Evaluation of Influence of Intellectual Capital on Human-Structural-Relational Capitals and Performance in a Food Product Company

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Abstract
In recent years with rapid changes and global competition, organizations are successful that take advantage of help of instruments such as intellectual capital and opportunities created. For this reason, various models in the world have been proposed for evaluation of the influence of and real understanding of intellectual capital. Yet, because industry in every country has its own needs and affectability, this paper endeavours to identify key factors (human, structural, intellectual capital and performance of the company) and the level of positive affectability by intellectual capital. For realization of this objective, initially there is need to attend the literature of the topic and collect information from personnel in an industrial company for food products. The conceptual model will be designed appropriate with and logically from results of world research and a questionnaire will be administered for data collection. Statistical population evaluated in this research consists of all personnel at various levels of a food product company in 2015. Among them, 30 individuals were selected as sample and were surveyed and for data analysis, the Pearson test was used. The main results obtained showed that intellectual capital has positive and meaningful correlation with each of the elements of human-structural-relational capital and performance in the company studied.

Keywords: Intellectual Capital, Human Capital, Structural Capital, Relational Capital, Performance.
Introduction

In today’s knowledge oriented societies, returns gained from intellectual capital has acquired much more importance than financial capital. In other words, we can imagine that in comparison with intellectual capital, the role and importance of financial capital in determination of capability of sustained profitability has significantly reduced. Therefore, it can be thought that between the level of enjoyment of tangible assets and knowledge by companies on the one hand and the real value of their intellectual capitals (and ultimately the market value of the company capital) on the other hand, a direct correlation exists. Because of increased relative importance of intellectual capital (as the most import part of the company capital) in sustained and durable and long term profitability, most companies seek appropriate responses to their fundamental questions in the context of intellectual capital (Anvari Rostami, Seraji, 2005). In relation with the development and rapid growth of global economy in the past three decades, it has been critical capital in the direction of strengthening of companies (Fornell, 2007). With such interpretations, it is logical that organizations now a day seek a response for the following fundamental question. How can we manage the value of our capital and develop it? For responding to this question, initially intellectual capital and its elements should be evaluated. In this research, we will first open the concept of intellectual capital and for better understanding of this topic we will discuss its components. Therefore, with a review of these topics in this research, the influence of intellectual capital on human, structural, relational capital and also on performance will be investigated. Companies that in the business arena only operate based on tangible organizational advantages such as machinery and equipment and... cannot reach competitive advantage and correct performance; while, companies active in the age of information and economy based on knowledge need to focus on intangible new resources and organizational capabilities such as knowledge, skills, strategy, innovation, processes and organizational systems and structure (Brooking, 2001) as factors influential in acquisition of competitive and performance advantage. Daniel Anderson states the reason for companies measuring their intellectual capital as follows, improvement in internal management, improvement in external reports and satisfaction of executive and legal factors (Cohen, 2012). Therefore, it is time that measuring intellectual capital and its forming elements and its inclusion in accounting financial and managerial reports are significantly given attention to by companies.

In this research, evaluation of the effect of intellectual capital on human capital, structural capital and relational capital in the Tarkhosh food product company and also evaluation of influence of intellectual capital on performance of employees of this company are pursued.

Review of the Literature

1- Evaluation of theories in the research perimeter:

1.1- Intellectual Capital:

Now a day with entrance into knowledge oriented economy, knowledge has gained increased preference compared to other production factors and an economy based on knowledge has built its main foundation on intellectual capital (Motidoost, Nazmfar, Bashardoost, 2014). Intellectual capital is endeavour for effective use of knowledge (final product) as opposed to information (raw material) (Bontis, 2014). In the viewpoint of Roos and colleagues (2014), intellectual capital includes all processes and assets which are usually not shown in the balance sheet and also encompasses intangible assets (such as trademarks, registration and
profiting patents and trade names) which are attended to in the modern accounting method. Stewart (2002) believes that intellectual capital includes knowledge, information, intellectual asset and experience which can be used for creation of wealth. Intellectual capital is cognitive and group abilities or key knowledge in the form of a collection.

1.2- Human Capital:

Brooking (2001) believes that human capital of an organization includes skills-specialties-problem solving ability and leadership style. Human capital has led organizations into reliance to a great extent on knowledge and skills of their staff for creation of income, growth and improvement of efficiency and profitability.

1.3- Structural Capital:

Roos and colleagues (2014) believe that structural capital is what remains in a company after employees go home at night.

Brooking (2001) has noted that structural capital includes sub structural assets such as technologies-processes-working methods and also intellectual assets such as technical knowledge-trademarks-registration and profiting patent.

Chen and colleagues (2009) have stated that structural capital is a function of human capital. Therefore structural capital and human capital in interaction with each other help organizations to form, develop and use their customers’ capital in a coordinated way.

1.4- Relational Capital (relationship with the customer):

Steward (2002) has noted that main issues are customer capital, knowledge in marketing channels and customer relations.

Fornell (2007) as a result of his research found out that customer satisfaction can maintain business relations, decrease product price flexibility and increase a company’s credibility. These studies provide much evidence with regards to importance of customer capital as a key component of overall intellectual capital of an organization. Growth of customer capital is dependent on support of human and structural capital. Overall, customer capital that behaves as an intermediary bridge in the process of intellectual capital is the main determining factor in transformation of intellectual capital to market value and as a result organizational business performance (Chen et al, 2009).

New definitions have extended the concept of customer capital to relational capital which includes existing knowledge in all relationships established by the company with customers, competitors, providers, trade societies or the government (Bontis, 2004).

1.5- Performance:

Studies (Bontis, 2003) in Malaysian industries have shown that positive and meaningful correlation exists between elements of intellectual capital and business performance.

Other research (Brenan & Contell, 2005) has shown that intellectual capital has significant influence on a company’s performance as the most important capital.
2- Evaluation of Models Formulated (Background):

During the first decade of the twenty first century, the concept, role and importance of knowledge in economy and business have undergone great changes. The importance of this discussion is to the extent that the European Union in its annual meeting in Lisbon, Portugal, has introduced its most important goal to be transformation into the largest economic pole in the world based on knowledge.

Therefore, we will evaluate multiple research projects that have addressed aspects of intellectual capital.

The MERITUM Project: this project measures intangible factors with the purpose of understanding and improving management of innovation. The main purpose of this project which has been financially supported by the European Commission in 2010 was presentation of strategies for measuring and demonstrating intangible factors for improved decision making by organizational directors and benefactors.

More clearly stated, four main objectives of this project were

1- Establishment of a classification scheme for intangible factors.

2- Documentation of organizational control and management systems for identification of better procedures in Europe in the context of measuring intangible factors.

3- Evaluation of the relationship between intangible factors as a function of capital markets by way of market data analysis.

4- Presentation of strategies for measuring and reporting intangible factors (Johnson, 2009).

Working life in 2010: the Intellectual Capital Workshop, particularly human capital, in February 2009 was one of 60 specialty workshops that were placed in the agenda of the European Commission in relation with working life. In this workshop, which was hosted by Saudi Arabia, all countries of the European Union were encouraged to participate and researchers from ten European countries, Australia and United States of America attended. Its first purpose was summarization of the newest methods of management and accounting of intangible factors and its second objective was extrusion of results for future research and announcement of European guidelines (Gregory Johnson, 2009).

OECD: in June 2009 with support of OECD an international symposium on measuring and reporting intellectual capital: “experiences, problems, outlooks” was held.

In this symposium emphasis was made on trade sharing in contexts of intangible factors, innovation, human capital indices and human capital accounting. This congregation was held because of the increasing importance of intangible factors “intellectual capital” as a key element in economic growth and social progress.

National Innovations: in addition to international research mentioned, a number of countries in the world took actions for reporting intellectual capital. For example, the countries of Netherlands-Denmark-Norway provided incentives for evaluation and research in intellectual capital. The government of Netherlands, with invitation of 4 accounting companies, has performed an action oriented study regarding intangible assets of a number of companies and was able to attach a preliminary appendix to their annual financial report without being influenced by limitations due to laws and regulations of accounting principles (Malco, 2013).
Research Hypotheses:

This research has 4 main hypotheses:

1- Intellectual capital has positive and meaningful influence on human capital in the company under investigation.

2- Intellectual capital has positive and meaningful influence on structural capital in the company under investigation.

3- Intellectual capital has positive and meaningful influence on relational capital (customer relations) in the company under investigation.

4- Intellectual capital has positive and meaningful influence on performance in the company under investigation.

![Figure 1. Conceptual Model](image)

Research Methodology:

The method of this research was survey, descriptive and analytic. In this research, we described and analyzed relationships between variables of intellectual capital and relationship between intellectual capital and performance. Population of respondents in this research included all personnel at different levels of the food product company where from this population a random sample of 30 individuals was selected and 53/6% of the sample consisted of men and 46/4% of women. The highest number was administrative personnel and the least number constituted of directors and the mean of years of work experience was 8/56. In this research for collection of needed information, library investigation and field study were used. Instruments for collection of information included 1- fiche review: for
collection of information related to the research theoretical principle, extrusion and formulation of information related to the topic, 2-questionnaire: for the purpose of collection of needed data for testing research hypotheses, a questionnaire was designed based on criteria of Bontis (2001). Additionally, since criteria for intellectual capital in this research were qualitative, for quantification of them a 5 point Likert scale was used. Also, for evaluation of the reliability of the questionnaire, Cronbach’s alpha coefficient was used where the value obtained for it with omission of inappropriate items was 0/83 which is appropriate for confirmation of questionnaire reliability. In this research, for data analysis, SPSS software was used. Additionally, in the inferential statistical method analysis of variance, correlation, Chi-square and Spearman tests were used.

**Research Findings**

**Test of the first hypothesis**

Intellectual capital has positive and meaningful influence on human capital in the company investigated.

Considering the statistical test results for the first hypothesis, the level of P-value or Sig was equal to 0/000 and considering the level of Pearson’s R being 0/782, it can be concluded that at a significance level of (0/05), intellectual capital has positive and meaningful influence on human capital in the company investigated. Therefore, hypothesis one was confirmed in this company at a 95 percent confidence level.

**Test of the second hypothesis**

Intellectual capital has positive and meaningful influence on structural capital in the company under investigation.

In hypothesis 2 considering that the level of P-value or Sig was equal to 0/000 and considering the level of Pearson’s R being 0/849, it can be concluded that at a significance level of (0/05), intellectual capital has positive and meaningful influence on structural capital in the company investigated. Therefore, hypothesis 2 was confirmed in this company at a 95 percent confidence level.

**Test of the third hypothesis**

Intellectual capital has positive and meaningful influence on relational capital (customer relations) in the company under investigation.

In hypothesis 3 considering that the level of P-value or Sig was equal to 0/000 and considering the level of Pearson’s R being 0/864, it can be concluded that at a significance level of (0/05), intellectual capital has positive and meaningful influence on relational capital in the company investigated. Therefore, hypothesis 3 was confirmed in this company at a 95 percent confidence level.

**Test of fourth hypothesis**

Intellectual capital has positive and meaningful influence on performance in the company under investigation.
In hypothesis 4 considering that the level of P-value or Sig was equal to 0/000 and considering the level of Pearson’s R being 0/826, it can be concluded that at a significance level of (0/05), intellectual capital has positive and meaningful influence on employee performance in the company investigated. Therefore, hypothesis 4 was confirmed in this company at a 95 percent confidence level.

Table (1). Test of research hypotheses

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Dependent variable</th>
<th>Independent variable</th>
<th>Pearson’s correlation coefficient</th>
<th>Significance level</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>Human capital</td>
<td>Intellectual capital</td>
<td>0/782</td>
<td>0/000</td>
</tr>
<tr>
<td>Second</td>
<td>Human capital</td>
<td>Structural capital</td>
<td>0/849</td>
<td>0/000</td>
</tr>
<tr>
<td>Third</td>
<td>Human capital</td>
<td>Relational capital</td>
<td>0/864</td>
<td>0/000</td>
</tr>
<tr>
<td>Fourth</td>
<td>Human capital</td>
<td>Performance</td>
<td>0/826</td>
<td>0/000</td>
</tr>
</tbody>
</table>

Prioritization of components of intellectual capital
According to results of Pearson’s correlation coefficient, components of intellectual capital in order of decreasing rank in the company investigated are relational capital-structural capital-performance-human capital.

Discussion/Conclusion

The topic of knowledge management and intellectual capital are gradually finding place in organizations. The undeniable role played by knowledge today in modern economy, trade and managerial processes, manifests the increasing importance of intellectual capital in organizations more than ever. Debility of accounting, management and traditional financial systems in measuring intellectual capital of companies and following that, neglect of the importance of knowledge in processes are among the most important problems with traditional accounting systems. Most of these systems are unaware of the role and increasing importance of right of spiritual ownership and knowledge in organizations of the modern age and are unable in evaluation of the real value of intangible assets in their computations. For this reason, interest in evaluation and inclusion of the real value of intangible assets and knowledge in financial reports of companies has increased more than ever (Zanjirdar, Cohan, Soltanzadeh, 2007). Additionally, the business environment and work based on knowledge are in need of a wealth that incorporates new intangible assets of the organization such as knowledge-qualifications of human resources-innovation-customer relations-organizational culture, systems, processes, organizational structure and etc. In this line, the theory of intellectual capital has increasingly gained the attention of university researchers and organizational superintendents. From a strategic point of view, intellectual capital is used for
creation and increasing organizational value and an organization’s success depends on its ability in management of this rare resource (Roos, 1997). The main purpose of this research was evaluation of the role of intellectual capital in a food product company. Analysis of information gathered in this research showed that creation of intellectual capital can have an influential role in performance and intellectual capital has direct influence on human capital-structural capital-relational capital in the company investigated. Results of the research showed that intellectual capital has positive and meaningful correlation with each of the elements of human-structural-relational capital in the company investigated. This means that with investment in intellectual capital, increase in human-structural-relational capital can be expected. In other words, intellectual capital as one of the important capabilities and assets of the organization investigated, greatly helps in creation and sharing of knowledge in human-structural-relational dimensions and performance of the company improves compared to previously.

Suggestions

Results of the research in the context of intellectual capital in this company showed that its elements in order of decreasing priority are relational, structural and human capital. This finding shows that the company has made endeavours in the context of human capital such as knowledge, skill, qualifications of employees, specialty of individuals and in the structural context such as intellectual assets, innovation, processes, working methods, organizational learning and information systems and in the relational context such as relations with external benefactors such as customers, providers and investors. Therefore, for the purpose of development of its intellectual capital, it should take actions in the following domains.

A) Structural capital development:
1- Increase of efficiency in the context of human resources, primary material, company equipment and design of a system of encouragement based on it.
2- Omission of laws and regulations that come in the way, excessive working methods, complex and long hierarchy with the purpose of decreasing excessive bureaucracy in the company.
3- Endeavor to create a support culture by way of design of encouragement and motivational systems for strengthening of creativity and innovation, learning and development of human resources of the company.
4- Evaluation of productivity of human resources and planning for its improvement at the company level.
5- Management of the company structural knowledge.

B) Development of relational capital:
1- Designing and planning improvement of external communication with customers, providers and investors.
2- Measuring customer loyalty.
3- Informing employees in contexts of target market and kind of customers.
4- Dissemination of customer feedback across the companies.
5- Management of relational knowledge of companies.

C) Development of performance:
1- Use of information from measurements of performance for creation of positive change in organizational culture.
2- Creation of change in processes and systems with helping regulation of objectives of performance.
3- Prioritization-allocation of resources and informing directors to change laterality of existing plans and policies for achieving goals.

D) Development of human capital:
1- Design of a framework for qualifications of employees and directors inclusive of knowledge, skills, abilities and planning for developing them based on qualifications.
2- Design and establishment of a system with replacement measures for key company employees.
3- Design of support and encouragement systems for better thoughts of employees with the purpose of their timely application in the operational process of the company.
4- Design and establishment of human capital performance management process at the company level.
5- Management of human knowledge in company development.
References

[In Persian]


[In Latin]


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