The Effect Of Knowledge Management On Relationship Between Intellectual Capital And Business Performance: A Case Study Of IRAN's Industrial Development And Renewal Organization (IDRO)

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ABSTRACT:

In this study we suppose that knowledge management system is a facility for developing knowledge in a company; this system effects the correlation between intellectual capital and business performance. Thus in this research we studied effect of knowledge management on business performance as a moderate variable. Therefore we attempt to explain relationship between intellectual capital and business performance regarding knowledge management. It was found that the knowledge management system moderates the relationship between intellectual capital and business performance. Also we found a positive correlation between three dimension of intellectual capital and business performance. Despite a positive correlation between intellectual capital and business performance, when we controlled the effect of knowledge management we observed that the correlation was less than before. This indicates significant effect of knowledge management on intellectual capital and business performance. It is observed by correlation analysis that KM as a moderated variable, has a positive effect on the business performance and we show that the relationship between IC and BP is positively moderated by KM.

Keywords: *Knowledge management, Intellectual capital, Business performance*

1. Introduction

We propose a relationship between intellectual capital and business performance and therefore we want to consider knowledge management's role in adjusting this relationship. The management of intellectual capital includes management style, internal processes, customer relationship, employee satisfaction and knowledge management. On the basis of previous study in intellectual capital, role of human capital is more important than others (structural capital and costumer capital). We surveyed in 30 Iranian firms associated with IDRO - IDRO is a holding company in industrial management of Iranian organization. The sample was selected on the basis of organizational field and social perspective. Nowadays, there is a little attention to intellectual asset in most Iranian firms. Unfortunately there is not enough study in this field. In spite of some limitation in intellectual asset management, this study can be helpful in altering the management perspective about intellectual asset and knowledge management.

2. Relevant Literature

The money that enterprises spend on human resources has traditionally been reported in the accounts as a cost, rather than as an investment . This has been the case even where firms and organizations have relied heavily on the knowledge and skills (intellectual capital) of their staff to generate earnings and growth and to improve efficiency and productivity (Brennan &

Connell, 2000). Petty and Guthrie (2000), divided intellectual capital to 3 dimension, this dimensions and sub-dimension of intellectual asset is shown in Table 1 .

Table 1: Guthrie And Petty (2000) Modified Intangible Assets Monitor

Intellectual assets	Dimension	Sub-dimension
Internal: organizational (structural) capital	Intellectual property	Patents
		Copyrights
		Trademarks
	Infrastructure assets	Management philosophy
		Corporate culture
		Management processes
		Information systems
		Networking systems
		Financial relations
External: customer (relational) capital		Brands
		Customers
		Customer loyalty
		Company names
		Distribution channels
		Business collaborations
		Licensing agreements
		Favorable contracts
		Franchising agreements
Employee competence: human capital		Know-how
		Education
		Vocational qualification
		Work-related knowledge
		Work-related competencies
		Entrepreneurial spirit,
		innovativeness, proactive and reactive abilities,
		changeability

In result we summarize all of criteria and sub-criteria of intellectual capital on the basis of this literature review, and in Table 2 we divide intellectual capital in to 3 sub-criteria namely human capital, structural capital and costumer capital.

Table 2: Sub-Dimension Of Intellectual Capital

Intellectual Capital		
Human Capital	**Structural Capital**	**Customer Capital**
-Knowledge, skills and abilities of employees **-Combined human ability to solve business problems** **-Inherent in people, not owned by the organization**	**-Processes** **-Trademarks** **-Information systems** **-Proprietary databases**	**-Strength & loyalty of Customer relations** **-Customer satisfaction** **-Repeat business**

3. Knowledge Management

Knowledge management systems (KMS) are becoming increasingly important to organizations both for their strategic potential and as a crucial resource. (Liebowitz & Suen, 2000). Consequently several organizations have established these systems in order to leverage the combined knowledge of individual employees – their intellectual capital – and disseminate this amalgam to promote organizational learning in order to increase decision making effectiveness and ultimately competitive positioning. Organizations are increasingly adopting the resource-based view of knowledge which holds that the accumulation of their employees' knowledge is a primary assets and a resource to be managed like other organizational asset (Wenger & Etienne, 2004).

4. Performance Measurement

On the basis of historical study we divide business performance in to financial and non-financial indicators that are summarized in Table 3.

Table 3: Business Performance Criteria

Business Performance	
Financial measures	**Non-financial measures**
Profit	Future outlook
Profit growth	Overall response to competition
Sales growth	Success rate in new product
After-tax return on assets	launches
Share prices	Overall business performance
After-tax return on sales	success
Industry leadership	

5. Research Methodology

In this study 30 firms randomly were selected and the questionnaire was sent for 4 expert people in each of them (see Table 4). In all 120 copies of the questionnaire were sent and 80 of them were returned that included 30 firms; therefore response rate is 66%.We averaged all respondents in the firm. In result, final result per firm is the average all respondents in their firm.

Table 4: Sampling Distribution

Field	# of firm	# of sent questionnaire	# of returned questionnaire
Manufacturing	12	48	30
logistics	11	44	18
Industrial service	4	16	26
Planning and engineering	3	12	6

For collecting operational data we studied statement and documents of firms; for example Iranian National and Productivity Excellence award's statement, financial data, social perspective etc.

6. Theoretical Framework

This model was made on the basis of a literature review; for example Stewart (1999), Tayles et al (2007), Saudah et al (2006), Marr & Moustaghfir (2005), Bontis (2001), Rao & Osei-Bryson (20007), Amaratunga et al (2001), Chen & Chen (2005) and Nonaka (1994).

Since the three intellectual capitals are complementary to each other, the intellectual capital can create value only by combining them (Rao & Osei-Bryson, 2007). The final business performance of an organization is influenced by the interactions of the three dimensions of the intellectual capital. Dzinkowski (2000) and Edvinsson (2000) stressed that human capital was a cornerstone and influential factor in intellectual capital (Huang & Hsueh, 2007). Thus IC with sub-criteria is an independent variable that effects the BP (as dependence variable). KM is a moderated variable that effects the relationship between IC and BP (Figure 1).

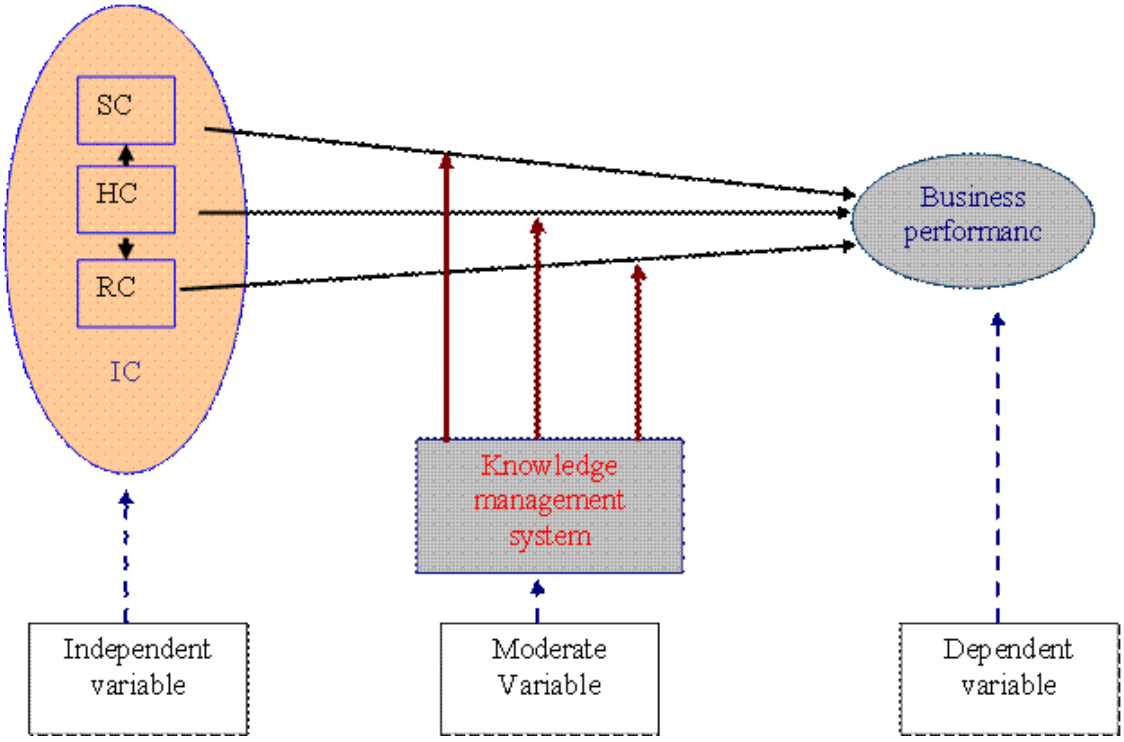

Figure 1: Theoretical Frameworks For This Study

7. Findings And Discussion

7.1. Correlation Analysis

Table 5 illustrates correlation between independent variable (human capital, structural capital, customer capital) with dependent variable (business performance). Follow this table there is a positive correlation between HC with BP (0.807**), SC with BP (0.581**) and CC with BP (0.76**) .also there is positive relationship between HC with SC (0.454*) and HC with CC (0.73**).

Table 5: Correlation Matrix Of Measured Dimensions

	HC	SC	CC	KM
Human Capital	1			
Structural Capital	.454(*)	1		
Customer Capital	.730(**)	.510(**)	1	
Knowledge Management	.769(**)	.481(**)	.711(**)	1
Business Performance	**.807(**)**	**.581(**)**	**.760(**)**	**.893(**)**

* P< 0.05 ** P< 0.01

Regarding Table 5 costumer capital is more positive correlation than Structural capital with BP, in the other hand human capital has the most positive correlation with BP.Also there is a positive correlation among the 3 dimensions of intellectual capital, especially the coefficient of human capital and customer capital is 0.73**, showing a remarkable level of correlation.

Table 6: Correlation Matrix Of Measred Dimensions

	HC	SC	CC	BP
Knowledge Management	**.769(**)**	**.481(**)**	**.711(**)**	**.893(**)**

* P< 0.05 ** P< 0.01

Table 6 shows a positive and direct correlation between knowledge management and business performance. Moreover there is also a positive correlation between the 3 dimensions of intellectual capital and knowledge management, coefficient of human capital and knowledge management is 0.769 **, showing a weighable level of correlation vs. others.

7.2. Controlling KM's Effects

On the basis of main hypothesis we assumed KM's positive effect on the relationship between IC and BP. we will need to control effect of KM -as a moderated variable- on the BP –as a

independence variable- If we want to test of this hypothesis .

Table 7: Correlation Matrix Of Measured Dimensions

Control Variables		HC	SC	CC
Knowledge Management	Human Capital	1.000		
	Structural Capital	.151	1.000	
	Customer Capital	.407(*)	.272	1.000
	Business Performance	**.418(*)**	**.384(*)**	**.393(*)**

* P< 0.05 ** P< 0.01

So we control KM's effect in this study to see correlation of IC's criteria and business performance. Thus it is considered the effect of independence variable (HC, SC, CC) on the business performance has been become less than before. Therefore we can claim "relationship between Intellectual capital and organizational performance is positively moderated by the Knowledge Management System" (see Table 7).

7.3. Controlling IC Sub-criteria's Effect

We want to analyze effect of sub-criteria of intellectual capital on the business performance, so we controlled effect of HC, SC and CC then studied correlation between IC and BP.

Table 8: Correlation Matrix Of Measured Dimensions

Control Variables		**SC**	**CC**	**IC**
Human Capital	Human Capital	1.000		
	Structural Capital	.293	1.000	
	Customer Capital	.546	.442	1.000
	Business Performance	**.408**	**.422**	**.711**
Structural Capital		**HC**	**CC**	**IC**
	Human Capital	1.000		
	Structural Capital	.650	1.000	
	Customer Capital	.910	.703	1.000
	Business Performance	**.749**	**.662**	**.857**
Customer Capital		**HC**	**SC**	**IC**
	Human Capital	1.000		
	Structural Capital	.140	1.000	
	Customer Capital	.819	.391	1.000
	Business Performance	**.568**	**.346**	**.769**

* P< 0.05 ** P< 0.01

Corresponding to Table 8 there is significant correlation between IC and BP. When we controlled effect of IC, we saw that the effect of IC on the BP will be less than before. With controlling HC, correlation of IC and BP will be less but not as the control of HC. In a result the effect of HC on the BP is the most positive than others.

7.4. Functional Data Analysis

In this part we studied correlation between operational data such as; Iranian National and Productivity Excellence award(INPE),capital and number of personal with prime variable same as; KM, IC and BP.

Table 9: Correlation Matrix Of Measured Dimensions

	# of personnel	INPE Award	Capital	KM	BP	IC
# of personal	1					
INPE Award	**.684(**)**	1				
Capital	**.691(**)**	**.809(**)**	1			
Knowledge management	**.556(**)**	**.792(**)**	**.725(**)**	1		
Business Performance	**.645(**)**	**.832(**)**	**.831(**)**	**.85(**)**	1	
Intellectual Capital	**.579(**)**	**.847(**)**	**.859(**)**	**.853(**)**	**.907(**)**	1

* P< 0.05 ** P< 0.01

Table 9 shows significant correlation between INPE's award with IC (.847**), with KM (.792**), and with BP (**.832****). Also there is positive correlation between capital and KM (**.725****) and capital with IC (.859**). In general we can conclude; firms that work well in KM and IC, they got a good mark in INPE's award; also firms that have high capital are better than other firms that haven't more capital. in the finally we see correlation between number of personal with IC , KM and INPE's award . So we can claim that big, reach and high social perspective organization concern with knowledge management and intellectual capital despite of others. Also this organization has better performance related to other organization.

8. Conclusion

In this paper, we have examined this hypothesis; "relationship between Intellectual capital and organizational performance is positively moderated by the Knowledge Management System". We have offered findings based on a sample of industrial Iranian firms. Findings suggest that the level of business performance in Iranian organizations is associated with Knowledge management practices, concern to IC, and the social perspective. IC has a direct effect on the business performance but KM is a moderated variable. Find out that KM as a moderated variable, has a positive effect on the business performance and we approve relationship between IC and BP is positively moderated by KM. Also we analyzed correlation between sub-dimension of IC and BP, so we find, positive relation between this variable. In addition there is a positive correlation between level of IC with BP and with themselves. The result shows that human capital has a significant influence on structural capital and relational capital. Therefore, we suggest that enterprises should make more investment in this area, for example, developing staff education, enhancing the training process, and managing of their knowledge.

9. References

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