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Intellectual capital management enablers in an Iranian context

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Today, developing and managing intellectual capital has become a real necessity in the field of trade, and the weakness of intellectual capital management and its measurements leads to a considerable percent neglect of the real potential of organizations’ values. Meanwhile, recognizing the enablers is a necessary act to manage intellectual capital. In this survey, the direct effect of organic structure, as an enabling factor to manage the intellectual capital, was examined. Also, the effect of this structure on intellectual capital was reviewed by creating interactive behaviors and organizational area along with the needed trust. According to the results, organic environments lead to increase in the trust of the organization by creating a base for interactive behavior; in this way, it causes the processes of intellectual capital management to improve in the organization and also have positive and direct effects on these processes.

Key words: Organic structure, interactive behavior, trust, intellectual capital.

INTRODUCTION

Capital refers to the money related to the asset by which wealth is produced, and is controlled by an organization. Some of the main physical assets of an organization include: tools, factory, cash money, etc., but these cases are not enough for the organization to attain the intended goals (Isaac et al., 2010).

The meaning of intellectual capital was mentioned by Mach lap for the first time in 1962. After that, Gal bright applied the "intellectual capital" expression in 1969 (Bontis, 1998). Intellectual capital (IC) refers to a set of personal or collective knowledge of each organization or society, and is used to make money, multiply the results of physical capital, achieve competitive advantages and increase the other values of capital sources. Intellectual capital could be expanded as an asset and a necessary source to develop industry (Casey, 2010). Bukh (2003) defines intellectual capital as intellectual and knowledge sources of the organizations. Ostovart revealed that intellectual capital means everything that the institution can use to increase the comparative advantages in the market; and it includes the knowledge, information, intellectual assets and experience. In other words, IC reveals the imperceptible assets and it exists in the values of firms’ products which can be reversed in the finance balance sheets, but which does not directly exist in the balance sheets under the name of "accounting". Therefore, if a firm could quantitatively evaluate and analyze imperceptible assets, it will be more successful in competitive conditions (Adam et al., 2009).

In recent years, companies have discovered the importance of systematic management of foreign relationships due to intellectual capitals. According to several researches, there is a meaningful difference between the information presented in the annual reports of the companies and the requested information of the market. Generally, companies, investors and authors need more reliable information about subjects such as management quality, skill, honesty and appropriateness of clients and employees’ relationships. These factors are correlated

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Abbreviation: IC, Intellectual capital.
with intellectual capital (Bukh, 2003). Intellectual capital which reveals the information related to the imperceptible assets has become so important in recent years. It is an inseparable part of the companies, which makes the value (Bukh, 2003). Intellectual capital is an imperceptible asset, but is not completely presented in the definition of ‘imperceptible assets’ in accounting. In other words, the imperceptible asset in accounting is a part of intellectual capital subset. Although, some sources such as innovations and commercial marks are available in the accounting system of firms compulsorily, other sources such as organization’s fame, the behavior of staff, etc., are not presented in the accounting system.

Some authors have argued that intellectual capitals of firms could be defined as the difference between the value of net assets and market capital (Strikeover et al., 2008). Some companies, especially in Northern Europe, develop the intellectual capital reports to complete the annual traditional ones. These reports emphasize on the role of intellectual capital related to creating value and the relationship between the knowledge sources of successful companies and their strategic structure (Bukh, 2003). Many studies have been carried out on the use of evaluation models for multi-variables performance, because the performance of a company is a complex phenomenon and needs several criteria.

Lu et al. (2010) have designed two steps for intellectual capital: the ability of intellectual capital and the efficiency of intellectual capital. For the first case, intellectual capital is measured based on two inputs (responsibility and financial right of the partners) and four outputs (human capital, process capital, innovation capital and customer capital). The second model measures the ability of the company to create perceptible value by use of four inputs (human capital, process capital, innovation capital and customer capital) and two outputs (scriptural/ marketing value and revenue) (Figure 1).

**Intellectual capital classification**

Several classifications related to intellectual capital have been developed and used. A measurement plan named intellectual capital control was presented, which includes the following three categories: exterior sources, interior sources and employees’ capabilities.

In another division, five financial aspects (renovation, development, client, process and human emphasis) were mentioned. In a different survey, Kaplan and Norton (2004) analyzed intellectual capital based on four aspects: finance, client, business, and learning and growth. Also, Brooking (1996) suggests that the analysis of firms' intellectual capital should be composed of four elements: marketing assets, human assets, intellectual assets and substructure assets. Roos et al. (1998) suggest that intellectual capital is composed of human capital, trade capital, innovation capital and client capital (Striukova et al., 2008). Casey (2010) opines that intellectual capital includes three separate aspects:

1. **People**: This aspect refers to the capability, knowledge, and understanding people have on how to adapt to relational networks and experience.
2. **Internal aspect**: It refers to the inter-organization routine works, processes, culture, structures and management systems.
3. **Exterior aspect**: It refers to the external aspects such as relationships with the clients, suppliers, partners, strategic unions, research institutions and different networks related to the creation of intellectual capital.

Lee (2010) and Isaac et al. (2010) classify intellectual capital into three categories: human capital, organizational capital and relational capital.

**Human capital**

This refers to the knowledge level of people, such as their profession, skill, experience and innovation. This capital is the most valuable one in any organization (Lee, 2010; Isaac et al., 2010). Human intellectual capital is related to knowledge, skill, capabilities, efficiency and creativity, and it helps organizations to create knowledge capital. It

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*(Figure 1. Intellectual capital ability and efficiency model of organizations.)*
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Figure 2. The final direction of enablers of intellectual capital management.

has a meaningful relationship with the organizational intellectual capital. Managers of intellectual capital should try to help employees to present their knowledge (Isaac et al., 2010).

**Organizational capital**

This includes a set of assets, belonging to a company, which make the company to create new things. Among these assets are the viewpoint of the company, managing philosophy, organizational culture, strategies, processes, working systems and relational technology (Lee, 2010). Organizational intellectual capital presents technologies and other mechanisms which help the employees to make money. Relational capital systems, main data and procedures belong to this category. The control systems related to organizational capital can be used to manage the relationship between learning and cooperation. Such systems help the employees to achieve the needed knowledge (Isaac et al., 2010).

**Relational capital**

This is the total asset which causes the companies to relate to the environment. This capital includes the relationships with the clients, suppliers, partners, competitors, societies and institutions (Lee, 2010). Relational capital is an aspect of social capital which identifies the network’s main points when identity, trust and liability exist in the network (Adam and Urquhart, 2009). Intellectual-relational capital is an aspect which sometimes refers to social capital and its relationship with the investors. The organization should preserve its relationship with investors and develop the opportunities and long-term correlations to reach the suitable financial results of intellectual capital managing systems. It is, therefore, expected that they could protect the improvements of relational-intellectual developments (Isaac et al., 2010).

**The enablers**

**Organic structure**

Burns and Stalker (1966) recognized two organic structures named mechanic and organic organizations. Both of them have special characteristics. They perceived that there is a difference between
organizational structures of dynamic environments and stable ones. Mechanic organizations are distinguished by some characters such as high intricacy, focus and hierarchy. These structures are based on repetitive activities and operations. They are highly related to the planned behaviors and react to unpredictable events. On the other hand, organic structures are relatively flexible and applicable. These structures focus on parallel relationships and their effectiveness are based on skill and knowledge, and not on organizational situation. The responsibilities are flexible and their focuses are on the data shared.

Burns and Stalker (1966) emphasized that none of these structures is better than the other and the identity of organizational environment determines the kind of structure which should be used (Amiri et al., 2010).

Mechanic structure has a bureaucracy identity and the management causes the power of the employees to appear along with their obedience. But organic organization, relating to inter-organizational relationships, is dependent on the manager’s tendency toward partnership and group work (Van Marrewijk and Trimmers, 2003).

Relating to the organic structures, Bent and Gabriel state that managing knowledge is based on variable, flexible and renovated organizational conditions which are created by the renovation of creating knowledge (Isaac et al., 2010). Ferguson et al. (2005) observed that the comprehensive quality management and learning organizational systems, related to the dynamic external environments, support the characteristics of the organic structure. Shivers (2006) mentioned that the organic and mechanic structures affect stable and predictable environments, respectively. Vogt (2005) emphasizes that working environments should be established based on a suitable structure, and employees should be allowed to freely establish connection and improve on their human abilities. Amiri et al. (2010) in their research concluded that with respect to the organizations’ movements toward the knowledge-based goal and focuses on intellectual processes, they need organic and flexible structures by which the needed area for inter-organizational creativity, innovation, making work, promoting knowledge and establishing learning organizations, is prepared. One of the main hypotheses belongs to 26 productive organizations, which show a positive and meaningful relationship between organic structures and intellectual capital. However, this hypothesis was confirmed in this study.

Isaac et al. (2010) suggest that organic environments lead to interactive behavior, building trust and enabling intellectual capital management systems. According to this fact, there is a direct or an indirect relationship between creativity, innovation and organic structure. Some researchers believe that mechanic structures are not able to achieve the strategic goals. As a result, organic structures could act better than mechanic structures, because bureaucracy does not prevent innovation, group objectives are better than individual ones, risk-taking has been accepted, leadership is related to employees’ skill and not to the hierarchical situations and behavioral improvement with emphasis on mutual respect.

**Interactive behavior:** Taking part in decision-making differs from interactive behavior. An employee can take part in the sessions, but cannot present any innovation and creativity. Such behavior does not enable the intellectual capital management to make money. In contrast, the interactive behavior refers to a more tight relationship between the employees, such as: opinion exchange, relationships or relational networks (Isaac et al., 2010).

In a survey in 2004, the researchers emphasized on the relationship between intellectual capital and transference of knowledge in order to encourage the members to take part in some activities such as sharing knowledge, partners’ conversations and multi aspects adjustments (Poyhonen and Smedlund, 2004).

Interactive behavior could improve variety, cause the creation of multi-aspect view points, and make the process of decision making better. Interactive behavior could encourage the employees to participate in committed projects and duties (Olson et al., 2007). By interactive behaviors, persons challenge each other, deal with issues through various view points, and in such behavior, the conflict of organizational goals is much better than keeping personal domain. These behaviors are created due to organic structures. The interactive behavior, therefore, could be affective as a mediator variable toward the managing systems of the intellectual capital (Isaac et al., 2010).

**Trust:** Trust refers to the truth, stability, ability, reliance, etc., of someone or something. In A.D.B site, obligation refers to the suggested responsibilities in which there are power and trust. Trust means a confident relationship and is not separate from the relationship. Both excitement and intellectuality are useful in trust. Some of the exciting aspects which are necessary to create mental health are kindness, gratefulness, security, acceptance, notice, admiration, respect, interest, appreciation, sufficiency and satisfaction. Its logical aspects are based on the evaluation of groups’ reliability, and it plays a major role in decision making (Serrat, 2009).

Morgan and Hunt (1994) mention that trust is used when a group participates in the exchange of credibility and honesty. They conclude that there is a positive relationship between trust, contribution values and obligation, and there is a negative relationship between trust, distrust and opportunistic behaviors.

Independent industrial manner, instead of joint effort to create the capacity at industry, leads to promote distrust and emphasizes on means during operations. In fact,
sharing sources such as knowledge with other organizations is recognized as a competitive threat in the organization. During a research in this area, one of the participators opines: "can you grow a tree in a desert? You can do so, but the tree will not remain for a long time, because there is no suitable environment for its growth." This is as an industry which needs sharing sources, but there is no area to share sources. Making such cultures is not impossible, but is surely time-consuming.

Distrust prevents sharing knowledge in an organization. For example, graduates are not encouraged to share their knowledge, but are regarded as a threat to the management. It is so hard for the managers to accept new graduates as a part of their teams. They believe that the new graduates are real threats. Therefore, external distrust of the industry is aggravated by internal distrust of the organization (Adam et al., 2009). Trust plays a major role when establishing relationship. Sharing implicit knowledge is related to the environment which is full of mutual respect and which causes trust to improve.

Mille has mentioned that humanizing culture is disposed to present trust as a social capital. By trust of an organization, we mean the trust employees have for each other. They believe that the organization take steps toward making them comfortable. The trust of the cooperators is regarded as an intermediate variable and it causes the implicit knowledge to share (Isaac et al., 2010).

Conceptual model of research

In this survey, we did not examine the intellectual capital level of the organization, but the main factors to develop and improve intellectual capital. In other words, we examined the organizational structures in which the intellectual capital is developed. According to the aforementioned and implicit knowledge, the following are considered:

1. Organic structures positively affect interactive behavior.
2. Interactive behaviors bring more trust in organizations.
3. When an employee has more trust in an organization, it causes the human intellectual capital management to improve.
4. The managing processes of human intellectual capital cause the managing processes of organizational intellectual capital to improve.
5. The managing processes of human intellectual capital cause the managing processes of intellectual relational capital to improve.
6. There is a meaningful relationship between organic structures and human capital.
7. There is a meaningful relationship between organic structures and relational capital.
8. There is a meaningful relationship between organic structure and organizational capital.

The meaning-based model of this research was designed based on the model of Isaac et al. (2010) and Amiri et al. (2010), in which intellectual capital was divided into three aspects (namely: human, organizational and relational capitals) that integrate several explained aspects.

RESEARCH METHODOLOGY

According to the way of gathering data and its practical goal, this research is a descriptive-measuring one. National Gas Company contains three subsets: refineries, gas-pipelines and gas-transferring management.

Gas-transferring management changes natural gas into house-gas and presents refined gas to industrial and house partners. The employed human force of this department includes technical workers, technicians and experts who are active to preserve and develop gas-transferring management. They play a great role in economic development. Using partnership system and other exiting management systems, this company is active to satisfy its staff and customers. In this research, we studied this subset because of its importance in core activities of the National Gas Company. Since the research population contains 420 employees of Fars Gas Company, the sample comprises 201 persons based on Morgan's table. In this research, 220 questionnaires were distributed from which 214 were gathered and in this way, we were sure that the samples are sufficient for the research.

A questionnaire planned by Isaac et al. (2010) was used to test the hypothesis of this research. Four main items (organic structure, interactive behavior, trust and intellectual capital) were measured by 14, 6, 5 and 21 questions, respectively. To examine its permanency, a Cronbach model was used. At first, it was separately counted for each index and then, it was totally counted for the questionnaire. According to the results of Table 1, this questionnaire has a suitable permanency.

In order to examine the validation of input by use of Lizrel software, factor analysis was used; in order to analyze the findings by use of Lizrel software, the structural equations test was used.

RESULTS

In order to examine the enablers of intellectual capital management, the relationship between the variables was directly examined and is shown in Figure 2.

According to t quantities, variables such as B (interactive behavior) (t = 6.55, P<0.01), C (trust, t = 9.6, P<0.01), E (relational capital, t = 8.16, P<0.01), F (organizational capital, t = 6.44, P<0.01) and D (human capital, t = 2.51, P<0.05), with significance level more than 99%, have a direct relationship with variable A (organic structure). Also, according to t quantities, the following statements were found out to be correct:

1. There is a direct relationship between B (interactive behavior) (t = 5.45, P<0.01), and C (trust).
2. There is a direct relationship between C (trust) (t = 4.13, P<0.01), and human capital.
3. There is a direct relationship between D (human
Table 1. Amount of pre-test Chronbach for each variable.

<table>
<thead>
<tr>
<th>Scale title</th>
<th>Scale questions</th>
<th>Chronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being organic</td>
<td>14</td>
<td>0.64</td>
</tr>
<tr>
<td>Interactive relations</td>
<td>6</td>
<td>0.641</td>
</tr>
<tr>
<td>Trust</td>
<td>5</td>
<td>0.771</td>
</tr>
<tr>
<td>Human capital</td>
<td>8</td>
<td>0.757</td>
</tr>
<tr>
<td>Relational capital</td>
<td>7</td>
<td>0.75</td>
</tr>
<tr>
<td>Organizational capital</td>
<td>5</td>
<td>0.912</td>
</tr>
</tbody>
</table>

Table 2. Variables and quantities in the structural model.

<table>
<thead>
<tr>
<th>Direct relation of the variables in the model</th>
<th>Estimated value</th>
<th>Standard value</th>
<th>Standard error</th>
<th>T</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactive behavior (B)</td>
<td>0.54</td>
<td>0.44</td>
<td>0.082</td>
<td>6.55</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Trust (C)</td>
<td>0.6</td>
<td>0.54</td>
<td>0.062</td>
<td>9.60</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Human capital (D)</td>
<td>0.22</td>
<td>0.22</td>
<td>0.086</td>
<td>2.51</td>
<td>P&lt;0.05</td>
</tr>
<tr>
<td>Relational capital (E)</td>
<td>0.55</td>
<td>0.50</td>
<td>0.067</td>
<td>9.16</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Organizational capital (F)</td>
<td>2.27</td>
<td>0.037</td>
<td>0.35</td>
<td>6.44</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Trust (B)</td>
<td>0.32</td>
<td>0.36</td>
<td>0.078</td>
<td>4.13</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Interactive behavior (C)</td>
<td>0.28</td>
<td>0.31</td>
<td>0.051</td>
<td>5.45</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Human capital (D)</td>
<td>0.32</td>
<td>0.21</td>
<td>0.068</td>
<td>4.74</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Relational capital (E)</td>
<td>2.28</td>
<td>0.37</td>
<td>0.032</td>
<td>7.05</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Organizational capital (F)</td>
<td>1.33</td>
<td>0.24</td>
<td>0.34</td>
<td>3.98</td>
<td>P&lt;0.01</td>
</tr>
</tbody>
</table>

capital), E (relational capital) (t=4.74, P<0.01), and F (organizational capital) (t=7.05, P<0.01).

4. There is a direct relationship between E (relational capital) (t= 3.98, P<0.01), and F (organizational capital) (Table 2).

Finally, according to the related indexes of suitability of the final direction model, Table 2 reveals that this model is suitable. Indexes of the final model belonging to enablers of Intellectual Capital Management are mentioned in Table 3.

Results of hypothesis tests

According to the statistical results obtained, there are direct relationships between organic structure and interactive behavior, and organic structure and intellectual capital aspects (human, relational and organizational capitals). Interactive behavior directly affects trust. The direct effectiveness of trust and human intellectual capital on human intellectual capital and organizational intellectual capital respectively, was confirmed.

DISCUSSION AND CONCLUSION

As an intra and extra organizational necessity, managing and testing intellectual capital is very important. Today, it could be said that physical assets will disappear and in future, the technologies invented will not be efficient. Therefore, the intellectual capital managing art is a valuable art to develop imperceptible and intellectual capitals. As the results reveal, based on the organizations movements toward knowledge and in response to the dynamic external environments, the organic structure will need flexibility and dexterity. It is therefore confirmed as one of the enablers of intellectual capital.

The organic structures have more interactive behavior which causes more trust and the managing processes related to the intellectual capital to appear. As the organizations move toward the better use of intellectual capital, the first step is to create organic and dynamic structures. Based on the first hypothesis of this research, the relationship between organic structure and behavioral interaction was confirmed. On the other hand, the other organic structure directly affects intellectual capital management, and improves human, relational and
organizational managing capital.

Another hypothesis of this research emphasized on the relationship between behavioral interaction and trust. Participation in behavioral interaction leads to more trust because the participants trust their cooperators. Also, those organizations which create the trust space among their employees would prepare a base for human intellectual capital management, and this trust causes the implicit knowledge to change into explicit knowledge, which finally promotes the intellectual capital of the organization.

REFERENCES


Table 3. Indexes of the mentioned model belonging to the enablers of intellectual capital management.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Value</th>
<th>Accepted domain</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF/$\chi^2$</td>
<td>0.976</td>
<td>$2DF&lt;\chi^2$</td>
<td>Accepted</td>
</tr>
<tr>
<td>p-value</td>
<td>0.43108</td>
<td>P&gt;0.05</td>
<td>Accepted</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.000</td>
<td>RMSEA&lt;0.09</td>
<td>Accepted</td>
</tr>
<tr>
<td>GFI</td>
<td>1.00</td>
<td>GFI&gt;0.9</td>
<td>Accepted</td>
</tr>
<tr>
<td>AGFI</td>
<td>0.96</td>
<td>AGFI&gt;0.85</td>
<td>Accepted</td>
</tr>
<tr>
<td>NFI</td>
<td>0.99</td>
<td>NFI&gt;0.90</td>
<td>Accepted</td>
</tr>
<tr>
<td>CFI</td>
<td>0.99</td>
<td>CFI&gt;0.90</td>
<td>Accepted</td>
</tr>
</tbody>
</table>