

FACTORS AFFECTING INTELLECTUAL CAPITAL AND ITS ROLE IN FINANCIAL PERFORMANCE OF ORGANIZATION

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ABSTRACT

The significant objective of this article is to consider existence of relationship between two main factors that they include Intellectual Capital and Organization's Financial Performance in a company in Iran. To assess this, models with 14 latent variables are presented, where each of the variables is measured by some other indicators. In order to measure the indicators, a questionnaire was provided and distributed among 79 respondents. The questionnaire was used to test the hypotheses that are derived from a research conducted on "Intellectual capital and corporate performance in knowledge-intensive SMEs" by Cohen & Kaimenakis (2007) in which the relations among intellectual capital components have been confirmed. Visual PLS was utilized to evaluate the relationship between the latent variables. According to the conclusions, a significant relationship exists between Intellectual Capital and Organization's Financial Performance. Intellectual capital has been mostly affected by the relational capital, human capital and structural capital.

KEYWORDS: Intellectual Capital, Financial Performance, Partial Least Square (PLS), Tehran Stock Exchange

Capital, labor and land are traditionally regarded as assets of greatest worth in the economy, and conventional physical assets were deemed to be the main factors that determine the performance of all economic activities. However, the pattern and structure of the production system have been changed due to the rapid development of science and technology (as inputs), as well as the increasing expansion of market by globalization. Factors such as technology, knowledge, expertise and relationships between relevant stakeholders, which can be described together as "intellectual capital", mainly drive the emerging production system (Ahangar R, 2011). Intellectual capital includes intangible assets, which are composed of technology, customer information and credit, as well as and culture of the organization that are of crucial importance for the competitiveness of the organization (Low, J. and Kalafut, P.C, 2002).

Sibay (1997) believes that intellectual capital consists of three components: human capital (i.e. ability to perform in different conditions and create tangible and intangible assets), structural capital (e.g. loyalty, concepts, models and office/computer systems) and relational capital (i.e. relationships with suppliers and customers).

Ross et al (1997) argue that staff creates intellectual capital through their competence, perspective and intellectual alacrity. The most important components

of human capital in an enterprise are all labor skills, as well as the depth and breadth of their experience. Human capital consists of: i) the skills and competencies of workforce ii) knowledge in areas that are critical to the success of the company, and iii) talents, ethics and behavior of the workforce.

Broking (1996) argues that human assets of an enterprise include the skills, expertise, problem-solving ability and leadership styles. If there is a high turnover of staff in an enterprise, it can be concluded that the organization will lose this important component of the intellectual capital.

Rose et al (2005) argue that structural capital includes non-human knowledge resources, which consist of databases, organizational charts, executive instructions of processes, strategies and executive programs.

LITERATURE REVIEW

The concept of intellectual capital has continuously been the subject of debates, and no different well-defined words have been used for its interpretation (Snake, 2008). According to Bontis (1998), intellectual capital can be defined as a set of intangible assets (resources, capabilities, and competition) that are obtained by creating the value of organizational performance. Addison and Malone argue that intellectual capital

includes the information and knowledge required to work and to create value.

Betis et al (2002) defines intellectual capital as a reserve of existing knowledge within an organization or a company at a certain period of time, which is related to intellectual capital and organizational learning.

Recently, researchers have proposed a comprehensive definition of intellectual capital, which also explains the criteria for recognizing these assets. Intellectual capital is a type of asset that measures the ability of the enterprise to create wealth. This asset is an intangible asset (rather than an objective and physical entity), which is obtained through the use of the assets related to human resources, organizational performance and relationships outside the enterprise. All these features create value within the organization, which, as a totally intra-organizational phenomenon, cannot be transacted (Rose and Barones, 2005).

FINANCIAL PERFORMANCE

Performance is very vital for management because it is an outcome that a person or group of people in an organization related to its authority and responsibility may achieve in order to attain the objectives in a legal way (rather than against the law) and consistent with the moral and ethical considerations (Iswati and Anshori, 2007). Performance is based on the organization's capacity to acquire and manage the resources in many various ways to develop a competitive advantage, and includes the two types of financial performance and non-financial performance (Hansen and Mowen, 2005).

Financial performance focuses on the variables that are associated with financial reports in a direct way.

Here are three dimensions to evaluate the performance of an enterprise.

1. productivity, i.e. how to process input into output efficiently.
2. profitability, i.e. an earning level that is greater than the cost of the company.
3. market premium, i.e. a level of market value that exceeds the book value of the firm (Walker, 2001).

Impact of intellectual capital to organizational performance

Several studies have clearly demonstrated the impact of intellectual capital on organization performance. In the age of globalization, all organizations need to focus their efforts on achieving and maintaining a certain level of competitive advantage. Both physical capital and intellectual capital are required to obtain a competitive advantage. The results of a study by Hitt et al (2001) show that intangible capital plays a more important role than tangible capital. In another study, intellectual capital is acknowledged as a significant resource that, compared to physical capital and financial capital, can help organization to attain greater efficiency, effectiveness, productivity, and innovation (Najibullah, 2005).

According to a study by Bontis et al (2002), a significant relationship can be found between structural capital and its performance, which is confirmed by the study of Bollen et al (2005) on 41 German pharmaceutical companies. The study of Tovstiga and Tulugurova (2007) on 20 Russian SMEs shows that human capital can be considered as the most significant intellectual capital component for competitive advantage.

Study of Cohen & Kaimenakis (2007) demonstrates that there is a significant relationship among hard intellectual capital and soft intellectual capitals and performance at the level of 95%.

In addition, the results of a study by Clarke et al (2010) on 2161 companies that have been listed on the Australian Stock Exchange from the financial year of 2003 to 2008, shows that there is a relationship between human and structural capitals during the year before and the performance in the current year.

The results of a study by Pulic (1999) demonstrated that the added value can be created by the intellectual capital in the organization. It supports the idea that considers intellectual capital as a very important resource for the organization.

This research shows that intellectual capital, as a creator of wealth, has the ability to organize business activities, which conforms with previous studies (Walker, 2001; Usoff, Thibodeau and Burnaby, 2002; and Karp, 2003).

The role of intellectual capital in raising business performance proves its ability as a strategic resource for business. In such a case, the intellectual capital can be viewed as a significant element to obtain a competitive advantage.

In contrast, the results of a different study conducted by Iswati (2007) showed no relationship between intellectual capital and the performance of banks in Jakarta Stock Exchange.

METHODOLOGY

The questionnaire was used to test the hypotheses that were derived from a research entitled “Intellectual Capital and Corporate Performance in Knowledge-intensive SMEs” by Cohen and Kaimenakis (2007), which confirmed the relationship between the components of intellectual capital (human capital, structural capital and relational capital) and organizational performance.

The constituent elements of these components were presented and measured by the researcher in order to test the hypotheses. The elements were collected on the basis of the work of Rooset al (1997) and Bontis (1998).

To achieve the objectives of this study, a structured questionnaire was used to ask participants to respond with an emphasis on the intellectual capital of their organization.

In other words, the study was aimed at measuring the intellectual capital of an organization using

these perceptions and their relationships that they were hypothesized in this study.

Similar questionnaires were used by Bontis(1998) and Bontis et al(2002). The questionnaire included 60 statements focusing on the management of intellectual capital in the organization, in which the respondents were asked to comment on each statement by selecting a score of 1 to 5 (1 means “I completely disagree” and 5 means “I completely agree”). In this questionnaire, human capital, structural capital and relational capital were measured by 23, 18 and 19 questions, respectively. It should be noted that the statements in the questionnaire were prepared so that respondents would not face consecutive statements related to a component. In addition, a number of scattered statements in the questionnaire were reversely coded. Two methods were used to prevent respondents from using a fixed pattern for responding, which led to the exaggeration about the intellectual capital management of their organizations.

To test the research hypotheses and examine the capital management indices in Iran Khodro Industrial Group, the questionnaire that was prepared in the previous chapter was distributed among 70 managers, deputies and experts of Iran Khodro Industrial Group who were asked about the importance of indices and variables. In the questionnaire, the importance of each item was set on a scale of 1 to 5, in which 1 meant minimum importance and 5 meant maximum importance.

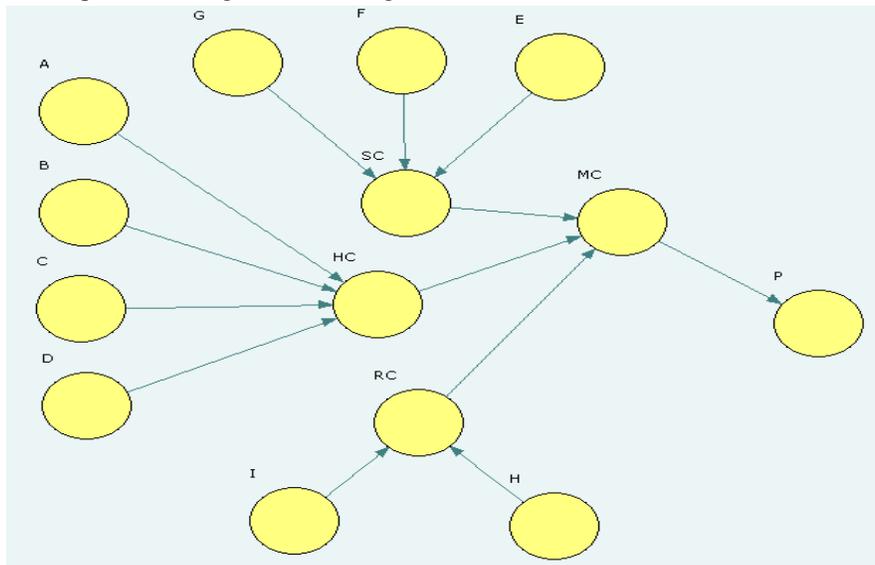


Figure 1: Model of the research

This is a causal model with 14 latent variables, in which "intellectual capital (IC)" contains three variables: "structural capital (SC)", "relational capital (RC)" and "human capital (HC)". On the other hand, the outcome of intellectual capital includes the latent variable of "financial performance of a company (P)".

Human capital is defined by four latent variables of "abilities and skills (A)", "loyalty and commitment (B)", "employee satisfaction (C)" and "values and culture (D)"; structural capital is defined by three latent variables of "knowledge management (E)", "organizational culture (F)" and "organizational process efficiency (G)"; and relational capital is defined by two latent variables of "proportion of customer (H)" and "customer satisfaction and market-oriented (I)". Each of them is defined with other manifest variables.

To evaluate the model, manifest variables should be first normalized by the following equation after extracting the answers (with a scale of 1-5),

$$y_i = \frac{100 (x_i - 1)}{4}$$

Based on this equation, the scale of manifest variables varies between 0-100.

Relations among Latent Variables: the causality model described in figure 1 leads to linear equations relating the latent variables (structural equation modeling):

$$Z_j = \beta_{j0} + \sum_i \beta_{ji} Z_i + \epsilon_j$$

Given the above equation, the linear equation among latent variables of the model will be as follows:

$$HC = \beta_{10} + \beta_{11} \cdot A + \beta_{12} \cdot B + \beta_{13} \cdot C + \beta_{14} \cdot D + \epsilon_{10}$$

$$SC = \beta_{20} + \beta_{21} \cdot E + \beta_{22} \cdot F + \beta_{23} \cdot G + \epsilon_{20}$$

$$RC = \beta_{30} + \beta_{31} \cdot H + \beta_{32} \cdot I + \epsilon_{30}$$

$$IC = \beta_{40} + \beta_{41} \cdot HC + \beta_{42} \cdot SC + \beta_{43} \cdot RC + \epsilon_{40}$$

$$P = \beta_{50} + \beta_{51} \cdot IC + \epsilon_{50}$$

After the relationship between the variables was specified, all of the model's parameters and coefficients were estimated using the Visual PLS software.

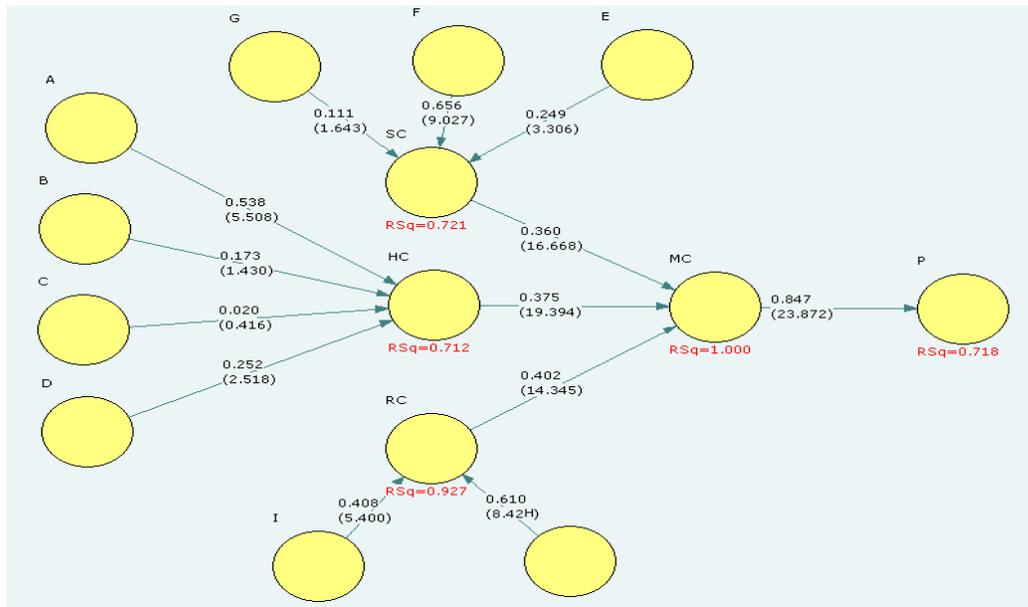


Figure 2: Estimated model using VPLS

RESEARCH RESULT

As we know, a PLS path model is composed of a structural model and a measurement model. Therefore, the analysis and interpretation of the two models are needed to validate a PLS path model, which can be regarded as a two-step process: assessing the

measurement model and assessing the structural model (Henseler, J; Ringle, C.M; Sinkovics, R. R, 2009).

Assessing the structural model

R² is used to assess the structural model and indicates the variance of endogenous latent variables. In this model, R² is acceptable because in a model with

endogenous and exogenous latent variables, acceptable R² values are between 0.33 and 0.67 (Trujillo, 2009).

Assessing the measurement model

To assess the measurement model, "unidimensionality of the indicators", two issues should be examined: "checking whether the indicators are explicitly articulated by the latent variable" and "assessing the extent that constructs may differ from each other."

Unidimensionality of the indicators

In this paper, unidimensionality of the indicators was measured using Cronbach's alpha, which was used in this section to evaluate the unidimensionality of the indicators. According to Hensler et al (2009), the reliability of the model is acceptable because the average Cronbach's alpha of the whole model is greater than 0.7, despite the fact that the coefficient is less than 0.6 for G and D.

Checking whether the indicators are explicitly articulated by the latent variable

Three tools were used to check whether the indicators are well explained by its latent variable: communality, composite reliability and the average variance extracted (Jafari Samimi, Mohammadi, 2011):

Communality

Communality is calculated to determine whether indicators in a block are explicitly articulated by the latent variable (Trujillo, 2009). In this research, the average communality of the model was estimated at 0.5181, which is equal to the average of all the block communalities.

CR

In PLS path modeling, reliability is examined by composite reliability (CR). Average CR is equal to 0.85 (over 0.6) in this model, which illustrates the acceptable reliability of the model.

AVE

Average variance extracted (AVE) is used to measure the amount of variance that a latent variable derives from its indicators relative to the amount of variance caused by measurement error.

The average variance extracted from the model is equal to 0.63 (over 0.5), which confirms the convergent validity of the model.

Table 1: Cronbach's alpha, reliability and AVE

Construct	Composite Reliability	AVE	Cronbach's alpha
A	0.83	0.36	0.76
B	0.75	0.34	0.61
C	0.81	0.6	0.67
D	0.72	0.49	0.50
E	0.82	0.54	0.71
G	0.78	0.64	0.44
F	0.85	0.33	0.81
H	0.83	0.33	0.78
I	0.86	0.47	0.78
HC	0.97	0.94	0.79
SC	0.93	0.98	0.93
RC	0.89	0.91	0.95
MC	0.96	0.95	0.84
P	0.99	0.89	0.81
Average	0.85	0.63	0.74

Difference in constructs

To do this, one must ensure that, compared to the variance shared with other constructs, there is a greater variance shared between a construct and its indicators (Henseler, J; Ringle, C.M; Sinkovics, R.R.;, 2009). According to the results of the VPLS software, all constructs differ from one another.

CONCLUSION

The results of our study show that at a confidence level of 95%, structural capital, relational capital and human capital have a material impact on the financial performance of the firm and that the relationship between intellectual capital and the financial performance of the company is confirmed. The results indicate that intellectual capital was mainly mostly affected by the relational capital (0.40), human capital (0.38) and structural capital (0.36), respectively.

The results of this study are consistent with the findings of Bontis et al (2002), Bollen et al, (2005), Tovstiga and Tulugurova (2007), and Clarke et al (2010).

Another method can be also used in this study to measure the performance of intellectual capital. In addition, since the analysis in this study is based on the data obtained from only one firm, more research can be done using data from a variety of business sectors. Although there are some possible restrictions (such as the data obtained from a single company, the relatively

focused sample and a single internallocation), valuable insights wererepresented inthis study about the relationship between intellectual capital and performance of the company.

Table 2: Structural Model

Relationship	T-Statistic
A -----> HC	5.508
B -----> HC	1.430
C -----> HC	0.416
D-----> HC	2.518
E -----> SC	3.306
F -----> SC	9.027
G-----> SC	1.643
H-----> RC	8.240
I -----> RC	5.400
SC ----> MC	16.668
HC ----> MC	19.394
RC ----> MC	14.345
MC ----> P	23.872

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