). Managing tacit and explicit knowledge transfer in IJVs: The role of relational embeddedness and the impact on performance. *Journal ofInternational Business Studies, 35*, 428-442.

Dixit, A. K., & J. E. Stiglitz (1977). Monopolistic Competition and Optimum Product Diversity. *American Economic Review, 67*(3), 297–308.

Dixon, A. M. 2000. *Common knowledge: How companies thrive by sharing what they know*. Boston: Harvard Business School Press.

Doktor, R., Tung, R. L., & Glinow, M. A. V. (1991). Incorporating interpersona dimensions in management theory building. *Academy of Management*

Review,16(2), 259-261.

Drozd, L., & J. Nosal (2008).Understanding International Prices: Customers as Capital, Unpublished manuscript, Wisconsin.

Drucker, P. (1993), the Post-Capitalyst Society. New York: Harper Business.

Drucker, P. F. (1999). *Knowledge productivity*. PhD dissertation, University of Twent, Netherlands.

Earl M. (2001), Knowledge Management Strategies: Toward a Taxonomy. *Journal of Management Information Systems, 18*(1), 215-233.

Earl, M J (1998). *Management Strategies for Information Technology*. New York: Prentice-Hall.

Earl, M. (2002). Knowledge management strategies: Towards taxonomy. *Journal of Management Information System, 18*(1), 215-233.

Eaton, J., M. Eslava, M. Kugler, C. Krizan, and J. Tybout (2010). *A Search and Learning Model of Export Dynamics*, Unpublished manuscript.

EC (European Commission) (2008) 'InCaS: Intellectual Capital Statement – Made in Europe, European Intellectual Capital Statement Guideline' developed by the InCaS Consortium.

Edgeman, R. L. (2000). BEST business excellence: An expand view. *Quality Focus, 4*(4), 14-17.

Edvinsson, L., & Malone, M. S. (1997). *Intellectual capital – Realizing your company's true value by finding its hidden roots*. New York: Harper Business.

Edwards, Michael (1994). NGOs in the age of information. *IDS Bulletin, 25*(2), 117–240.

Eisenhardt, K. M., & Brown, S. L. (1998). Time pacing: Competing in markets that won't stand still. *Harvard Business Review*, 76(2), 59-67.

El Sawy, O. A.; Malhotra, A.; Gosain, S.; and Young, K. M. (1999). It-intensive value innovation in the electronic economy: Insights from Marshall industries. *MIS Quarterly. 23*(3), 305-335.

Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business. Capstone*: Oxford University Press.UK

Empson, L. (1999). The challenge of managing knowledge. *The Financial Times Mastering Series: Mastering Strategy, 4*, 8–10.

Epstien, M. J., & Wisner, P. S. (2001). Using a balanced scorecard to implement sustainability. *Environmental Quality Management, 1*, 1-10.

Ergeneli, A., Gohar, R., & Temirbekova, Z. (2007). Transformational leadership: Its relationship to culture value dimensions. *International Journal of Intercultural Relations, 31*(6), 703-724.

Farrell, J., & Klemperer, P. (2007). Coordination and lock-in: Competition with switching costs and network effects. *Handbook of industrial organization, 3*, 1967-2072.

Fernandes-Richards, L. (2005). *Strengthening the cohesive structure of organizational culture through branded office environments*. Washington State University Department of Interior Design.

Fernstrom, M., Tonkonogi, M., & Sahlin, K. (2004). Effects of acute and chronic endurance exercise on mitochondrial uncoupling in human skeletal muscle. *The Journal of Physiology, 554*(3), 755-763.

Fey, C. F., & Denison, D. R. (2003). Organizational culture and effectiveness: can

American theory be applied in Russia? *Organization science*, 686-706.

Firestone, J. M., & McElroy, M. W. (2003). *Key issues in the new knowledge management. Boston.* MA: Butterworth-Heinemann.

Flanagin, A. J. (2000) Social pressures on organizational website adoption. *HumanCommunication Research, 26*, 618–46.

Foos, T., Schum, G. & Rothenberg, S. (2006). Tacit knowledge transfer and the knowledge disconnect. *Journal of Knowledge Management, 10*, 6-18.

Foreman, S. (1997). IC and the healthy organization. In E. Scholes (Ed.) Gower handbook of internal communication (pp.18-26). Aldershot, Hampshire, UnitedKingdom: Gower.

Forley, K. (2001). Knowledge management key to collaboration. *InformationWeek , 857*, 78-82.

Foster, L., J. Haltiwanger, & C. Syverson (2009). *The Slow Growth of New Plants: Learning about Demand?*. University of Maryland.

Fukayama, F. (1995). *Trust: The Social Virtues and the Creation of Prosperity*. London: Hamish Hamilton.

Gold.A.H., Malhotra, A., & Segars, A. (2001). Knowledge management: An organizational capabilities perspective. *Journal of MIS, 18*(1), 185-214.

Grant, R. M. (1996). 'Prospering in dynamically-competitive environments: Organizational capability as knowledge integration'. *Organization Science, 7*, 375-387.

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic management journal, 17*, 109-122.

Grant, R. M., & Cibin, R. (1996). Strategy, structure and market turbulence: the international oil majors, 1970-1991. *Scandinavian Journal of Management, 12*(2), 165-188.

Gravett, L., & Throckmorton, R. (2007). *Bridging the generation gap*. Franklin Lakes, NJ: The Career Press.

Gunter, B. (2007). Technology trends: Work package V. Information Behavior of the Research of the future. A British Library/JISC Study, 2007. Retrieved on January 23, 2009 from: http://www.bl.uk.

Guzman, G. & Trivelato, L. (2008). Transferring codified knowledge: socio technical versus top down approaches. *The Learning Organization, 15*, 251-276.

Haanes, K., & Lowendahl, B. (1997). The unit of activity: towards an alternative to the theories of the firm. *Strategy, structure and style*, 201-218.

Hair, J. F. Jr., W. C. Black, B. J. Babin, R. E. Anderson and R. L. Tatham. 2006. *Multivariate Data Analysis*, 6th Edition, New Jersey: Prentice Hall, Pearson Education, Inc.

Hamza, S. (2009). Capturing tacit knowledge from transient workers: Improving the organizational competitiveness. *International Journal of Knowledge Management, 5*, 87-102.

Hansen, M., Nohria, N., & Tierney, T. (1999), What's your strategy for managing knowledge? *Harvard Business Review, 77*, 106-16.

Harlow, H. (2008). The effect oftacit knowledge on firm performance. *Journal of Knowledge Management, 12*, 148-163.

Harrison, S. and Sullivan, P.H. (2000). Profiting from intellectual capital: learning from

leading companies. *Industrial and Commercial Training. 32* (4), p139-148.

Herremans, I.M. and Isaac, R.G. (2004). Leading the strategic development of intellectual capital. *The Leadership & Organization Development Journal, 25* (2), p. 142-160.

Hickins, M. (1999). Xerox shares its knowledge. *Management Review, 88*(8), 40-45.

Hofstede, G. (1980). *Culture's consequences.* London, England: Sage Publications.

Hofstede, G., Neuijen, B., Ohayv, D. D., & Sanders, G. (1990). Measuring organizational cultures: A qualitative and quantitative study across twenty cases. *Administrative Science Quarterly, 35*(2), 286-316.

Holm, J. (2001). *Capturing the spirit of knowledge management.* Paper presented at the American Conference on Information Systems, Boston, MA.

Holsapple, C. W., and K. Joshi (2004) . A formal knowledge management ontology: Conduct, activities, resources, and influences. *Journal of the American Society for Information Science and Technology, 55*(7), 593-612.

Horwitch, M., & Armacost, R. (2002). Helping knowledge management be all it can be. *Journal of Business Strategy, 23*(3), 26-32.

Houghton, J., & Sheehan, P. (2000). A primer on the knowledge economy. Center for Strategic Studies, Footscray, Victoria, Australia.

Howard, L. W. (1998). Validating the competing values model as a representation of organizational cultures. *International Journal of Organizational Analysis, 6*(3), 231-250.

Hsiu-Yueh (Sonya) Hsu, (2006). *Knowledge Management And Intellectual Capital.* Dissertation for PhD. Southern Illinois University Carbondale.

Hsu, H. Y. (2006). Knowledge management and intellectual capital. PhD thesis, Southern Illinois University Carbondale.

Huang, D., Miyoshi, J., La Torre, D., Marshall, A., Perez, P., & Peterson, C. (2007). Exploring the intellectual, social and organizational capitals at LA's BEST, CSE Technical Report 714, University of California.

Huang, K.T. (1998). Capitalization on intellectual assets. *IBM Systems Journal, 37* (4), 570-584.

Hung,et al,(2005) Critical factors in adopting a knowledge management system for the pharmaceutical industry. *Industrial Management & Data Systems .105*(2), 164-183.

Insch, G., McIntyre, N., & Dawley, D. (2008). Tacit knowledge: A refinement and empirical test of the academic tacit knowledge scale. *The Journal of Psychology, 142,* 561-79.

Ismail M. B. (2007). *The influence of IC on the performance of Telekom Malaysia.* Unpublished PhD thesis, University of Teknologi Malaysia.

Ittner, C. D., & Larcker, D. F. (1998a). Are non-financial measures leading indicators of financial performance? An analysis of customer satisfaction. *Journal of Accounting Research, 36,* 1-35.

Jarnigan, C., & Slocum, J. W. (2007). Creating corporate culture through mythopoetic leadership. *Organizational Dynamics, 36*(3), 288-302.

Jennex, M. (2007). *Knowledge Management in Modern Organizations.* Pennsylvania: Idea Group Publishing.

Jennex, M. E. (2007), *Knowledge Management in Modern Organizations.* United Kingdom: San Diego University, USA.

Johansson, J., Davis, J., Scherneck, H. G., Milne, G., Vermeer, M., Mitrovica, J., et al. (2002). Continuous GPS measurements of postglacial adjustment in Fennoscandia 1. Geodetic results. *Journal of geophysical research, 107*(B8), 2157.

Johnson, J. J. (2000). *Differences in supervisor and non-supervisor perceptions of quality culture and organizational climate.* Public Personnel Management. Retrieved July 12, 2007 from: HighBeam Research at http://www.highbeam.com.

Johnson, W., Snyder, K., Anderson, R., & Johnson, A. (1996). School work culture and productivity. *The Journal of Experimental Education, 64,* 139-156.

Johnston, R., Fitzgerald, L., Silvestro, R. and Voss, C., (2001). Quality Measurement in Service Industries. *International Journal of Service Industry Management, 1*(2), 54-66.

Joia, L. & Lemos, B. (2010). Relevant factors for tacit knowledge transfer within organizations. *Journal of Knowledge Management, 14,* 410-427.

K.A. Kanagasabapathy & R. Radhakrishnan,(2004). Empirical Investigation of Critical Success factor and knowledge management structure for successful implementation of knowledge management system: a case study in Process industry.P,1-13. Department of Management Studies.Hindustan College of Engineering, Old Mahabalipuram, Padur- India.

Kannan, G. and Aulbur, W. G. (2004). Intellectual capital: Measurement effectiveness. *Journal of Intellectual Capital, 5*(3), 389-413.

Kaplan, R. S. (1998). *The tyrrany of the balanced scorecard: Measures that drive performance.* Boston: HBR Press.

Kaplan, R. S. (2000). The strategy-focused organization: How balanced scorecard companies thrive in the new business environment. Boston: HBS Press.

Kaplan, R. S. (2001). Strategic performance measurement and management in nonprofit organizations. *Nonprofit Management & Leadership, 11*(3), 353-370.

Kaplan, R. S., & Norton, D. P. (1996). *The balanced scorecard: Translating strategy into action.* Boston, MA: Harvard Business School Press.

Kaplan, R.S. & Norton, D.P. (2001). *The Strategy-focused Organization,* Harvard Business School Press, Boston, MA.

Kee, M. R. (2003). *Corporate culture makes a fiscal difference.* Industrial Management. Retrieved June 28, 2007, from: HighBeam research at http://www.highbeam.com.

King, A. W., & Zeithalm, C. P. (2003). Measuring organizational knowledge: A conceptual and methodological framework. *Strategic Management Journal, 24*(8), 763-772.

Kirkman, B. L., Lowe, K. B., & Gibson, C. B. (2006). A quarter century of culture's consequences: A review of empirical research incorporating Hofstede's cultural values framework. *Journal of international Business Studies, 37*(3), 285-320.

Klein, G. (2003). *Intuition at Work: Why Developing Your Gut Instincts Will Make You Better at What You Do.* New York: Doubleday.

Klemperer, P. (1995). Competition when Consumers have Switching Costs. *Review of Economic Studies, 62,* 515–539.

Kleshchelski, I., and N. Vincent (2009). Market Share and Price Rigidity. *Journal of Monetary Economics, 56*(3), 344–352.

Kotter, J. P., & Heskett, J. L. (1992). *Corporate culture and performance.* New York: Free Press.

Krueger, A. B., & Mueller, A. (2008). *The lot of the unemployed: A time use perspective*. Bonn, Germany: Princeton University, Industrial Relations Section.

Kuen-Hung Tsai a, Jiann-Chyuan Wang,(2008). External technology acquisition and firm performance: A longitudinal study. *Journal of Business Venturing, 23*, 91–112.

Lamberg, J., Tikkanen, H., Nokelainen, T., & Suur-Inkeroinen, H. (2009). Competitive dynamics, strategic consistency, and organizational survival. *Strategic Management Journal, 30*, 45-60.

Laudon, K.C. & Laudon, J.P. (2004). Essentials of Management. Retrieved on April 16, 2009, from http://www.computing. surrey.ac.uk/teaching/200607/csm21/Introduction.pdf.

Lee, S. W., & Yu, K. (2004). Corporate culture and organizational performance. *Journal of Managerial Psychology, 19*(4), 340.

Lev, B. (2001). *Intangibles – management, measuring and reporting*. New York: Brookings Institution Press.

Levin, R. C, A. K. Klevorick, R. R. Nelson and S. G. Winter (1987). *Appropriating the returns from industrial research and development*, Brookings Papers on Economic Activity. 783-820.

Levin, R.I., & Rubin, DS. (1998). *Statistics for Management, (7th Ed)*. NJ: Prentice Hall, Inc.

Leylan Fernandes&, Richards, (2005). *Strengthening the Cohesive Structure of Organizational Culture Through Branded Office Environments*. Published by Branded Office Environments.

Liebowitzs, J. (1999) *Building Organizational Intelligence: A Knowledge Management Primer*. Boca Raton, Fla.: CRC Press.

Louadi, M. & Tounsi, I. (2008). Do organizational memory and information technology interact to affect organizational information needs and provision?. *International Journal of Knowledge Management, 4*, 21-40.

Machlup, F. (1967). 'Theories of the fimi: Marginalist, behavioral, managerial', *American Economic Review, 57*,201-220.

Malhotra, Y. (2000). Knowledge Management for E-Business Performance: Advancing Information Strategy to Internet Time, information strategy. *The Executives Journal, 16*(4), 5-16.

Mallak, L. A. (2001). Understanding and changing your organization's culture. *Industrial Management, 43*(2), 18-24.

Maluenda, J. U. (2006). *Support effectiveness*. Unpublished master's thesis. Malardalen University.

Marr, B. (2004). Management consulting practice on intellectual capital: Editorial and introduction to special issu. *Journal of Intellectual Capital, 6*, (4), 496-473.

Marr, B., Schiuma, G. (2001). *Measuring and managing intellectual capital and knowledge assets in new economy organizations*. In Bourne, M. (ed.) Handbook of Performance Measurement. London: GEE Publishing Ltd.

Martin, J. (2002). *Organizational culture: Mapping the terrain*. Thousand Oaks, CA: Sage.

Massa, S. & Testa, S. (2009). A knowledge management approach to organizational competitive advantage: Evidence from the food sector. *European Management Journal, 27*, 129– 141.

Mayo, A. (2000). The role of employee development in the growth of intellectual capital. *Personnel Review, 29*(4), 521-33.

McAdam, R., Mason, B., & McCrory, J. (2007). Exploring the dichotomies within the tacit knowledAQge literature: Towards a process of tacit knowing in organizations. *Journal of Knowledge Management, 11,* 43-59.

McAdamR. & McCreedy S. (1999). A Critical Review of Knowledge Management Models. The Learning Organisation, M, 91-100.

McElroy M.W. (2002). Ethics, innovation and the open enterprise. *Knowledge Management Magazine, 6* (1), 15-18.

McGregor, J., Tweed, D., & Pech, R. (2004). Human capital in the new economy: devils bargain? *Journal of Intellectual Capital, 5*(1), 153-164.

McInerney, C. (2002). Knowledge management and the dynamic nature of knowledge. *Journal of the American Society for Information Science and Technology, 53*(12), 1009-1018.

McQueen, R. (1998). *Four views of knowledge and knowledge measurement.* 4th Americas Conference on Information Systems, Baltimore, 609-611.

Meeta Bhardwaj and John Monin,(2006)., Tacit to explicit: an interplay shaping organization knowledge. *Journal of Knowledge Management, 10* (3), 72-85.

Meliha Handzic , (2006). Knowledge Management in SMEs. *CACCI Journal, 1,* 1-11.

Merriam, S., Caffarella, R. & Baumgartner, L. (2006). *Learning in Adulthood: A Comprehensive Guide.* San Francisco: Jossey-Bass.

Michelle Lane Heinea, Varun Groverb;, Manoj K. Malhotrac, (2003)., "The relationship between technology and performance: a meta-analysis of technology models. Omega *31,* 189-204.

Mitchell, RJ.(1992).Testing evolutionary and ecological hypothesis using path analysis and structural equation modeling. *Functional Ecology. 6:*123-129.

Morgeson, F. P., DeRue, D. S., & Karam, E. P. (2010). Leadership in teams: A functional approach to understanding leadership structures and processes. *Journal of Management, 36*(1), 5-39.

Mulder, U. & Whiteley, A. (2007). Emerging and capturing tacit knowledge: a methodology for a bounded environment. *Journal ofKnowledge Management, 11,* 68-83.

Myers, P. S. (2004). *Making the Business Case for Knowledge Management,* ICEX International Capital Exchange white paper, available at http://www.icex.com.

Nakamura, E., and J. Steinsson (2008). *Price Setting in Forward-Looking Customer Markets.* Unpublished manuscript, Columbia.

Neely, A.; Adams, C.; Kennerley, M., (2002). The performance prism: The scorecard for measuring and managing business success. Financial Times. Prentice Hall London.

Nelson, R. E. (2001). On the shape of verbal networks in organizations. *Organization Studies, 22*(5), 797-823.

Nick Bontis, (2001). Assessing Knowledge assets: a review of the models use to measure intellectual capital.

Nikolaos, T. Dimitrios, M. & Georgios, T., (2008)., "Knowledge Management Enabler Factors and Firm Performance: An empirical research of the Greek medium and large firms." Kavala Institute of Technology, Department of Business

Administration. Agios Loukas, Kavala.

Nonaka, I (2002). *A dynamic theory of organizational knowledge creation. In C.W. Choo, & N. Bontis (Eds.)* The Strategic Management of Intellectual Capital and Organizational Knowledge. NY: Oxford University Press.

Nonaka, I. & Takeuchi, H., 1995, The knowledge-creating company: How Japanese Companies Create the Dynamics of Innovation. Oxford University Press, New York.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science, 5* (1), 14-37.

Nonaka, I. (1994). Overlapping organization: A Japanese approach to managing the innovation process. *California Management Review, 32* (3), 27-38.

O'Dell, C., & Grayson Jr., C. J. (1998). *If only we know what we know: The transfer ofinternal knowledge and best practice.* The Free Press.

O'Kane, P., Hargie, O., & Tourish, D. (2004). *Chapter 5: Communication without frontiers: The impact of technology upon organizations.* In D. Tourish, & O.Hargie (Eds.), Key issues in organizational communication (pp. 74-95). London: Routledge.

O'Reilly, M., Wathey, D., & Gelber, M. (2000). ISO 14031: Effective mechanism to environmental performance evaluation. *Corporate Environmental Strategy, 1*(3), 267-275.

OECD (2006). Meeting of the OECD Council at Ministerial Level. Retrieved on March 5, from: www.oecd.org/dda.

Ogbonna, O., & Harris, L. C. (2000). Leadership style, organizational culture and performance: Empirical evidence from UK companies. *International Journal of Human Resource Management, 11*(4), 766-788.

Ordonez de Pablos, P. (2004). Measuring and reporting structural capital: Lessons from European learning firms. *Journal of Intellectual Capital, 5*(4), 629-647.

Orlikowski, W. and Barley, S. (2001). Technology and institutions: What can research on information technology and research on organizations learn from each other? (electronic version). *MIS Quarterly, 25*(2), 145-165.

Otley, D. (1999). Performance management: A framework for management control systems research. *Management Accounting Research, 10*, 363-382.

Ouchi, W. G. (1981). Theory Z : *How American business can meet the Japanese challenge.* Reading, MA: Addison-Wesley Publishing Company.

Parikh, M. (2001). Knowledge Management Framework for High tech Research and Development. *Engineering Management Journal, 13*(3), 27-34.

Parker, A., Cross, R., & Walsh, D. (2001). Improving collaboration with social network analysis. *Knowledge Management Review, 4* (2), 24-29.

Pascale, R. T., & Athos, A. G. (1981). *The art of Japanese management.* New York, NY: Simon & Schuster.

Peltoniemi, M. and Vuori, E. (2005). *Competitive intelligence and co-evolution within an organisation population.* Proceedings of The 6th European Conference on Knowledge Management (ECKM 2005), Limerick, Ireland.

Pentland, B. T. (1995). Information systems and organizational learning: The social epistemology of organizational knowledge systems. *Accounting, Management & Information Technology, 5*(1), 1-21.

Peter Ingwersen, (2002). Information retrieval interaction." www.db.dk/pi/iri. Royal School of Library and information science department of information studies. 227-246. Taylor Graham Publishing.

Peters, T. J., & Waterman, R. H. (1982). *In search of excellence: Lessons from America's best run companies*. New York, NY: Harper & Row.

Pettigrew, A. M. (1979). On studying organizational cultures. *Administrative Science Quarterly, 24*(4), 570-581.

Polanyi, M. (1966). *The tacit dimension*. Garden City, NY: Doubleday.

Prahalad, C. K., & Doz, Y. L. (1987). *The multinational mission*. New York: Free Press.

Puntillo P.(2009). Intellectual Capital and business performance. Evidence from Italian banking industry". *Journal of Corporate Finance, 4*(12).

Quintas, PR, Lefrere, P, and Jones, G (1997). Knowledge management: a strategic agenda. *Long Range Planning, 30*, 3, 332.

Ravn, M. O., Schmitt-Grohe, S., & Uribe, M. (2010). Incomplete cost pass-through under deep habits. *Review of Economic Dynamics, 13*(2), 317-332.

Report of the Republic of Iraq Ministry of Industry and Minerals (2009). Available at: http://www.industry.gov.iq/ar/.

Report of united nations industrial development organization. (2009). survey of agro-industries in the republic of iraq a statistical report, available at http://www.unido.org/fileadmin/user_media/Services/PSD/BEP/FORESIGHT/Iraq/IraqStats.pdf.

Rhodes, J., Hung, R, Lien, B, Wu, C, & Lok, P. (2008). Factors influencing organizational knowledge transfer: implication for corporate performance. *Journal of Knowledge Management, 12*, 84-100.

Richard T. Herschel , Hamid Nemati & David Steiger, (2001),. " Tacit to explicit knowledge conversion: knowledge exchange Protocols." *Journal of Knowledge Management, 5*(1), 107-116.

Riordan, C. M., Vandenberg, R. J., & Richardson, H. A. (2005). Employee involvement and organizational effectiveness: An organizational system perspective. *Human Resource Management, 44*(4), 471-488.

Roberts, C. 2003. Uniqueness in definite noun phrases. *Linguistics and Philosophy, 26*(3), 287–350.

Rock, K., & Pratt, M. (2002). *Where do we go from here? Predicting identification among dispersed employees.* In B. Moingeon & G. Soenen (Eds.), Corporate and organizational identities,51-71. New York: Routledge.

Ron Sanchez & Linden, (2001). Tacit Knowledge" versus "Explicit Knowledge" Approaches to Knowledge Management Practice. Department of Industrial Economics and Strategy Frederiksberg, Denmark. 1-22.

Roos, J., G. Roos, N. Dragonetti, and L. Edvinsson. (1997). Intellectual Capital: Navigating the New Business Landscape. London: MacMillan Press.

Roos, J., Roos, G., Dragonetti, N. C., & Edvinsson, L. (1998). *Intellectual capital: navigating in the new business landscape.* New York: New York University Press.

Rosen, S. (1991). *Transactions costs and internal labor markets*. In O. E. Williamson and S. G. Winter (eds.). The Nature of the Firm. Oxford University Press, New York, 75-89.

Rotemberg, J. J., and M. Woodford (1991). Markups and the Business Cycle. *NBER Macroeconomics Annual, 6,* 63–129.

Ruiz-Mercader, J., o-Cerdan, A. L. M., Sabater-Sa'nchez, R. N. (2006). Information technology and learning: Their relationship and impact on organisational performance in small businesses. *International Journal of Information Management, 26,* 16-29.

Runy, L. A. (2007). Attributes of a high-performing culture. *Hospitals & Health Networks, 81*(4), 61-64.

Saint-Onge H. (1996). Tacit knowledge: The key to strategic alignment of intellectual capital. *Planning Review, 24* (2),10-14.

Sánchez, M.P., Castrillo, R. and Elena, S. (2005) *.Intellectual Capital within Universities. Challenges for the OEU Project: Some proposals.* Paper presented at the Observatory of European Universities (OEU) meeting. Budapest.

Schein, E. H. (1990). Organizational culture. *American Psychologist, 45*(2), 109-1.

Schein, E. H. (1992). *Organizational culture and leadership (2nd ed).* San Francisco, CA: Jossey-Bass.

Schein, E. H. (2000). *Sense and nonsense about culture and climate.* In N. M. Ashkanasy, C. P. Wilderom, & M. F. Peterson (Eds.), Handbook of organizational culture and climate (xxiii-xxx). Thousand Oaks, CA: Sage Publications.

Schein, E. H. (2004). *Organizational culture and leadership (3rd ed).* San Francisco, CA: Jossey-Bass.

Schn, D, A. (1983). *The Reflective Practitioner: How Professionals Think in Action.* NY: Basic Books.

Schubert, P., Lincke, D., & Schmid, B. (1998). *A global knowledge medium as a virtual community: The NetAcademy concept.* Proceeding of the 4th Americas Conference on Information Systems, Baltimore, MD, 618-620.

Sekaran, U. (2000). *Research methods for business: A skill building approach (3rd ed.).* NY: John Wiley & Sons, Inc.

Sekaran, U. (2003). *Research methods for business: A skill building approach (4th ed.).* New York: John Wiley & Sons.

Sekaran, U. (2006).*Research Methods for Business: A Skill-Building Approach. (4th ed.).* New York,NY:John Wiley & Sons.

Sekaran, U.& Roger,B., (2010).*Research Methods for Business: A Skill-Building Approach. (5th Ed.).*UK: John Wiley & Sons.

Serenko, A., & Bontis, N. (2008). Global ranking of knowledge management and intellectual capital academic journals. *Journal of Knowledge Management, 13*(1), 4-15.

Seubert, E., Balaji, Y., and Makhija, M. (2001). The knowledge imperative. CIO. Retrieved on February 5, 2006, from: http://www.cio.com/sponsors/031501_km.html.

Shan, n. (2009). *Iraq Industry, Al-Sabah Newspaper,* Retrieved on February 12, 2007, from: www.alsabaah.com.

Silvia Massa & Stefania Testa,(2009). A knowledge management approach to organizational competitive advantage: Evidence from the food sector. *European Management Journal, 27,*129– 141.

Singh, S. (2008). Role of leadership in knowledge management: A study. *Journal of*

Knowledge Management, 12, 3-15.

Skandia (1994), *Visualizing Intellectual Capital in Skandia,* Supplement to Skandia's1994 Annual Report.

Smith, S. (2008). *Decoding generational differences: Fact, fiction or should be just get back to work.* Deloitte Development.

Sokal, R., & Rohlf, F. (1981). *Biometry (2nd edn).* New York: WH Feeman and Company.

Spear, S., & Bowen, H. K. (1999). Decoding the DNA of the Toyota production system. *Harvard Business Review, 77,* 96-108.

Stam C. D. (2007). *Knowledge productivity.* Unpublsihed PhD dissertation, University of Twent, Netherlands.

Sternberg, R., Wagner, R., Williams, W., & Horvath, J. (1995). Testing common sense. *American Psychologist, 5,* 912-927.

Stewart, T. (1997). *Intellectual capital: the new wealth of organizations.* New York, NY: Doubleday.

Stewart, T. A. (1999). *Intellectual capital: The new wealth of organizations.* New York: Doubleday.

Stover, M. (2004). Making tacit knowledge explicit: The ready reference database as codified knowledge. *Reference Services Review, 32*(2), 164-173.

Stover, M. (2004). Making tacit knowledge explicit: the ready reference database as codified knowledge. *Journal: Reference Services Review, 32*(2):164-173.

Sullivan P.H. (1998). *Profiting from Intellectual Capital; Extracting Value from Innovation.* New York: John Wiley & Sons Inc.

Sveiby, K. E. (1998). *Measuring intangibles and intellectual capital.* Retrieved on 2 August 2003, from: http://www.sveiby.com.oulemerqingstandard.html.

Sveiby, K. E. (1998). The Intangible Assets Monitor. *Journal of Human Resource Costing & Accounting, 2*(1), 73-97.

Sveiby, K. E. (2000). *Intellectual capital and knowledge management.* Retrieved August 30, 2001, from http://www.sveiby.com.au/IntellectualCapital.html.

Sveiby, K. E. (2001). A knowledge-based theory of the firm to guide in strategy formulation. *Journal of Intellectual Capital, 2*(4), 344-358.

Sveiby, K. E. (2004). *Methods for measuring intangible assets.* Retrieved on November 8, 2004, from: http://www.sveiby.com.

Tan, H. T., & Libby, R. (1997). Tacit managerial versus technical knowledge as determinants of audit expertise in the field. *Journal of Accounting Research, 35*(1), 97-114.

Tan, K. C. (2002). A comparative study of 16 National Quality Award. *The TQM Magazine, 14*(3), 165-171.

Tapscott, D. (2009). *Growing up digital.* New York, NY: McGraw Hill.

Tapscott, D., & Williams, A. D. (2006), *Wikinomics: How mass collaboration changes everything.* New York, NY: Penguin.

Taylor, C. (2007). *Culture: Asset or liability? The role of a director.* Retrieved on May 22, 2009,from:http://www.axialent.com/uploaded/papers_articles/documentos/Cultur e%20Asset%20or%20Liability.pdf.

Teece, D. J. (1987). Profiting from technological innovation: Implications for integration,

collaboration, licensing and public policy. *Research policy, 15*(6), 285-305.

Teece, D., Pisano, G. and Schuen, A. (1998). Dynamic capabilities and strategic management. *Strategic Management Journal, 18*(7), 509-533.

Tiwana, A. (2001). *The Essential Guide to Knowledge Management: E-Business and CRM Applications*. NJ: Prentice Hall.

Trice, H. M., & Beyer, J. M. (1991). Cultural leadership in organizations. *Organization Science, 2*(2), 149-169.

Turban, E.; King, D; Lee, J.; Warkentin, M., and Chung, M. (2002). *IT for management. Electronic Commerce; a Managerial Perspective, International Edition*. New Jersey: Pearson Education, Inc.

United Nations Report, (2009). A statistical report prepared for the Government of the Republic of Iraq. Technical Assessment for the Development of the Industries Sector in Iraq. United Nations Industrial Development Organization Vienna. Validity.sflb.ashx.

Van Buren, M. (1998).Virtual coffee klatch. *Technical Training, 9* (5), 42-46.

Van Buren, M. E. (1999). A yardstick for knowledge management. *Training & Development, 53,* 71-78.

Von Krogh, G. (1998). Care in knowledge creation. *California Management Review, 40*(3), 133-153.

Wagner, R. (1987). Tacit knowledge in everyday intelligence behavior. *Journal of Personality and Social Psychology, 52,* 1236-1247.

Walsh, J. P., & Ungson, G. R. (1991). Organizational Memory. *The Academy of Management Review, 16*(1), 57-91.

Wang, W. Y., & Chang, C. (2005). Intellectual capital and performance in causal models Evidence from the information technology industry in Taiwan. *Journal of Intellectual Capital, 6*(2), 222-236.

Warner, M. and Witzel, M. 2004. *Managing in Virtual Organizations*. London: Thomson.

Waterman, R. H., & Bogner, W. C. (2003). Robert H. Waterman, Jr., on Being Smart and Lucky. *The Academy of Management Executive, 16*(1), 45-50.

Watson, R. (1999). *Data management: Database and organizations*. New York, NY: John Wiley Publishing.

Wen-Ying Wang & Chingfu Chang, (2005). Intellectual capital and performance in causal models Evidence from the information technology industry in Taiwan. *Journal of Intellectual Capital, 6,* (2), 222-236. Emerald Group Publishing Limited.

White, J. D., & Korrapati, R. B. (2007). Knowledge sharing in a human resource community of practice. *Academy of Information and Management Sciences, 11*(1), 55.

Wiig, K.M. (1993). *Knowledge Management Foundations: Thinking about Thinking*. Arlington, TX: Schema Press.

Wiig, K.M. (1997). Integrating intellectual capital and knowledge management. *Long Range Planning, 30,* 399-405.

Wilderom, C. P. M., Glunk, U., & Maslowski, R. (2000). Organizational culture as a predictor of organizational performance. *Handbook of Organizational Climate and Culture,* 193-209.

Wilkins, A. L., & Ouchi, W. G. (1983). Efficient cultures: Exploring the relationship

198

between culture and organizational performance. *Administrative Science Quarterly, 28*(3), 468-481.

Wood, M. (2008). Reactive to predictive maintenance - The cultural change. Retrieved on July 7, 2008, from: www.bluepencil.com.au.

Yilmaz, C., & Ergun, E. (2008). Organizational culture and firm effectiveness: An examination of relative effects of cultural traits and the balanced culture hypothesis in an emerging economy. *Journal of World Business, 43*, 290-306.

Yin R. (1994). *Case Study Research: Design and Methods, 2nd edition.* Newsbury Park, CA: SAGE Publication, Inc.

Zack M., McKeen J. & Singh S. (2009). Knowledge management and organizational performance: an exploratory analysis. *Journal of Knowledge Management, 13* (6), 392-400.

Zack, M. H. (1999). *Knowledge and strategy.* MA: Butterworth-Heinemann.

Zhao, S. (2009). The nature and value of common sense to decision making. *Management Decision, 47*, 441-453.

Zikmund, W. G. (2003). *Business Research Methods. 7th.* Oklahoma, EUA: Thomson.

Appendix 1

Questionnaire Survey

In the Name of Allah, Most Gracious , Most Merciful

Utara University of Malaysia

College of Business Management

Mr.   Mrs......................

Ratified the Resolution

I put between your hands – resolution form, designed to measure variables labeled thesis verification the relationship between knowledge management and intellectual capital to achieve out standing performance. It is pant of the requirements of PhD in the philosophy of business management form (UUM) the purpose of the Investigating the Relationship between Knowledge Management, Intellectual Capital and Business Performance of Iraqi Industry. Given your experience and knowledge in this area, please kindly read the terms and repressing an opinion on the dimensions of the paragraphs contained in this form together with the observations necessary to serve in the following points:

1- Dose the resolution paragraphs measure the variables of the baseline study?

2- The extent and clarity of each paragraph, after falling under each measure and the purpose for which they were designed.

3- The affiliation of each paragraph of each post?

4- The possibility of adding to the specific dimensions or exclusion the unsuitable paragraphs.

Since Supervisor   Researcher

Dr. Sa'ari Bin Ahmad   Abbas Mezael Mushraf

1432   2011

PART ONE: PERSONAL INFORMATION

Please tick (√) in the appropriate box.

Demographic	Categories	Please tick (√)
Gender	Male	
	Female	
Age Group	Under 30 years old	
	31-39 years old	
	More than 39	
Education	Preparatory	
	Diploma	
	B.D.	
	Master	
	PhD	
Years Of Experience	Less than 10	
	11-15	
	16-20 years	
	21 years and above	

PART TWO: GENERAL DEFINITIONS

Knowledge management: It is the process of continually managing knowledge of all kinds to meet existing and emerging need to identify and exploit and to developer new opportunities (Quintas et al., 1997).

A. Tacit knowledge which means knowledge that we can't see or express easily. It comprises technical, cognitive and behavioral knowledge. (Cullen, 2005)

B. Explicit knowledge : By which we mean the knowledge that we express by words , numbers and sound and sharing it through data scientific equations , visual tools , curriculum features and booklets Hence knowledge can easily be transferred to individuals. (Nonaka, 2004).

C. Knowledge processes which mean the general attitudes to seek knowledge through creation, acquisition, participation and .application of knowledge. This can be done through training learning, observation, experiments and other activities.

2.Intellectual capital : Asset of intangibles, (resource capabilities and competence) that drive organizational performance and value creation (Bontis et al., 2000).

3.Business performance The degree to which an organization realizes its strategic goals and objectives (Daft, 2001; Johanson et al., 2001).

PART THREE : ITEM MEASURES

First: Item Measures of KM

a- Item Measures of KM Processes:

1- Knowledge Creating and Acquisition

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
Kc1	My organization : Have processes for acquiring knowledge about our customer.					
Kc2	Have processes for generating new knowledge from existing knowledge.					
Kc3	Have processes for acquiring knowledge about it's competitive industry environment.					
Kc4	Have processes for acquiring knowledge about new product/services within our industry.					
Kc5	Have processes for observing knowledge from individual and other partners.					

2- Knowledge Dissemination and sharing :

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
Ks1	My Organization : Has processes for distributing knowledge through out the organization.					
Ks2	Has processes for exchanging knowledge between individual (employees)					
Ks3	Has processes for exchanging knowledge with our business partners.					
Ks4	Has processes for integrating different sources and types of knowledge.					
Ks5	In my Organization Knowledge sharing, skills and competences are appreciated, appropriately recognized and rewarded.					

3- Knowledge Application and Utilization:

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
Ku1	My organization : Has processes for applying knowledge learned from past experiences, success, stories and mistake.					
Ku2	Has processes for using knowledge in development of new product and services.					
Ku3	Uses knowledge to adjust vision, mission and strategic direction.					
Ku4	Is seeking to apply knowledge to respond of competition demands and market changed.					
Ku5	Is able to locate and apply Knowledge to achieve competitive advantage.					

204

b- Item Measures of content KM:

1- Tacit Knowledge

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
Tk1	My organization has clear vision and strategic direction.					
Tk2	My organization has excellence research and development efforts.					
Tk3	The origination is making out standing efforts in research and development.					
Tk4	The origination has capacity and patents in the work.					
Tk5	The origination has employees with high experiences skeletal.					

2- Explicit Knowledge

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
Ek1	My organization has excellence knowledge about the future demands.					
Ek2	My organization has advances knowledge about future market change.					
Ek3	My organization has excellence knowledge about existing and potential customers.					
Ek4	My organization uses effective index for customer satisfaction and loyalty.					
Ek5	My organization has effective system which support all knowledge processes.					

205

SECOND: ITEM MEASURES OF INTELLECTUAL CAPITAL MEASURES

1- HUMAN CAPITAL

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
Hc1	My organization has a highly component management team.					
Hc2	Employees can quickly adopt to changes made by management					
Hc3	On-the-job training and Learning are valued factory management concerned programs and learning employee .					
Hc4	Employees are experts in their jobs					
Hc5	Employees are brilliant, innovative and creative.					

3- Customer Capital

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
Cc1	My organization uses customer feedbacks electively in our afford to provide quality products and services to our customer.					
Cc2	My organization key values; Total commitment to customers.					
Cc3	In my opinion, my organization new vision focus on delivering exceptional value to our customer.					
Cc4	My organization has programs to update a knowledge and information about our customers.					
Cc5	My organization is seeking to translate knowledge about the customer to design products .					

206

3- RELATIONAL CAPITAL

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
Rc1	Our suppliers have performed extremely well in supporting my organization to achieve our targets					
Rc2	My organization uses feedback and recommendations from vendors to produce better products and services to our customer					
Rc3	Government agencies provide good support to us in our effort to serve the people better.					
Rc4	My organization always considers environmental health and public social benefits in any planning, development and implementation of our project.					
Rc5	My organization always interested in the competitiveness of its, competitors in the market.					

3- STRUCTURAL CAPITAL

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
Sc1	Policies, procedures and instructions in my organization are contained in manuals and databases.					
Sc2	Knowledge and information in my organization are embedded in our employees, system and procedures.					
Sc3	My organization has a good information system utilized staff to improve their performance .					
Sc4	My origination has an information system compatible with the supplying system , selling and buying .					
Sc5	My origination has batter system to improve customer service					

THIRD: MODERATORS:

1- ITEM MEASURES OF CULTURE

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
C1	In my organization : Employees understand the importance of knowledge and intellectual capabilities to corporate success					
C2	High levels of participation are expected in capturing and sharing knowledge and experience					
C3	The benefits of sharing knowledge and experience outweigh the costs.					
C4	Senior management clearly support the role of knowledge and intellectual capabilities in our firm's success					
C5	Overall organizational vision, mission and objectives are clearly stated					

4- ITEM MEASURES OF TECHNOLOGY

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
T1	My organization : Has a clear rule for formatting or categorizing its product/processes knowledge.					
T2	Uses technology that allows it to monitor its industry environment and competition.					
T3	Uses technology that allows employees to collaborate with other person inside and out side in order to acquiring and sharing knowledge.					
T4	Uses technology that allows employees to search for new knowledge.					
T5	Uses technology that allows it to retrieves and use knowledge in its today's operations.					

FOURTH: ITEM MEASURES OF BUSINESS PERFORMANCE

1- Innovation

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
IP1	Over the past three year: My organization has improved its ability to innovate new products\services					
IP2	Our" Employee Satisfaction Index" is high					
IP3	My organization has improved its ability to indentify new market growth opportunities.					
IP4	My organization has improved its ability to coordinate the research and development activities to products and services.					
IP5	My organization has improved its ability to achieve long term customer value creation .					

2- RATE OF NEW PRODUCT DEVELOPMENT

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
RP1	Over the past three year : My organization adopted new development programs to raise employees efficiency and improve production.					
RP2	Rate of sales over competitors					
RP3	My organization achieved high level in the creation to improve the product.					
RP4	My organization adopted new technology to improve and development the production.					
RP5	My organization has achieved better profitability of our competitors.					

3- CUSTOMER SATISFACTION

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
CP1	Over the past three year: My organization has improved its "Customer Satisfaction Index"					
CP2	My organization has improved its ability to decrease customer response time.					
CP3	Our organization has improved service to customers.					
CP4	My organization has improved its "customer Retention Index"					
CP5	In my organization customers growth Index has exceeded our competitors.					

4- CUSTOMER RETENTION

Variable Symbol	Items	Strongly disagree	Disagree	Neutral	Agree	Strong Agree
OP1	Over the past three year: My organization has achieved an improvement in the effectiveness and operational efficiency.					
OP2	My organization is seeking to improve their ability to develop competitive products and services.					
OP3	My organization has improved its ability to minimize cost and improved the relation ship with the customers.					
OP4	My organization is seeking to increase economic value added (to improve the utility customer).					
OP5	My organization is seeking to improve the productivity index.					

212

2- __Appendix__

<div dir="rtl">

بسم الله الرحمن الرحيم

جامعة اوتارا الماليزية

كلية ادارة الاعمال

السيد ....المحترم

م/ استمارة استبيان

تحية طيبة:

أضع بين يديك استمارة الاستبانة المخصصة لاختبار متغيرات دراستنا الموسومة ((تحديد العلاقة بين إدارة المعرفة ورأس المال الفكري وأداء الأعمال)) وهي جزء من متطلبات نيل شهادة الدكتوراه في فلسفة إدارة الإعمال من جامعة أوتارا الماليزية'' وان الهدف من الاستبانة هو التحقق من العلاقة بين إدارة المعرفة ورأس المال الفكري واداء الاعمال في الصناعة العراقية . راجيا مساعدتكم في الإجابة على التساؤلات الواردة في الاستمارة مع توخي الدقة في الإجابة للوصول الى نتائج أفضل مع التأكيد ان هذه المعلومات سيتم استخدامها لأغراض البحث العلمي فقط ......

نشكر تعاونكم معنا .... مع التقدير

الدكتور

شاعري بن احمد   عباس مزعل مشرف

المشرف   الباحث

1432   2010

</div>

القسم الاول : معلومات شخصية:

رجاء ضع علامة (√) في المربع المناسب.

ضع علامة (√)	الفئات	الديموغرافية
	ذكر	الجنس
	انثى	
	اقل من 30 سنة	العمر
	بين 31سنة و 39 سنة	
	اكثر من 39 سنة	
	اعدادية	التعليم
	بكالوريوس	
	ماجستير	
	دكتوراه	
	اقل من 10 سنوات	عدد سنوات الخبرة
	بين 11 و15 سنة	
	بين 16 و 20 سنة	
	اكثر من 21 سنة	

القسم الثاني : تعريفات عامة :

1ـ ادارة المعرفة (K.M):- وتعني العمليات التي تساعد المنظمة على توليد المعرفة واختبارها وتنظيمها واستخدامها ونشرها وتحويل المعلومات الهامة والخبرات التي تمتلكها المنظمة والتي تعتبر ضرورية للانشطة الادارية المختلفة كاتخاذ القرارات وحل المشكلات والتعلم و التخطيط الاستراتيجي.

أـ **المعرفة الضمنية (Tacit knowledge)** وهي المعرفة التي لا يمكن رؤيتها او التعبير عنها بسهولة والتي تشمل المعرفة الفنية و المعرفة الادراكية والمعرفة السلوكية (Cullen 2005)

ب ـ **المعرفة الظاهرية (المعلنة) (Explicit knowledge)** وهي المعرفة التي يمكن التعبير عنها بالكلمات و الارقام والصوت والتشارك فيها من خلال البيانات والمعلومات العلمية و المرئيات ومواصفات المنتج والكتيبات وبناءأ عليه فانه يمكن نقل المعرفة إلى الأفراد بسهولة (nonaka 2004)

ج ـ **عمليات المعرفة (knowledge processes)** وتعني التوجهات العامة للاستفسار عن المعرفة من خلال خلق واكتساب والمشاركة وتطبيق المعرفة ويتم ذلك من خلال التدريب والتعليم والملاحظة والتجارب والنشاطات الاخرى.

2ـ راس المال الفكري (IC) :- ويعني مجموعة القيم والأفكار المصنفة بالموجودات غير الملموسة والتي لا تظهر في حساب الموازنات العامة .ويشمل على راس المال البشرى و الاجتماعي والهيكلي و العلاقاتي .

3ـ اداء الاعمال (BP) هو دالة لقدرة المصنع على تحقيق أهدافه ألاستراتيجيه (الأداء المالي – الأداء ألزبوني – الأداء التشغيلي والإبداع والتعلم).

اولا: أدارة المعرفه

أ   مؤشرات عمليات المعرفة

1- مؤشرات قياس واكتساب وخلق المعرفة

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
Kc1	يمتلك المصنع آليات وتقنيات واضحة لأكتساب المعرفة حول الزبون					
Kc2	للمصنع آليات وعمليات واضحة لتوليد المعرفة الجديدة من المعرفة الحالية والسابقة					
Kc3	يمتلك المصنع آليات وعمليات واضحة لأكتساب المعرفة حول بيئة الصناعة التنافسية (موردين, تكنولوجيا , سوق)					
Kc4	للمصنع آليات واضحة لأكتساب المعرفة حول المنتجات التنافسية الجديده					
Kc5	لدى المصنع القدرة على صناعة واكتساب والحصول على المعرفة من العاملين وبقية الشركاء					

2- مؤشرات قياس مشاركة ونشر المعرفة

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
Ks1	لدى المصنع عمليات واليات واضحة لتوزيع ونشر المعرفة الى جميع الأقسام والوحدات					
Ks2	للمصنع عمليات واليات واضحة لتبادل المعرفة بين الأفراد العاملين					
Ks3	لدى المصنع القدرة لتبادل المعرفة مع شركائه في العمل (المنافسين , المصانع المناظرة)					
Ks4	يمتلك المصنع عمليات واليات واضحة للمشاركة وخلق التكامل بين الأنواع المختلفة للمعرفة (ظمنية او ظاهرية)					
Ks5	لدى المصنع آليات لتحفيز ومكافأة عمليات مشاركة المعرفة والمهارات والخبرات					

3- مؤشرات قياس تطبيق واستخدام المعرفة

المتغيرا ت	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
Ku1	للمصنع آليات واضحة لتطبيق المعرفة المكتسبة من التجارب الناجحة والأخطاء السابقة					
Ku2	للمصنع آليات واضحة لأستخدام المعرفة في تطوير منتجات وخدمات جديدة					
Ku3	يوظف المصنع المعرفة من اجل تكييف رسالته وخططه الإستراتيجية المستقبلية					
Ku4	يسعى المصنع الى تطبيق المعرفة للاستجابة لمتطلبات المنافسة وتغيرات السوق					
Ku5	المصنع يمتلك القدرة على اكتشاف وتطبيق المعرفة لتحسين موقعه التنافسي مقارنة بالمنافسين					

ب   مؤشرات محتوى المعرفة

3-   مؤشرات قياس المعرفة الظاهرية

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
Ek1	للمصنع معرفه متقدمه بمستويات الطلب المتوقعة في المستقبل					
Ek2	المصتع يمتلك معرفة متقدمة حول تغيرات السوق المستقبلية					
Ek3	للمصنع معرفه متقدمه حول زبائنه الحاليين والمحتملين					
Ek4	للمصنع مؤشر فعال في متابعة رضاء وولاء الزبون					
Ek5	للمصنع نظام فعال لتدعيم جميع عمليات اكتساب ونشر وتكامل المعرفه					

217

4- مؤشرات قياس المعرفة الضمنية

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
TK1	للمصنع رؤية وتوجه استراتيجي واضح في مجال إدارة المعرفة والقدرات البشرية					
TK2	يمتلك المصنع معرفة ضمنية متميزة تسهل انجاز المهام اليومية					
TK3	يمتلك المصنع جهود متميزة في مجال البحث والتطوير					
TK4	للمصنع قدرات وبراعات اختراع متقدمة في مجال عمله					
TK5	لدى المصنع عاملين يتميزون بمهارات وقدرات عاليه					

ثانيا: مقاييس رأس المال الفكري

1- مؤشرات قياس رأس المال البشري

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
HC1	يعتمد المصنع فرق عمل ذات قدرات عاليه في انجاز مشاريع البحث والتطوير					
HC2	لدى العاملين في المصنع قدره عاليه للتكيف مع التغيير					
HC3	تقيم إدارة المصنع وتكافئ برامج التدريب والتعلم أثناء العمل					
HC4	العاملون في المصنع خبراء في مجال عملهم					
HC5	للعاملين في المصنع دافعية عالية لتحسين قدراتهم ومهاراتهم					

218

2- مؤشرات قياس رأس المال الزبائني

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
Cc1	يوظف المصنع المعلومات المرتدة من الزبون في تدعيم جهوده لتقديم منتجات وخدمات متميزة					
Cc2	تدعم إدارة المصنع ثقافة الولاء المطلق للزبون والسعي لأسعاده					
Cc3	هدفنا الاستراتيجي هو تحقيق ميزة ومنفعة استثنائية للزبون					
Cc4	للمصنع آليات مجددة لأكتساب المعرفة والمعلومات عن الزبائن					
Cc5	يسعى المصنع الى تحويل وترجمة المعرفة حول الزبون الى تصاميم لمنتجات وخدمات جديدة					

3- مؤشرات قياس رأس المال العلائقي

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
Rc1	موردينا (مجهزينا) هم شركاؤنا في تدعيم جهود المصنع للتحقيق رسالته وأهدافه					
Rc2	يسعى المصنع الى استعمال المعلومات المرتدة من الموردين لتصنيع منتجات وخدمات افضل لزبائننا					
Rc3	يلقى المصنع دعم ومساندة المؤسسات الحكومية لتدعيم جهوده في خدمة المجتمع					
Rc4	المصنع يأخذ بالاعتبار سلامة البيئة والمصلحة العامة في تخطيط وتطور مشاريع عمله					
Rc5	المصنع يضع نصب عينيه القدرات التنافسية لمنافسينا في السوق					

219

4ـ مؤشرات قياس رأس المال الهيكلي

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
Sc1	لدى جميع الأقسام في المصنع سياسات وإجراءات وتعليمات مكتوبة وموثقه بقواعد بيانات					
Sc2	المعلومات والمعرفة في المصنع جزء أساسي ومكمل لهياكلنا وإجراءاتنا					
Sc3	لدينا نظم معلومات بإمكان جميع العاملين الاستفادة منها في أداء مهامهم اليومية					
Sc4	لدينا نظم معلومات متكاملة ومتوافقة مع نظام البيع والتجهيز والشراء					
Sc5	يوظف المصنع أنظمة لتحسين عمليات خدمة الزبون					

ثالثا: الوسائط

1- الثقافة

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
CL1	يدرك العاملون في المصنع أهمية تطوير المعرفة في نجاح المصنع					
CL2	تشجع إدارة المصنع العاملين على اكتساب ونشر ومشاركة المعرفة على مختلف المستويات					
CL3	نعتقد ان مشاركة وتقاسم المعرفة يسهم في تخفيض التكاليف					
CL4	نؤمن بتعزيز دور المعرفة والقدرات البشرية من اجل تحقيق النجاح					
CL5	نثق دائما بقدرات وخبرة وإخلاص العاملين					

2- التكنولوجيا

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
TL1	يمتلك المصنع قواعد بيانات لتصنيف وتحليل وخزن واسترجاع البيانات حول المنتجات والعمليات					
TL2	يوظف المصنع تكنولوجيا متقدمة في رصد ومراقبة بيئته التنافسية ومنافسيه					
TL3	يوظف المصنع تكنولوجيا تساعد العاملين في التعاون واكتساب ومشاركة المعرفة داخل وخارج العمل					
TL4	يشجع المصنع العاملين على استخدام التكنولوجيا لتنمية المعرفة الجديدة					
TL5	يوظف المصنع تكنولوجيا المعلومات في تنظيم عملياته اليومية أينما كان ذلك ضروريا					

رابعا: مؤشرات اداء الاعمال

1- الإبداع

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
	في السنوات الخمس الماضية:					
Lp1	1- المصنع يطور قابليته في الإبداع لتقديم منتوج وخدمة جديدين					
Lp2	2- مؤشر رضاء العاملين والموظفين عالي جدا					
Lp3	3-تحسنت قابلية المصنع بالبحث عن فرص نمو في الأسواق الجديدة					
Lp4	4- المصنع يحسن قابليته في تفعيل دور البحث و التطوير في الإنتاج وتقديم الخدمة التنافسية					
Lp5	5- سعى المصنع توظيف جميع قدراته من اجل تحسين القيمة المضافة للزبون(منفعته) مدى الحياة					

2- معدل تطوير منتج جديد

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
Lp1	خلال السنوات الخمس الماضية: 1- أعتمد المصنع برامج تطوير حديثة في رفع كفاءة العاملين وتحسين الإنتاج					
Lp2	2- معدل مبيعاتنا تجاوز المنافسين					
Lp3	3- حقق المصنع مستو عال في خلق و توليد وتوزيع المعرفة لتحسين المنتج					
Lp4	4- أعتمد المصنع تكنولوجيا حديثة في تطوير وتحسين الإنتاج					
Lp5	5- يحقق المصنع ربحية أفضل من منافسينا من خلال تقديمه منتجات جديدة					

3- رضا الزبون

المتغيرات	البنود	لا اتفق تماما	لا اتفق	اتفق الى حد ما	اتفق	اتفق تماما
Cp1	في السنوات الخمسة الماضية: 1- استطاع المصنع تحسين مؤشرات رضا الزبون					
Cp2	2-استطعنا من تحسين قدراتنا على تخفيض وقت الاستجابة للزبون (وقت التسليم)					
Cp3	3-نعمل على تحقيق التسليم في الوقت المحدد					
Cp4	4-نسعى الى تحسين العلاقة مع الزبون والاحتفاظ به					
Cp5	5- مؤشر نمو الزبائن تجاوز المنافسين					

4- الاحتفاظ بالزبون

اتفق تماما	اتفق	اتفق الى حد ما	لا اتفق	لا اتفق تماما	البنود	المتغيرات
					في الخمس سنوات الماضية: 1- حقق المصنع تحسنا في فاعليته وكفاءته التشغيلية	Pp1
					2- المصنع يسعى الى تحسين قابليته لتطوير منتجات و خدمات تنافسيه	Pp2
					3-المصنع يحسن قابليته في تقليل الكلفة وتحسين العلاقة مع الزبون	Pp3
					4- المصنع يسعى الى زيادة القيمة الاقتصادية المضافة (تحسين المنفعة للزبون)	Pp4
					5- المصنع يسعى الى تحسين مؤشر الإنتاجية	Pp5

Appendix 3

Tests of Normality Results for All Items of Questionnaire

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
EK1	.290	191	.000	.764	191	.000
EK2	.302	191	.000	.793	191	.000
EK3	.297	191	.000	.789	191	.000
EK4	.332	191	.000	.764	191	.000
EK5	.337	191	.000	.757	191	.000
TK1	.295	191	.000	.794	191	.000
TK2	.306	191	.000	.776	191	.000
TK3	.315	191	.000	.789	191	.000
TK4	.333	191	.000	.791	191	.000
TK5	.336	191	.000	.752	191	.000
KC1	.262	191	.000	.815	191	.000
KC2	.284	191	.000	.796	191	.000
KC3	.281	191	.000	.827	191	.000
KC4	.268	191	.000	.848	191	.000
KC5	.303	191	.000	.826	191	.000
KS1	.305	191	.000	.784	191	.000
KS2	.250	191	.000	.810	191	.000
KS3	.330	191	.000	.788	191	.000

KS4	.247	191	.000	.824	191	.000
KS5	.294	191	.000	.800	191	.000
KU1	.300	191	.000	.804	191	.000
KU2	.293	191	.000	.827	191	.000
KU3	.305	191	.000	.807	191	.000
KU4	.284	191	.000	.826	191	.000
KU5	.255	191	.000	.821	191	.000
HC1	.266	191	.000	.821	191	.000
HC2	.280	191	.000	.831	191	.000
HC3	.303	191	.000	.809	191	.000
HC4	.312	191	.000	.812	191	.000
HC5	.339	191	.000	.781	191	.000
CC1	.325	191	.000	.798	191	.000
CC2	.209	191	.000	.839	191	.000
CC3	.304	191	.000	.845	191	.000
CC4	.314	191	.000	.835	191	.000
CC5	.302	191	.000	.836	191	.000
RC1	.276	191	.000	.827	191	.000
RC2	.280	191	.000	.828	191	.000
RC3	.283	191	.000	.836	191	.000
RC4	.310	191	.000	.815	191	.000

RC5	.307	191	.000	.810	191	.000
SC1	.269	191	.000	.813	191	.000
SC2	.261	191	.000	.832	191	.000
SC3	.287	191	.000	.824	191	.000
SC4	.301	191	.000	.813	191	.000
SC5	.304	191	.000	.809	191	.000
CU1	.285	191	.000	.757	191	.000
CU2	.289	191	.000	.775	191	.000
CU3	.282	191	.000	.779	191	.000
CU4	.274	191	.000	.784	191	.000
CU5	.261	191	.000	.810	191	.000
TE1	.298	191	.000	.786	191	.000
TE2	.266	191	.000	.792	191	.000
TE3	.264	191	.000	.804	191	.000
TE4	.250	191	.000	.791	191	.000
TE5	.250	191	.000	.806	191	.000
LP1	.266	191	.000	.827	191	.000
LP2	.248	191	.000	.858	191	.000
LP3	.319	191	.000	.823	191	.000
LP4	.300	191	.000	.835	191	.000
LP5	.289	191	.000	.851	191	.000
NP1	.309	191	.000	.826	191	.000
NP2	.279	191	.000	.858	191	.000

226

NP3	.310	191	.000	.844	191	.000
NP4	.289	191	.000	.840	191	.000
NP5	.307	191	.000	.809	191	.000
CP1	.271	191	.000	.822	191	.000
CP2	.323	191	.000	.813	191	.000
CP3	.268	191	.000	.846	191	.000
CP4	.329	191	.000	.802	191	.000
CP5	.317	191	.000	.814	191	.000
PP1	.320	191	.000	.807	191	.000
PP2	.252	191	.000	.851	191	.000
PP3	.308	191	.000	.826	191	.000
PP4	.303	191	.000	.822	191	.000
PP5	.311	191	.000	.791	191	.000

Frequencies

Notes

Input	Output Created	09-10 -2010 AST 21:34:44
	Comments	
	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	191
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
	Syntax	FREQUENCIES VARIABLES=HC1 HC2 HC3 HC4 HC5 OVERALLHC CC1 CC2 CC3 CC4 CC5 OVERALLCC RC1 RC2 RC3 RC4 RC5 OVERALLRC SC1 SC2 SC3 SC4 SC5 OVERALLSC /STATISTICS=STDDEV MEAN MEDIAN /ORDER=ANALYSIS.
Resources	Processor Time	0:00:00.015
	Elapsed Time	0:00:00.017

[DataSet0]

Statistics

		HC1	HC2	HC3	HC4	HC5	OVERALLHC
N	Valid	191	191	191	191	191	191
	Missing	0	0	0	0	0	0
	Mean	4.0733	3.9529	3.8639	3.9529	3.9319	3.9550
	Median	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
	Std. Deviation	.72174	.72756	.66673	.69803	.71861	.49701

Statistics

		RC1	RC2	RC3	RC4	RC5	OVERALLRC
N	Valid	191	191	191	191	191	191
	Missing	0	0	0	0	0	0
	Mean	4.0366	3.9058	3.8691	3.8534	3.9162	3.9162
	Median	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
	Std. Deviation	.75653	.71194	.73172	.70298	.69834	.49894

HC2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	4	2.1	2.1	2.1
	3.00	43	22.5	22.5	24.6
	4.00	102	53.4	53.4	78.0
	5.00	42	22.0	22.0	100.0
	Total	191	100.0	100.0	

Statistics

		SC1	SC2	SC3	SC4	SC5	OVERALLSC
N	Valid	191	191	191	191	191	191
	Missing	0	0	0	0	0	0
	Mean	4.0995	4.0262	3.9319	3.9738	3.8901	3.9843
	Median	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
	Std. Deviation	.70004	.74998	.70381	.68391	.66764	.48727

Frequency Table

HC1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	3	1.6	1.6	1.6
	3.00	34	17.8	17.8	19.4
	4.00	100	52.4	52.4	71.7
	5.00	54	28.3	28.3	100.0
	Total	191	100.0	100.0	

HC3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	2	1.0	1.0	1.0
	3.00	51	26.7	26.7	27.7
	4.00	109	57.1	57.1	84.8
	5.00	29	15.2	15.2	100.0
	Total	191	100.0	100.0	

HC4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	5	2.6	2.6	2.6
	3.00	36	18.8	18.8	21.5
	4.00	113	59.2	59.2	80.6
	5.00	37	19.4	19.4	100.0
	Total	191	100.0	100.0	

HC5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	2	1.0	1.0	1.0
	2.00	4	2.1	2.1	3.1
	3.00	32	16.8	16.8	19.9
	4.00	120	62.8	62.8	82.7
	5.00	33	17.3	17.3	100.0
	Total	191	100.0	100.0	

OVERALLHC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.60	4	2.1	2.1	2.1
	2.80	2	1.0	1.0	3.1
	3.00	6	3.1	3.1	6.3
	3.20	9	4.7	4.7	11.0
	3.40	16	8.4	8.4	19.4
	3.60	18	9.4	9.4	28.8
	3.80	20	10.5	10.5	39.3
	4.00	30	15.7	15.7	55.0
	4.20	32	16.8	16.8	71.7
	4.40	28	14.7	14.7	86.4
	4.60	25	13.1	13.1	99.5
	4.80	1	.5	.5	100.0
	Total	191	100.0	100.0	

232

CC1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	4	2.1	2.1	2.1
	3.00	36	18.8	18.8	20.9
	4.00	118	61.8	61.8	82.7
	5.00	33	17.3	17.3	100.0
	Total	191	100.0	100.0	

CC2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	4	2.1	2.1	2.1
	3.00	52	27.2	27.2	29.3
	4.00	76	39.8	39.8	69.1
	5.00	59	30.9	30.9	100.0
	Total	191	100.0	100.0	

CC3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	1.6	1.6	1.6
	2.00	13	6.8	6.8	8.4
	3.00	42	22.0	22.0	30.4
	4.00	101	52.9	52.9	83.2
	5.00	32	16.8	16.8	100.0
	Total	191	100.0	100.0	

CC4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	2	1.0	1.0	1.0
	2.00	11	5.8	5.8	6.8
	3.00	43	22.5	22.5	29.3
	4.00	106	55.5	55.5	84.8
	5.00	29	15.2	15.2	100.0
	Total	191	100.0	100.0	

CC5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	11	5.8	5.8	5.8
	3.00	40	20.9	20.9	26.7
	4.00	104	54.5	54.5	81.2
	5.00	36	18.8	18.8	100.0
	Total	191	100.0	100.0	

OVERALLCC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.60	1	.5	.5	.5
	2.00	1	.5	.5	1.0
	2.20	1	.5	.5	1.6
	2.40	3	1.6	1.6	3.1
	2.60	3	1.6	1.6	4.7
	2.80	5	2.6	2.6	7.3
	3.00	3	1.6	1.6	8.9
	3.20	15	7.9	7.9	16.8
	3.40	13	6.8	6.8	23.6
	3.60	23	12.0	12.0	35.6
	3.80	15	7.9	7.9	43.5
	4.00	30	15.7	15.7	59.2
	4.20	27	14.1	14.1	73.3
	4.40	27	14.1	14.1	87.4
	4.60	21	11.0	11.0	98.4
	4.80	3	1.6	1.6	100.0
	Total	191	100.0	100.0	

RC1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	6	3.1	3.1	3.1
	3.00	33	17.3	17.3	20.4
	4.00	100	52.4	52.4	72.8
	5.00	52	27.2	27.2	100.0
	Total	191	100.0	100.0	

RC2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	3	1.6	1.6	1.6
	3.00	49	25.7	25.7	27.2
	4.00	102	53.4	53.4	80.6
	5.00	37	19.4	19.4	100.0
	Total	191	100.0	100.0	

RC3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	5	2.6	2.6	2.6
	3.00	50	26.2	26.2	28.8
	4.00	101	52.9	52.9	81.7
	5.00	35	18.3	18.3	100.0
	Total	191	100.0	100.0	

RC4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1	.5	.5	.5
	2.00	3	1.6	1.6	2.1
	3.00	48	25.1	25.1	27.2
	4.00	110	57.6	57.6	84.8
	5.00	29	15.2	15.2	100.0
	Total	191	100.0	100.0	

RC5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1	.5	.5	.5
	2.00	2	1.0	1.0	1.6
	3.00	43	22.5	22.5	24.1
	4.00	111	58.1	58.1	82.2
	5.00	34	17.8	17.8	100.0
	Total	191	100.0	100.0	

OVERALLRC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.40	3	1.6	1.6	1.6
	2.60	1	.5	.5	2.1
	2.80	4	2.1	2.1	4.2
	3.00	3	1.6	1.6	5.8
	3.20	10	5.2	5.2	11.0
	3.40	16	8.4	8.4	19.4
	3.60	25	13.1	13.1	32.5
	3.80	17	8.9	8.9	41.4
	4.00	38	19.9	19.9	61.3
	4.20	25	13.1	13.1	74.3
	4.40	29	15.2	15.2	89.5
	4.60	18	9.4	9.4	99.0
	4.80	2	1.0	1.0	100.0
	Total	191	100.0	100.0	

SC1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	2	1.0	1.0	1.0
	3.00	32	16.8	16.8	17.8
	4.00	102	53.4	53.4	71.2
	5.00	55	28.8	28.8	100.0
	Total	191	100.0	100.0	

SC2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	4	2.1	2.1	2.1
	3.00	39	20.4	20.4	22.5
	4.00	96	50.3	50.3	72.8
	5.00	52	27.2	27.2	100.0
	Total	191	100.0	100.0	

SC3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	3	1.6	1.6	1.6
	3.00	45	23.6	23.6	25.1
	4.00	105	55.0	55.0	80.1
	5.00	38	19.9	19.9	100.0
	Total	191	100.0	100.0	

SC4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	3	1.6	1.6	1.6
	3.00	38	19.9	19.9	21.5
	4.00	111	58.1	58.1	79.6
	5.00	39	20.4	20.4	100.0
	Total	191	100.0	100.0	

SC5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.00	2	1.0	1.0	1.0
	3.00	48	25.1	25.1	26.2
	4.00	110	57.6	57.6	83.8
	5.00	31	16.2	16.2	100.0
	Total	191	100.0	100.0	

OVERALLSC

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.60	1	.5	.5	.5
	2.80	5	2.6	2.6	3.1
	3.00	4	2.1	2.1	5.2
	3.20	6	3.1	3.1	8.4
	3.40	13	6.8	6.8	15.2
	3.60	27	14.1	14.1	29.3
	3.80	24	12.6	12.6	41.9
	4.00	20	10.5	10.5	52.4
	4.20	35	18.3	18.3	70.7
	4.40	28	14.7	14.7	85.3
	4.60	20	10.5	10.5	95.8
	4.80	8	4.2	4.2	100.0
	Total	191	100.0	100.0	

Appendix 4

Correlations

Notes

Input	Output Created	09-10 -2010 AST 22:00:39
	Comments	
	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	191
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
	Syntax	CORRELATIONS /VARIABLES=BP EK TK KC KS KU /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE.
Resources	Processor Time	0:00:00.016
	Elapsed Time	0:00:00.015

[DataSet0]

Correlations

		BP	EK	TK	KC	KS	KU
BP	Pearson Correlation	1	.124	.224**	.392**	.154*	.463**
	Sig. (2-tailed)		.087	.002	.000	.034	.000
	N	191	191	191	191	191	191
EK	Pearson Correlation	.124	1	.585**	.336**	.316**	.306**
	Sig. (2-tailed)	.087		.000	.000	.000	.000
	N	191	191	191	191	191	191
TK	Pearson Correlation	.224**	.585**	1	.504**	.455**	.399**
	Sig. (2-tailed)	.002	.000		.000	.000	.000
	N	191	191	191	191	191	191
KC	Pearson Correlation	.392**	.336**	.504**	1	.488**	.601**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	191	191	191	191	191	191
KS	Pearson Correlation	.154*	.316**	.455**	.488**	1	.494**
	Sig. (2-tailed)	.034	.000	.000	.000		.000
	N	191	191	191	191	191	191
KU	Pearson Correlation	.463**	.306**	.399**	.601**	.494**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	191	191	191	191	191	191

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

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

Correlations

Notes

Input	Output Created	09-10 -2010 AST 22:01:41
	Comments	
	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	191
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics for each pair of variables are based on all the cases with valid data for that pair.
	Syntax	CORRELATIONS /VARIABLES=BP HC CC RC SC /PRINT=TWOTAIL NOSIG /MISSING=PAIRWISE.
Resources	Processor Time	0:00:00.000
	Elapsed Time	0:00:00.000

Correlations

		BP	HC	CC	RC	SC
BP	Pearson Correlation	1	.354**	.511**	.541**	.268**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	191	191	191	191	191
HC	Pearson Correlation	.354**	1	.590**	.512**	.414**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	191	191	191	191	191
CC	Pearson Correlation	.511**	.590**	1	.630**	.363**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	191	191	191	191	191
RC	Pearson Correlation	.541**	.512**	.630**	1	.597**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	191	191	191	191	191
SC	Pearson Correlation	.268**	.414**	.363**	.597**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	191	191	191	191	191

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

REGRESSION   /DESCRIPTIVES MEAN STDDEV CORR SIG N   /MISSING LISTWISE

Appendix 5

Regression

Notes

	Output Created	09-10 -2010 AST 22:07:04
	Comments	
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	191
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
	Syntax	REGRESSION /DESCRIPTIVES MEAN STDDEV CORR SIG N /MISSING LISTWISE /STATISTICS COEFF OUTS BCOV R ANOVA COLLIN TOL CHANGE ZPP /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN

		/DEPENDENT BP /METHOD=ENTER EK TK /RESIDUALS DURBIN.
Resources	Processor Time	0:00:00.015
	Elapsed Time	0:00:00.031
	Memory Required	1780 bytes
	Additional Memory Required for Residual Plots	0 bytes

[DataSet0]

Descriptive Statistics

	Mean	Std. Deviation	N
BP	3.9393	.63219	191
EK	4.1079	.42139	191
TK	4.0953	.42293	191

Correlations

		BP	EK	TK
Pearson Correlation	BP	1.000	.124	.224
	EK	.124	1.000	.585
	TK	.224	.585	1.000
Sig. (1-tailed)	BP	.	.043	.001
	EK	.043	.	.000
	TK	.001	.000	.
N	BP	191	191	191
	EK	191	191	191
	TK	191	191	191

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	TK, EK[a]	.	Enter

a. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.224[a]	.050	.040	.61935

a. Predictors: (Constant), TK, EK

b. Dependent Variable: BP

Model	Change Statistics					Durbin-Watson
	R Square Change	F Change	df1	df2	Sig. F Change	
1	.050	4.978	2	188	.008	1.072

b. Dependent Variable: BP

ANOVA[b]

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	3.819	2	1.910	4.978	.008[a]
Residual	72.116	188	.384		
Total	75.935	190			

a. Predictors: (Constant), TK, EK

b. Dependent Variable: BP

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	2.594	.492		5.267	.000
EK	-.015-	.131	-.010-	-.117-	.907
TK	.344	.131	.230	2.627	.009

a. Dependent Variable: BP

Coefficients[a]

Model	Correlations			Collinearity Statistics	
	Zero-order	Partial	Part	Tolerance	VIF
1 EK	.124	-.009-	-.008-	.658	1.519
TK	.224	.188	.187	.658	1.519

a. Dependent Variable: BP

Coefficient Correlations[a]

Model			TK	EK
1	Correlations	TK	1.000	-.585-
		EK	-.585-	1.000
	Covariances	TK	.017	-.010-
		EK	-.010-	.017

a. Dependent Variable: BP

Collinearity Diagnostics[a]

Model	Dimen sion	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	EK	TK
1	1	2.990	1.000	.00	.00	.00
	2	.006	23.257	1.00	.18	.23
	3	.004	26.277	.00	.82	.77

a. Dependent Variable: BP

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.2479	4.1864	3.9393	.14178	191
Residual	-2.96773-	.96349	.00000	.61608	191
Std. Predicted Value	-4.876-	1.743	.000	1.000	191
Std. Residual	-4.792-	1.556	.000	.995	191

a. Dependent Variable: BP

251