

Intellectual capital and knowledge management performance

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Abstract:

Knowledge management and intellectual capital (KM/IC) is a relatively new business related discipline, yet it has already attracted the attention of the academic research community. In today's competitive business environment, knowledge management is increasingly recognized as a significant factor in gaining a competitive advantage. To obtain such a competitive advantage, companies must know how to manage organizational knowledge by the use of organizational assets. So focus on this study is the relationship between intellectual capital and knowledge management performance. The population of this study is built on fifteen industrial firms of Kaveh Industrial City in Iran and the results show that intellectual capital affect knowledge management performance. It mentions that the statistical method was used in this study.

Keywords: knowledge management, Human capital, Structural capital, Relational capital

Introduction

Intellectual capital is becoming a crucial factor for a firm's long-term profit and performance in the knowledge-based economy as more and more firms identify their core competency as invisible assets rather than visible ones (Itami, 1987). Nonaka and Takeuchi (1995) pointed that future society is a knowledge-based society in which knowledge storage and application are the basis of economic growth and accumulated capital. Industries in such a society do not rely on traditional production factors for their competitive advantage, but on knowledge management and integration. This trend stresses the importance of knowledge and how to create, knowledge management, and evaluate intellectual capital. According to Mouritsen (2001) Reading intellectual capital statements, the impression is one of diversity. They do not have a set model, but they all somehow are organized along three dimensions. First, they have some form of knowledge narrative a scenario, which is a story line of the capabilities of the firm, and thus of how it is good at doing something. The knowledge narrative is a presentation of the

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firm's knowledge resources focusing on how they interact and allow the firm to be capable of doing certain things for external users. It thus both has a proposition of the firm's 'production function' and of the value proposition supplied to users. Second, intellectual capital statements identify a set of knowledge management challenges, which are the efforts management puts in place to develop and condition the firm's knowledge resources. These management challenges are related to the knowledge narrative as they seek to identify and implement activities that help to realize the narrative more. Third, there is a report which combines numbers, visualization and the narrative in a composition designed to show the development of the firm's knowledge resources.

At the same time knowledge management is recognized as the fundamental activity for obtaining, growing and sustaining the intellectual capital in organizations (Marr and Schiuma, 2001) successful management of IC is closely linked to the KM processes an organization has in place; which in turn implies that the successful implementation and usage of KM ensures acquisition and growth of IC. However we believe that there is the relationship between intellectual capital – including human capital, structural capital, and relational capital – and knowledge management performance. The main questions of this research are:

Can intellectual capital help knowledge management performance?

How industrial companies can run a good knowledge management system in their organizations with the use of intellectual capital?

Literature review

Intellectual capital is the valuable knowledge of an organization (Bassi, 1997). Wiig (1997) notes that intellectual capital comprises all assets created by intellectual activities, including knowledge acquisition, innovation, and creation. Intellectual capital also affects and advances knowledge management. Knowledge innovation is a key element in the creation of product value and economic growth in a knowledge-based economy (Piore, 1984). Knowledge innovation depends on organizational learning capability improvement. Baker (1992) contends that high-quality employees are the most important factor for a firm in this economy. Managers train their employees to be knowledgeable workers, improve their overall quality, and increase organizational learning capability. Pfeffer(1994) notes that the manner in which a firm retains and trains its best human resources is the most important competitive strategy within the knowledge economy context.

Zhou and Fink (2003) established similarities between the two and proceeds to develop a systematic approach to linking KM and IC through the intellectual capital web (ICW). They showed there are six components with the ICW: strategic objectives, management systems, measurement systems, knowledge workers, catalysts and reward and incentive systems. Also they said the integration of IC and KM requires alignment of KM processes with IC assets to meet the organization's strategic needs.

Curado (2008) led to some interesting findings, allowing verification of most of the theoretical knowledge management and intellectual capital literatures, as well as gathering some examples of its routines and elements, and also identifying the value given to knowledge management and intellectual capital by the banks that took part in the study. The study followed a qualitative approach and considers two different knowledge management strategies: exploitation and exploration and three

different intellectual capital components: human capital, internal structures and external structures. The paper developed and analyses several interviews in the banking industry at top management level across different banks.

Hsu and Fang examined the relationship between intellectual capital and organizational learning capability. They use interviews and the survey method to discuss the relationships governing intellectual capital, organizational learning capability, and new product development performance. They showed that human capital and relational capital actually improve new product development performance through organizational learning capability. Although structural capital positively affects organizational learning capability, managers should pay attention to possibly negative effects of structural capital on new product development performance.

Marr et al (2003) suggested ways of identifying and evaluating recourse transformations in organization, in order better to understand and manage knowledge creation to grow the intellectual capital of organization. Also they highlighted significant misalignment between knowledge management requirements epistemological terms and individual's perception of organizational knowledge management activities.

Definition of intellectual capital

Intellectual capital, a term first introduced by economist John Kenneth Galbraith in 1969, refers to the difference between an organization's market value and book value. Many researchers have come to regard intellectual capital as a firm's primary means of creating competitive advantage. The abstract and dynamic nature of intellectual capital makes its definition difficult for scholars (Zhou et al, 2003). Moreover; Guthrie (2001) even notes that some consider intellectual capital and intellectual assets or intangible assets as synonyms. Previous studies indicate that intellectual capital is the product of dynamic business operation processes, and is closely related to knowledge management or organizational learning (Stewart, 1997; Lynn, 1999). Some researchers also contend that accumulating intellectual capital is beneficial for creating competitive advantage or business values (Edvinsson, 1997; Roos et al, 1998).

Definition knowledge management

Knowledge Management (KM) is a process in which organizations formulate ways to recognize and archive knowledge assets within the organization that are derived from the employees of various departments or faculties and in some cases, even from other organizations that share the similar area of interests or specialization (Firestone, 2001). It is also defined as the process of transforming information and intellectual assets into persisting value. It connects people with the knowledge that they need to take action, when they need it (Kidwell, 2000). KM is concerned with making the right knowledge available to the right processor such as human or computer, at the right time in the right presentations for the right cost (Aranganathan, 2010). The general purpose of KM is to make knowledge usable for more than one individual, e.g. for an organization as a whole; that is, to share it (Kucza, 2001). Knowledge management is almost a new field, and experiments are just beginning in higher education. There is a

tremendous value to higher education institutions that develop initiatives to share knowledge to achieve business objectives (Marjan, 2011).

Intellectual capital and knowledge management

Baskerville and Dulipovici (2006) explored the “flow and use” of theoretical concepts in knowledge management, identifying eight broadly defined critical influences:

1. Information economics. 2. Strategic management. 3. Organizational culture. 4. Organizational structure. 5. Organizational behavior. 6. Artificial intelligence.
7. Quality management. 8. Organizational performance management.

They further subdivided each of these broad areas into more specific theoretical frameworks, but did not explicitly ground their model in a systematic analysis of the knowledge management literature. The result is a largely speculative, albeit highly useful, model of the theoretical structure of knowledge management. Choo & Bontis (2002) presented a visual model for strategic knowledge in this model that the role of intellectual capital in the knowledge management is presented in Fig.1 .



Fig 1. A framework for strategic knowledge management (Choo & Bontis, 2002)

The relationship between IC and KM is of vital importance to an organisation. Due to the similarities and complementariness, IC and KM should be linked to achieve added value and must be made to work together. The rationale of this linkage is if competitive IC is properly utilized and exploited, it becomes the central resource for sustainable competitiveness, success and viability (Wiig, 1999). On the other hand, KM plays an important role in the process of IC development and exploitation. KM focuses on facilitating and managing knowledge-related activities and strives to create a knowledge friendly environment in which IC will grow. Organizations “need to understand how to get broad priorities and integrate the goals of managing intellectual capital with the detailed machinery of managing the corresponding effective knowledge processes (EKPs)” (Wiig, 1997). The relationship of IC and KM is presented diagrammatically in Fig 2.

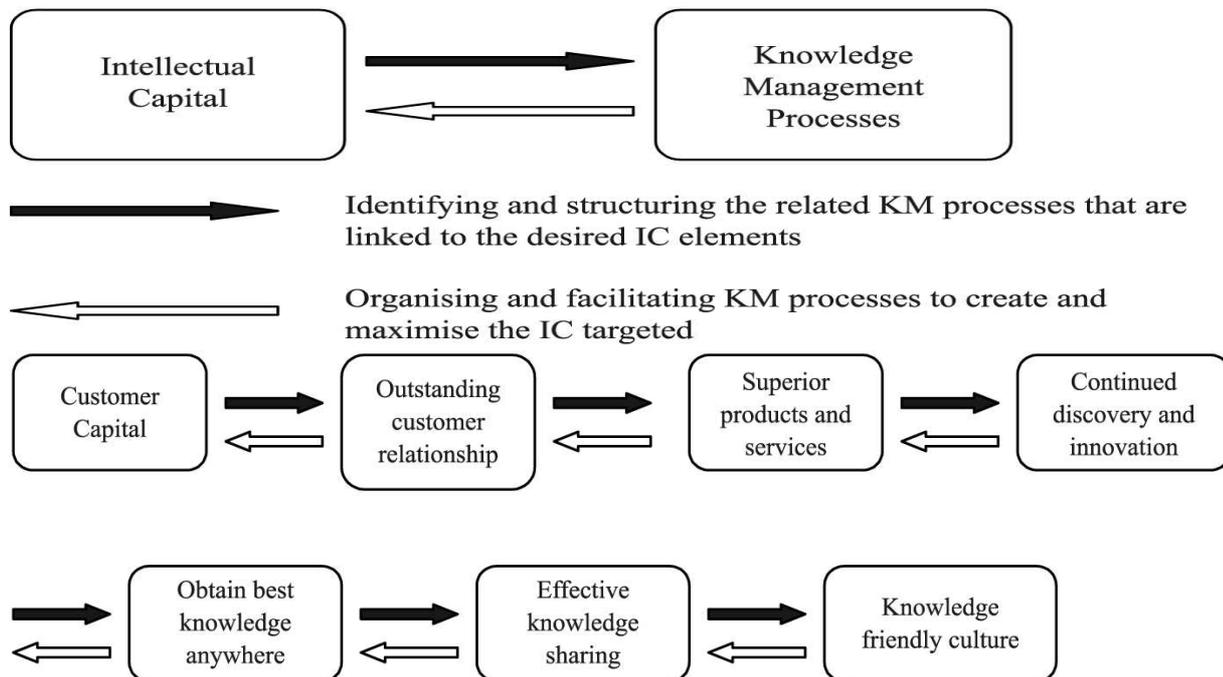


Fig 2. The relationship between IC and KM (Wiig, 1997)

Based on the discussion above, this study offers the following hypotheses.

Hypothesis1. Intellectual capital positively affects knowledge management performance.

Hypothesis1a. Human capital positively affects knowledge management performance.

Hypothesis1b. Structural capital positively affects knowledge management performance.

Hypothesis1c. Relational capital positively affects knowledge management performance.

Research Methodology

Sample and data collection

The population of this study is built on firms of Kaveh Industrial City. Kaveh Industrial City, measuring 3000 hectares, located 100 kilometer far from Tehran is one of the biggest industrial cities of Iran. This Industrial city has been converted to an international large pole of country for the settlement of 500 producing factories and residential complexes in this area with the population of 10000 persons as well as its geographical and strategic location, closeness to Tehran, simple access to other parts of Iran and transit roads, enjoying special infrastructural installations, adjacency to Imam Khomeini airport and Salafchegan free zone, access to overall railroad & adjacency to Tehran-Saveh highway. In this study we chose a sample of 15 firms of this industrial city. These firms have a good knowledge management system and they are started their activities for more than five years. We chose a group of top and middle managers of different firms, the number of this group is 150 persons i-e. That the population of this study is 150 person. The youngest manager in the sample is 38 years old and the oldest manager is about 57 years of age. The managers are 42 years old on average. 70 of them are female and others are male.

Measurement

This study is a questionnaire study. The number of questions in the questionnaire is 21. We measured all variables on a five point Likert-scale with the levels 1 = “strongly disagree” to 5 = “strongly agree”. Because participants were Iranian, all the scales used were first translated into Farsi by a translator and then back translated into English by a bilingual, native English translator. The Reliability test was performed by Cronbach's alpha. The specific measures used in the analysis, along with sample items of the relevant constructs, are outlined.

Intellectual capital

This study used fifteen items to measure intellectual capital according to the Literature. Human capital measurement comprises with four items (Van Buren,1999 ; Bontis,1998) (Cronbach's alpha= 0.71). Structural capital measurement comprises with seven items (Van Buren,1999 ; Bontis,1998 ; Peng,2002) (Cronbach's alpha= 0.83). Relational capital measurement comprises with four items: (Bozbura, 2004) (Cronbach's alpha= 0.83).

Knowledge management performance

According to Feng Wen (2009) Knowledge management performance comprises the following six items (Cronbach's alpha= 0.88): (1) whether or not my company has a good Knowledge creation system, (2) whether or not my company has a good Knowledge storing system, (3) whether or not my company has a good Knowledge distribution system, (4) whether or not my company has a good Knowledge deepening system, (5) whether or not my company has a good Knowledge generation system, (6) whether or not my company has a good Knowledge arrangement system.

Analysis and results

In this section the hypotheses were tested by statistical method, for this purpose we get benefit from SPSS program. Hypotheses 1a, 1b, 1c were tested by Correlations analysis; the results of the statistical analysis are summarized in the table 1. According to Correlations analysis human capital positively affects knowledge management performance (Pearson Correlation=0.436, Sig<0.01), structural capital positively affects knowledge management performance (Pearson Correlation=0.131, Sig<0.01) and relational capital positively affects knowledge management performance (Pearson Correlation=0.392, Sig<0.01). It means that hypotheses H1a, H1b, H1c are supported.

Hypothesis 1 was tested by regression analysis. The results that reported in the table 2 show that there is a linear relation between Intellectual capital and knowledge management performance (Sig <0.01). According to table 3 the equation of this liner relation is “ $KM = 3.444 + 0.249HC + 0.931SC + 1.026RC$, Sig<0.05”. The equation shows that relational capital has more effect on knowledge management performance and human capital has less effect on knowledge management performance therefore hypothesis 1 is supported.

Table 1 Correlations

		KM	HC	SC	RC
KM	Pearson Correlation	1	.436**	.131	.392**
	Sig. (2-tailed)		.000	.005	.000
	N	150	150	150	150
HC	Pearson Correlation	.436**	1	.662**	.977**
	Sig. (2-tailed)	.000		.000	.000
	N	150	150	150	150
SC	Pearson Correlation	.131	.662**	1	.760**
	Sig. (2-tailed)	.005	.000		.000
	N	150	150	150	150
RC	Pearson Correlation	.392**	.977**	.760**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	150	150	150	150

** . Correlation is significant at the 0.01 level (2-tailed).

Table 2 ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	8.465	3	2.822	34.368	.000 ^a
Residual	11.987	146	.082		
Total	20.453	149			

a. Predictors: (Constant), RC, SC, HC

b. Dependent Variable: KM

Table 3 Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	3.444	.280		12.323	.000
HC	.249	.263	.350	.948	.045
SC	.931	.132	.845	7.037	.020
RC	1.026	.318	1.377	3.232	.002

a. Dependent Variable: KM

Conclusion

Intellectual capital is increasingly recognized as an important strategic asset for sustainable corporate competitive advantages. Our study provides evidence that investors place higher value on firms with better intellectual capital, and that firm with better intellectual capital efficiency yield greater better knowledge management performance. The results of this research indicate that human capital significantly affects knowledge management performance. It means that employee empowerment level, employees' excellent professional skills, fostering employees' new ideas and well-designed training programs for them can help knowledge management system to sustain organizational goals. On the other hand according to Roos et al (1998) human competence, attitude and intellectual agility are indicators for component of human capital. Also we find that structural capital positively affects knowledge management performance. Process capital and innovation capital are indicators for component of structural capital (Van Buren, 1999; Bontis,1998 ; Peng,2002). So according to results IT investment, willing to invest in business development, easily-accessible information system, patent maintenance, and new market development investment should be attended by top managers of industrial companies. If they pay attention to these factors they will achieve a good knowledge management system and they will improve it. The results emerging from the paper is reporting that relational capital positively affects knowledge management performance and it is the most important effective factor in the knowledge management performance so having long-term relationships with customers, many excellent suppliers and strong strategic alliances play a vital role in the knowledge management performance.

Finally our results underline the importance of intellectual capital in improving knowledge management performance. Entering a knowledge area, organizations will need to become more adaptable and flexible in order to enhance intellectual capital and capture opportunities in the dynamic environment. The implications of this study in terms of knowledge management strategy identification and intellectual capital components valuation hopefully will conduct to more academic research. Also the findings of our study have important implications for managers who manage organizations in the knowledge economy. Managers, especially in knowledge based organizations; need to consider the importance of intellectual capital to facilitate knowledge creation, knowledge transferring and knowledge sharing.

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