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# ***IBIMA Business Review***

*Vol. 2011(2011), Article ID  
724444, 258 minipages.*

*DOI:10.5171/2011.724444*

*www.ibimapublishing.com*

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**Knowledge Management  
and SMEs: A Study of  
Knowledge Management  
Utilization by SMEs in  
Iran**

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# **Abstract**

Creating and sustaining a competitive advantage is a knowledge-based activity and those companies that

are aware of knowledge management concepts and utilize it within their organizations have an edge over their competitors. Small and medium-sized

enterprises (SMEs) play a major role in developing countries' growth agenda. The purpose of this study is to examine the degree of KM utilization in Iranian

SMEs and it conducts a comparative analysis of SMEs in Taiwan and Hong Kong. In order to gauge the degree of utilization, infrastructure and process

capabilities of Iranian SMEs are investigated. It is found that KM in Iranian SMEs is partially, not fully, deployed. Further, the results of regression

analysis indicate that organizational culture has a significant role in KM adoption amongst Iranian SMEs.

**Keywords:** Knowledge management,  
Infrastructure capability,  
Process capability, SMEs,  
Iran.

# **Introduction**

This century is called the knowledge century, a new period of time when it is possible to have a

thoroughly distinctive  
perspective toward  
business activities and  
processes with different  
business boundaries (Van,  
1999). It is evident that the

word knowledge  
management (KM) has  
been used for diverse  
activities intended to  
administer, produce,  
improve and raise the merit

and worthiness of intellectual resources within an organization. KM has multiple definitions and there is no unanimity on its definition (Choi, 2000). But

in broad concept we can  
define it as activities that  
result in knowledge  
acquisition, absorption,  
dissemination and sharing  
of suitable knowledge to

parties, business units or persons in the proper and required occasions (Van Ewyk, 2000). Furthermore, there is a multidisciplinary approach (Davenport et al.,

1998) to KM due to its contribution in organizational culture, business process, business strategy, business activities, organizational learning,

leadership and technology  
(Silver, 2000).

Nowadays, KM is definitely  
a necessary approach to  
solving business problems

such as innovation and competitiveness, since organizational performance is measured by the degree of innovation and extent of competitiveness. In this

respect, KM is the  
formulation of knowledge,  
expertise and experience  
that provides new  
opportunities and  
capabilities, as well as

allowing superior performance and supporting innovation (Beckman, 1997). Small and medium sized enterprises (SMEs) play a

major role in innovation practices. It has been a profound interest for many researchers to practically implement KM in SMEs (Chan and Chao, 2008)

since they are the industrial wheels of almost all countries worldwide.

SMEs comprise 90 percent of all enterprises in Iran

(Bayati, 2007). In Iran, enterprises with employees between 10 and 49 are considered small enterprises. SMEs in Iran are defined as enterprises

with employees between 10 and 99. Employment growth by SMEs during 1996 to 2006 has been nearly 0.60 percent. Additionally, a study

conducted by “Ministry of Industries in Iran about the role of industrial SMEs in total exports” indicates that the nation’s entire exports will increase up to 108

billion dollar by the year 2020/2021. Moreover, there is a growing interest in SMEs from Ministry of Industry in Iran due to their potential benefits to

economy. The country has a vision named 20-year development plan in which the role of SMEs is clearly stated.

In this era, creating and sustaining a competitive advantage is a knowledge-based activity and those companies that are aware of KM concepts and utilize

it within their  
organizations have an edge  
over their competitors.

Utilization of KM is a must  
for those companies  
struggling in a competitive

market (Valaei, 2011). This study is aimed to examine the degree of KM utilization in Iranian SMEs. It extends the study conducted by Lee and Lan (2011) and has a

comparative analysis of KM  
in SMEs in Taiwan, Hong  
Kong (Lee and Grossman,  
2007; Lee and Lan, 2009)  
and Iran.

# **Knowledge Management**

Philosophically, the nature of knowledge has been a topic that invites discussion for many generations

(Drucker, 1993). Nonaka (1991) defines KM as a process of “catching expertise and intelligence in an organization and utilizing them to boost

innovation through continued organizational learning". Main objectives of KM are to achieve the summit of success and prosperity within

organizational context to ensure that KM activities will be feasible and achievable, and to harvest the most output from its intangible resources (Wiig,

1997). The aim of KM, however, is to nurture an organization's knowledge capital in order to obtain a long lasting competitive advantage. Researchers

have had a unanimity in which KM will reveal a potential for competitive advantage in the 21st century (Drucker, 1993; Stewart, 1997). It is

obvious that KM is vital for business success and is treated as a medicine for today's business dilemmas.

KM is being practiced as a course of action within organization that causes intangible resources, including “explicit and tacit knowledge”, to turn into

much fertility, add worth  
and income as well as  
augment the elasticity to  
tackle the rivals. It  
facilitates collaboration  
between all entities

whether managers or employees within organization (Murray, 1998). Furthermore, a wide range of technologies are involved in KM practices

and processes, such as expert systems, decision support systems (DSS), knowledge management systems (KMS), relational and object oriented

databases, data mining,  
document management and  
artificial intelligence  
(Barclay and Murray,  
2000). The point is that  
enterprises must

acknowledge and draw  
their attention to the fact  
that a tiny percentage of  
KM prescriptions consist of  
technological and  
systematic aspects (Halawi

et al., 2006). However, there is another side which involves the human capital. Most efforts regarding KM examined the issues pertaining to “cultural,

managerial and behavioral” characteristics. In other words, to date, KM implementations have considered mainly the machine or technological

aspects of KM, but in recent years the importance of human element has been conceived.

Broadbent (1998) summed up four steps in KM initiatives:

1. Representing a business context within which

knowledge is visible and  
can be circulated easily;

2. Making an atmosphere in  
which the manner of

practicing KM activities is influenced by all entities;

3. Maturing a “knowledge culture” or influencing the existing culture; and

4. Set up a “knowledge infrastructure” that facilitates all KM processes.

These steps imply that an organization must have a

background to embrace KM initiatives in which knowledge culture and knowledge structure are essential requirements in its implementation.

# ***Knowledge Management Systems (KMS)***

Knowledge is a significant asset and the prosperity of the firm relies on its KM

capacities (Spender and Grant, 1996). IT application, particularly KMS, play a major role in developing KM capabilities. Alavi and Leidner (2001)

define KMS as a wide range of IT systems and applications for knowledge absorption, production, assimilation as well as sharing. KMS technologies

consist of databases, data warehouse, intranet, groupware, search engines, etc. Furthermore, KMS comprise a broad class of software to absorb,

administer, utilize and exploit the “intangible assets” related to all different sources available within organization (Cody et al., 2002).

The major role of KMS is to leverage organizational resources for the sake of obtaining a durable core competency. In resource-based view (RBV)

perspective, KMS has a critical role in gathering and disseminating knowledge to develop innovation process and in maintaining a long lasting

competitive advantage.  
Barney (1997) declared  
that the enterprise is  
obliged to have the power,  
capacity as well as  
capability to productively

and efficiently take advantage of its resources. In accordance with (RBV) theory, an organizational resource (i.e. KMS) must be valuable, rare, inimitable

and irreplaceable. But this advantage can be unsustainable due to technological changes. Thus, it can be inferred that blending of KMS with all

infrastructural capacities  
and capabilities is a  
necessity to stay  
competitive.

New knowledge is required to be gathered and administered via KMS in such a way that opportunities emerge from all business divisions in a

company to learn more. In addition, these internal KMS create an opportunity to transfer knowledge to external environment entities whose

participation increases the performance of the company.

## *Advantages of KMS*

The main objective of KM is to foster creativity and innovativeness. To obtain creativity and meet the

objectives as well as  
magnifying the merits  
which could result from an  
impressive and efficient  
KM, many organizations are  
spending a great deal of

resources in launching KMS to support their knowledge work and cultivate learning behavior within organization (Davenport et al., 1998). Further,

according to these authors,  
the organization which  
develops its KMS obtains a  
system that will give the  
firm strategic advantages it

needs to deal with severe competition.

KMS plays a vital role in survival of enterprises.

Approximately, most of the

organizations that are successful in competitive industries are taking advantage of various KMS that facilitate the business processes. KMS tools and

applications have the capacity to improve flexibility and adaptability, and eventually the company's prolonged core competency (Gold et al.,

2001). SMEs are prone to be more flexible and adapt easily to changes (i.e. technological and structural changes) compared to big companies

within which any changes won't take place without difficulty.

KMS are appropriate for maturing agility (the ability

of organizations to discover and exploit market opportunities) as the role of KMS is to build a repository of knowledge, combine issues related to

knowledge, enable an  
extensive access to  
knowledge repository as  
well as facilitate knowledge  
creation comprising  
imperatives for having an

agile enterprise (Grant, 1996). Furthermore, KMS usage intensifies knowledge-intensive capabilities, i.e. “agility and innovativeness” that results

in high performance among  
SMEs.

# **KM Model Applied in This Study**

Gold et al. (2001) indicated that an effective and efficient KM is affected by

two spheres of “KM capability” which are “infrastructure and process capabilities” that must take advantage of and utilize them thereby promising a

sustaining corporate prosperity. Chan and Chao (2008) quote that “A balanced combination of management support, technology, and

organizational structural factors is necessary for successful KM program implementation as well as adequate capability to

acquire, combine, apply,  
and create knowledge”.

In this research, a model  
used by Chan and Chao  
(2008) is applied to

investigate KM  
infrastructure and process  
capabilities in Iranian  
SMEs. According to this KM  
model the three  
infrastructure capabilities

examined are technology,  
structure and culture.

Process capabilities are  
knowledge acquisition,  
conversion, application and  
protection. In this study, a

sample of 63 companies is drawn for data analysis within which 22 utilize KM systems.

For the purpose of collecting primary data from SMEs in Iran, the survey questionnaire is adopted from Lee and Lan (2011). The first part of the

questionnaire taps the questions related to demographic data. The second part of the questionnaire (KM utilization) consists of four

subsets: technology,  
organizational culture,  
organizational structure  
and KM process capability  
to measure and identify the  
extent to which enterprises

utilize KM within their settings. The third part of the questionnaire indicates reasons for adopting KM.

Table 1 summarizes the demographic information of Iranian SMEs participating in this study. Respondents are categorized based on three

industry sectors including manufacturing (67.5%), service (6.5%), and others (26%). Most of participants are chief executive officers (47.6%). Other executives

and managers consist of 36.5% and 15.9% respectively. Regarding size of company, 14.3% have below 10 employees; 25.4% have employees

between 10 and 30; 17.5% have employees between 30 and 50; 23.8% have employees between 50 and 70 and 19% have employees between 70 and

99. Most of companies participated in this study are registered under Limited (LTD) Co. which stands for 90.5%. 7.9% of companies are registered

under Cooperative company as well as 1.6% for Limited liability partnership (LLP). Most of the companies (66.6%) have annual sales of below

10 million dollars. 49.1% of companies have been in business for 5 to 10 years and 30.1% of them are with more than 20 years of experience.

# **Table 1: Demographic Information of Iranian SMEs**

**Please See Table 1 in Full  
PDF Version**

# **Validity and Reliability**

Since the measurement instrument applied for this study has been used before, there is no need to test

their validity again for each study (Sekaran, 2003). For testing the reliability of measures (consistency and stability), the “Cronbach’s alpha reliability coefficient”

is applied. Sekaran (2003) mentioned that “the closer the reliability coefficient gets to 1.0, the better”. Reliability between .60 and .70 are considered

acceptable. Those over .80 are considered good reliability.

Cronbach's alpha for technology and structure

capabilities are .659 and .773 (table 2) which is acceptable. Alpha value for culture capability is .832 which is considered to be good. Cronbach's alpha for

knowledge acquisition construct is .709 which is acceptable. Cronbach's alpha for knowledge conversion, application and protection constructs are

.827, .818 and .885  
respectively which are  
considered to be good.

## **Table 2: Reliability Analysis**

**Please See Table 2 in Full  
PDF Version**

## **KM Utilization**

Following are the analyses of constructs pertaining to “infrastructure capability (technology, culture and

structure) as well as process capability (knowledge acquisition, conversion, application and protection)” regarding KM readiness in Iranian SMEs.

As adopted from Lee and Lan (2011), variables are analyzed based on their average respondent point (ARP) to delineate the current KM practices as

well as examining issues and dilemmas regarding KM adoption. Each variable is measured based on a seven-level Likert Scale as (0) Don't know/Not sure,

(1) Totally disagree, (2) Disagree, (3) Somehow disagree, (4) Somehow agree, (5) Agree and (6) Totally agree.

## *Technology*

Generally, in considering the technology capability of Iranian SMEs, executives strongly agreed that IT has

a major role in facilitating knowledge sharing with an ARP of 5.20. In addition, respondents to an extent agreed that the organization has IT

platform in place to support knowledge sharing between employees (ARP: 4.20). Companies do not utilize communication channels to share

knowledge (between  
organizations or partners)  
with the lowest ARP of  
3.50.

## *Structure*

Respondents agreed that the organizational structure encourage collaborative rather than

individualistic working  
behaviour with an ARP of  
4.90. Furthermore, they to  
an extent agreed that the  
organization support  
knowledge sharing

amongst employees with an ARP of 4.40. Few companies (ARP: 4.10) agreed that their organization possess a system to obtain various

successful and failed experiences.

## ***Culture***

The main concern in knowledge sharing is

“trust” between employees. Unfortunately, the primary issue in Iranian SMEs utilizing KMS is lack of trust in knowledge sharing which has a low ARP 3.30.

Furthermore, respondents agreed that the organization understands that the benefits of sharing knowledge outweigh the costs with an ARP of 4.90.

They to an extent agreed that senior managers bolster the role of knowledge in organization's success with an ARP of 4.30.

## ***Knowledge Acquisition***

Respondents agreed that the organization has course of actions to obtain new knowledge about products

as well as rivals' related knowledge with an ARP of 4.80. Moreover, they agreed that the organization has procedures to obtain the customer and supplier

related knowledge (ARP: 4.67). There is a low ARP of 3.40 for having procedures to apply standardized guidelines for knowledge acquisition.

## ***Knowledge Conversion***

In knowledge conversion, respondents accepted that the organization takes advantage of procedures to

convert knowledge to new products with an ARP of 4.50. Furthermore, they to an extent agreed that the organization takes advantage of procedures to

change competitive  
intelligence to operational  
plan with an ARP of 4.40.  
Less agreement of  
organizations having  
procedures to update

obsolete knowledge  
achieved an ARP of 4.0. In  
addition, there is less  
agreement regarding  
organization's capability to  
promote operational

knowledge and convey it to employees (ARP: 4.20).

### ***Knowledge Application***

Respondents to an extent agreed that the

organization has the capability to take advantage of knowledge obtained from the failures as well as successful experiences with an ARP of

4.30. Further, they agreed that the organization is capable of taking advantage of knowledge to solve problems with an ARP of 4.10. There is a less

agreement (somehow disagree) regarding organization's capability to instantly supply the requisite knowledge (ARP: 3.50).

## ***Knowledge Protection***

There is a moderate level of knowledge protection amongst SMEs in Iran. For instance, respondents

agreed that the organization has procedures to protect organizational knowledge and restrain unauthorized access with an ARP of 4.6.

Furthermore, they somehow agreed that there are a login and access policies to protect organization knowledge from unauthorized access.

## **Purpose of KM Adoption**

Amongst those companies that utilized KMS, 77.3% suggested that the purpose of KM adoption is to

increase profit and  
motivate innovation. 72.8%  
suggested that the purpose  
of KM adoption is to obtain  
competitive advantage; and  
63.7% voted for reducing

the duplication of work,  
68.2% for improving  
business processes, 63.6%  
for managing knowledge  
resources and 59.1%  
decided that the purpose of

KM adoption is to manage information overload.

## **Discussion**

Further to investigations carried out regarding KM

utilization, this part  
examines the knowledge  
management adoption  
maturity level of SMEs in  
Iran. A knowledge  
management growth

structure for Iranian SMEs is developed. At last, the results of regression analysis will be elaborated.

# ***Knowledge Management Adoption Maturity Level***

The maturity level of KM adoption is all about the degree of infrastructure

and process capabilities involved in business context. It gauges the level of adherence of company to infrastructure and process capabilities. The maturity

level is measured by the degree of contribution of these capabilities within organizations. The more participative these capabilities are, the more

mature would they be in  
KM adoption context.

# *Iran, Taiwan and Hong Kong SMEs' Level of Maturity*

The maturity level of Iranian SMEs is illustrated

in table 3. Regarding the level of maturity, five categories are defined which varies between low, medium and high level. These categories are low

(L) with a percentage of 0-20, medium-low (ML) with a percentage of 21-40, medium (M) with a percentage of 41-60, high-medium (HM) with a

percentage of 60-80 and high (H) with a percentage of 81-100. Iranian SMEs' level of maturity is evaluated using the data analysis method performed

in KM utilization (section 5).

**Table 3: KM Adoption  
Maturity Level in Iran,  
Taiwan, and Hong Kong  
SMEs**

**Please See Table 3 in Full  
PDF Version**

As illustrated in table 3, the results in Iran illustrate that all infrastructure and process capabilities, except culture and knowledge application, are in medium

level of maturity. Culture and knowledge application capabilities have a lower maturity level (medium-low). The result of this table relies on the fact that

the KM adoption and development strategy in Iran requires much effort to be applied and transformed within SMEs. Results in Taiwan and Hong Kong

conducted by Lee and Lan (2011) show that both economies are in same maturity level with a slight difference in structure and culture capabilities.

Therefore, Taiwan and Hong Kong SMEs appropriately adopted KM within their business settings.

Culture can neither be generated nor changed but it can be influenced.

However, the critical role of Iranian top-managers and executives pertaining to

cultural issues is evident.  
Furthermore, when  
corporate knowledge is not  
applied in business  
operations, it is futile and  
worthless. Iranian

companies, therefore, must support employees to apply their knowledge for problem solving and supply required knowledge to appropriate parties.

## ***Regression Analysis***

Further to this study there could be some hypotheses regarding the dependant variables (i.e. knowledge

acquisition, conversion,  
application, protection) and  
independent variables  
(technology, structure and  
culture) which will be

tested through regression analysis. Hypotheses are:

**H1:** “the three independent variables will significantly explain

the variance in  
knowledge  
acquisition”.

**H2:** “the three independent  
variables will

significantly explain  
the variance in  
knowledge  
conversion”.

**H3:** “the three independent  
variables will

significantly explain  
the variance in  
knowledge  
application”.

**H4:** “the three independent variables will significantly explain the variance in knowledge protection”.

Amongst these hypotheses,  
H1 and H2 were  
substantiated as follows:

The First hypothesis is  
accepted with a significance

level of .001 (table 4). R-square value is .595 which means that the variation in knowledge acquisition can be explained by the

variation in culture,  
structure and technology.

## **Table 4: Model Summary of Knowledge Acquisition**

**Please See Table 4 in Full  
PDF Version**

From the ANOVA table, the p-value is .001 which is less than .05 (p-value is significant). This means that at least one of these three variables (i.e. culture,

structure and technology)  
can be used to model  
knowledge acquisition.

# **Table 5: ANOVA of Knowledge Acquisition**

**Please See Table 5 in Full  
PDF Version**

The independent variables culture and technology have a coefficient of .444 and .159 (table 6) respectively. The structure construct has a small value

of .062. It can be inferred that culture and technology has a significant role in knowledge acquisition process amongst Iranian SMEs.

# **Table 6: Coefficients of Knowledge Acquisition**

**Please See Table 6 in Full  
PDF Version**

The second hypothesis has been substantiated with a significance level of .000 (table 7). Regarding independent variables, culture and technology

have a coefficient of .559  
and .189 (table 9)  
respectively.

# **Table 7: Model summary of Knowledge Conversion**

**Please See Table 7 in Full  
PDF Version**

From the ANOVA table, “the p-value is .000 which is significant”. This means that at least one of these three variables (i.e. culture, structure, and technology)

can be used to model  
knowledge acquisition.  
Therefore, H2 is  
substantiated.

## **Table 8: ANOVA of Knowledge Conversion**

**Please See Table 8 in Full  
PDF Version**

Structure has a small value of 0.028 (table 9). Based on the first hypothesis, it can be pointed out that culture and technology has a significant role in

knowledge conversion  
process amongst Iranian  
SMEs.

## **Table 9: Coefficients of Knowledge Conversion**

**Please See Table 9 in Full PDF Version**

Even though hypotheses three and four have not been substantiated with significance level of .054 and .151, culture has a coefficient value of .339 and

.159 for knowledge application and protection respectively. Thus, based on these findings, culture plays a significant role in KM process capabilities

amongst SMEs in Iran. This highlights the role of leadership in influencing culture by stimulating and motivating employees toward process capabilities.

To summarize, based on the findings of regression analysis of SMEs in Iran, culture is the most significant factor in KM adoption.

## ***Knowledge Management Growth Structure***

By virtue of infrastructure and process capabilities, figure 2 depicts a proposed

KM growth structure.  
Complete ignorance is  
assigned to organizations  
that do nothing about  
infrastructure and process  
capabilities. The awareness

square in figure 2 illustrates that the companies are aware and concerned about the significance of knowledge.

The infrastructure characterization square in this figure shows that the company or organization has pondered on infrastructure capabilities.

The process characterization square shows that the company is familiar with organizational as well as knowledge processes. Know-why

square in top-right of figure implies that the organization has thoroughly implemented and deployed KM. Therefore, high score in

process and infrastructure capabilities relies on the fact that the company had fully implemented KM.

**Figure 2: KM Growth  
Structure of Companies  
that Utilized KMS**

**Please See Figure 2 in Full  
PDF Version**

The above figure shows the KM growth structure in Iranian SMEs. This study utilizes a seven-level Likert scale, thus the figure has seven-scales from 1-7. The

(I) symbol is derived based on the means obtained from table 10 and 11 which represents Iranian companies KM growth structure. This symbol is

derived from the survey results. The average respondent point (ARP) of all infrastructure capabilities is 4.342 among Iranian SMEs (table 10).

# **Table 10: Mean of all Infrastructure Capabilities**

**Please See Table 10 in  
Full PDF Version**

Table 11 shows the mean of all ARPs obtained from process capabilities which is 4.312. Therefore, based on figure 2, we can conclude that KM in Iranian

SMEs is partially, not fully,  
deployed.

# **Table 11: Mean of all Process Capabilities**

**Please See Table 11 in  
Full PDF Version**

## **Conclusion**

In order to obtain a competitive advantage, utilizing a KM strategy is imperative to businesses

nowadays. SMEs are the industrial wheels of all economies particularly developing countries like Iran. KM has a profound contribution in

innovativeness and competitiveness. This study examines KM utilization amongst Iranian SMEs and compares the results with the same study done in

Taiwan and Hong Kong.  
Unsurprisingly, Iranian  
SMEs lag behind Taiwanese  
and Hong Kong SMEs and  
they situated themselves in  
a medium level of KM

maturity compared with latter economics which have a high maturity level. It should be noted that KM practices are at initial stages amongst SMEs in

Iran and it requires the parameter of “Time” to shift to a new stage of KM within which it passes through the traditional stage to a public and collaborative setting.

This research considered the infrastructure and process capabilities of Iranian SMEs for developing and improving the implementation of KM.

In infrastructure capability, companies need to utilize communication channels for sharing of knowledge (between organizations or partners). Organization

should possess a system to obtain various successful and failed experiences. In process capability, organizations must pose procedures to update

obsolete knowledge as well as instantly supplying the requisite knowledge.

This study has surfaced all challenges related to KM

implementation. It provides a platform for Iranian companies to notice the benefits of implementing a KM strategy. Moreover, since the primary issue in

Iranian SMEs is lack of trust, they must draw attention to the role of culture in KM adoption. They must pose course of

actions to motivate a  
knowledge sharing culture.

Future studies should  
consider the role of  
leadership in KM models.

Persuasive leadership is an imperative to a “healthy” organizational culture.

Leaders can influence the culture to incentivize employees to participate in

KM processes. However, the role of leadership should not be forfeited in KM implementation outline.

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