Intellectual Capital Evaluation among Nursing Staff

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Abstract

Nowadays, development of intellectual capital is one of the key factors in improvement of business processes and organization’s success. The reason is that creating processes for acquiring value through knowledge is one of the most important functions of intellectual capital management. This is why the present study was aimed to study the intellectual capital among nursing staff. This study is a descriptive-correlation research. The statistical population consists of the nursing staff of Social Security Hospital of Zahedan. A sample of 132 employees was selected randomly from this population and responded to the intellectual capital questionnaire. Reliability of the questionnaire has been examined through Cronbachs’ Alpha coefficient. Also the questionnaire was reviewed and modified by academic experts and professors for ensuring its validity. The main statistical methods that have been used for analyzing the research data and testing the hypotheses were the t test, Pearson correlation and Friedman. The results indicate that firstly, intellectual capital and its components (human capital, structural capital and customer capital) are in good condition and secondly, all the relationships between intellectual capital and its components are significantly positive and finally, according to the views of respondents, the components of intellectual capital do not have identical importance and human capital has the highest priority. According to the findings and relationships between study variables, intellectual capital and its components are of great importance, therefore, in organizational analysis, health system managers and administrators must consider these variables.

Keywords: customer capital, human capital, nursing staff, structural capital.

Introduction

In the industrial period, price of the raw materials, machines and equipment, and facilities is considered in very organization as an efficient component. Whilst, it is the efficient use of intellectual capital that determines success or failure of the organization. Despite the importance of tangible assets in producing goods and services in new economy, but economic value and wealth derives from creating and applying intellectual capital not through managing tangible assets. The importance of this issue is so much that it is proved that 50-90% of the created value by companies in today’s economy derives from intellectual capital management. Therefore, it can be said that it is necessary to develop and improve research and development and new technologies departments for being success in the technology-based economy (Sonnier et al., 2007)). In other words, it can be said that intellectual capitals management help the organization and institutes in achieving more successes in long-term. Nowadays, intellectual capital is considered as a main motivator of sustainable reliability of any system (Nazem and Matlabi, 2011).

Along with the development of the market value of knowledge-based organizations in the 1990s, a wide interest raised toward the concept of intellectual capital. Therefore, researchers have sought to define and measure the concept of intellectual capital that was impossible to measure up to that point. The first applications of the intellectual capital concept backs to the 60s, that for the first time this term introduced in
1969 by renowned economist John Kenneth Galbraith to explain the gap between book market value of institutions. Before that, Peter Drucker has used the term (knowledge workers) (Chen et al, 2004)

There is no consensus regarding the nature of intellectual capital and numerous definitions are presented. Among them, comprehensive definitions such as the one by Hsu and Fang (2009) can be noted: “intellectual capital is capabilities, knowledge, culture, strategy, processes, intellectual assets and networks which, create value and competitive advantage for the organization, and helps the organization to achieve its goals” (Hsu and Fang, 2009). Most scholars and experts in the field of intellectual capital, agree on definition of intellectual capital based on its constituted components (Bart, 2001, cited by Mirkamali and Zohuurparvande, 2008), along with the increasing studies on intellectual capital, many studies used frameworks proposed by Roos et al (1998), Bontis (1998), Johansen (1999) and Bozbura (2004) that includes human capital, structural capital and customer capital. (Mirkamali and Zohuurparvande, 2008 and Mar, 2005). These three components that have been considered as the main components of intellectual capital are defined and described in the following section:

**Human capital**

Bontis (2000) believes that human capital refers to the employees’ knowledge (Ghlichli and Moshabaki, 2006). There are different categorizations for human capital components. These include human capital as a basis of intellectual capital that refers to the employees’ knowledge, skills, capabilities, attitudes (Chen et al., 2004). Martin and Saez indicate that human capital includes values, capabilities, and experiences (Ramezan, 2011). Johanson (1999) pointed out that human capital is an idea-based capital (employees’ power, ability, and attitudes) and leadership capital (experts and managers’ characteristics) (wu et al., 2012). Human capital results in improved performance and also attracts the customers and increase profit. If the thoughtful employees cannot be selected appropriately, it is not possible to use knowledge and skills (Chen et al., 2004). Human capital is so important that it is considered as the main basis of innovation and strategy in the organizations. Therefore, any organization can create value in the knowledge-based economy (Ramezan, 2011).

**Structure capital**

Structure capital, is the capability and knowledge present in the organization that is in the organization control and after removing the staff will remain there and belongs to the whole organization and is producible and sharable (Bontis and Richardson, 2000), or according to Stewart (1997), structure capital refers to, use of effective ways to gather, testing, integrating existing knowledge, eliminating incorrect knowledge, retaining the correct knowledge and to spread it (wu et al, 2012).

For the capital structure too, various components and elements introduced, Alavi and Qureshi (2007), consider structure capital consists of Technology, network of data, publications, process and organization (Alavi and Qureshi, 2007), according to Hsu and Fang (2009), structural capital includes “process and work flow, special process, development of business plan, information technology systems, copyright, cooperation culture and R and D costs” (Hsu and Fang, 2009), or structural capital refers to innovation capital (models, brand, copyright, knowledge base) and process capital (labor practices and trade secrets) (Wu et al, 2012). The organization that has good structural capital creates good conditions for using human capital and also allows the human resource to perceive their actual potentials and then strive in increasing innovation capital and relational capital (Ramezan, 2011).

**Customer capital**

The relational capital refers to the knowledge that is resulted from relationship between an organization and its environment such as customers, suppliers, scientific centers, and others. According to Chen, the customer is the main component of relational capital. The reason is that success of every organization depends on its customers (Rashid et al., 2010). On the other hand, the customer is able to create a value of relations that the company has with external factors and seeks to preserve it (Ramezan, 2011). About the value and importance of communicating with customers, suppliers and competitors, Bontis have expressed, that this type of communication plays a large role in the growth opportunities creation for organization future. In addition, customer capital relates to topics such as consumer confidence and the ruling spirit of loyalty between the organization and the customers. One can say that all the organization's efforts are toward building customer capital (Alem Tabriz et al, 2009). Furthermore, based on-Martíñ de Castro and L?pez S?ez the (2008), customer capital, creates value from the relationships the company has with external factors and tries to protect these relationships (Ramezan, 2011).

Based on Bontis (1998), if an organization has poor systems and work procedures, intellectual capital as a whole will not reach its maximum potential, whereas, organizations with strong structural capital has a supportive culture which enable people to try new things, fail and then learn from the failure. Structural capital and human capital together can help organizations to coordinately form, develop and apply customer
capital (Chen et al, 2004), according to Alavi and Gureshi (2007), human capital alone does not make a difference unless combined with other components (Alavi and Gureshi, 2007).

Initially the focus of intellectual capital emerged in the business world, but today a growing interest in nonprofit organizations exist. Contrary to notions such as industrial organization, resource-based and knowledge-based approaches, the concept of intellectual capital can in fact, be used as a valid framework for the strategic management and competitive tool for nonprofit organizations. Intellectual capital will provide a better understanding to nonprofit managers of issues to internal and external organizations (Niloocii Babai et al, 2012).

In this regard, and due to the importance of intellectual capital in nonprofit organizations, the aim of this study is to check and measure the intellectual capital among the nursing staff of Social Security Hospital as a non-profit organization. Accordingly, the objectives of this study are as follows:

- Check the status of intellectual capital and its components among the nursing staff of the Social Security Hospital of Zahedan
- Examine the relationship between intellectual capital and its components
- Prioritize the intellectual capital components.

Materials and Methods

In terms of objective, this research is an applied research type and in terms of method of data collection, is descriptive and non-experimental and in terms of the relationship between variables is a correlation type. Research methods are survey type as well.

The statistical population of the study consists of nursing staff of Social Security Organization Hospital of Zahedan. Nursing staff includes nurses, healthcare workers, patient takers, operating room technicians, anesthesia technicians and midwives, that the number of these employees in our research population is 190 individuals. For statistical sampling, random sampling used to identify sample size. Cohen (1969) and Morgan and Krejcie (1970) table were used (Danaii Fard et al, 2009). According to this table and knowing that the total population size consists of 190 people, the sample size was set at 127. Predicting we may have a number of invalid questionnaires, 150 questionnaires were distributed and finally 132 valid questionnaires were collected and diagnosed valid.

In order to assess and measure intellectual capital, the required data, collected through the questionnaires. To this end, the questionnaire consists of two parts, general section displays gender, age, occupational history, education and marital status and the other section includes a questionnaire to evaluate intellectual capital as the primary means of data collection:

- Intellectual capital questionnaire: This part has been extracted from questionnaire that has been developed by Bontis (2001) and Pike et al. (2002). This part consists of 25 questions that include these components (human capital, structural capital and customer capital). On these bases, the intellectual capital questionnaire consists of 25 closed questions.
- The questionnaire questions based on five options Likert spectrum such that the responses organized from totally disagree to totally agree.
- The method used in this study to calculate the reliability of the questionnaires, is Cronbach’s alpha method, to calculate the Cronbach’s alpha, the total of 30 questionnaires were distributed among nurses and using SPSS software, an alpha level of 0.902 calculated, and considering that usually reliability above 70 percent is desirable, therefore, it can be said that the questionnaire have a high reliability.
- To evaluate the validity, face validity was utilized. In order to check the validity of the questionnaire has been reviewed and modified by academic professors and experts.
- In order to analyze the research data and test the hypotheses and questions, t test, Pearson correlation and Friedman tests have been employed in the SPSS.

The Findings

- demographic characteristics

The findings of this study in terms of demographic characteristics revealed that 59.1% of the respondents were female respondents. Also 34.1% of the respondents had 31-35 years old. 82.6% of the respondents were married. Finally, the findings revealed that 60.6% of the respondents had M.Sc. and 62.1% of them had 10 years job experiences.

- Review of research objectives

The first objective of the study was to determine the status of intellectual capital and its components among nursing staff of Social Security Organization Hospital of Zahedan. In order to achieve this objective, the t-test used that the results shown in table 1.
As shown in the Table 1, p-value of all of the indexes are less than 5% significance level of the test, so it can be said that the level of intellectual capital and its components (human capital, customer capital and structural capital) is desirable among Social Security Organization Hospital of Zahedan nursing staff.

The second study objective, examines the relationship between intellectual capital and its components (human capital, customer capital and structural capital), in order to achieve this objective the Pearson correlation test was used. The results shown in the following Table 2:

Table 2. The results of Pearson correlation coefficient

<table>
<thead>
<tr>
<th>Customer Capital</th>
<th>Structural Capital</th>
<th>Human Capital</th>
<th>Intellectual Capital</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>0.847**</td>
<td>0.851**</td>
<td>Intellectual Capital</td>
</tr>
<tr>
<td>1</td>
<td>0.548**</td>
<td>0.668**</td>
<td>0.911**</td>
<td>Human Capital</td>
</tr>
<tr>
<td>0.694**</td>
<td>0.548**</td>
<td>0.668**</td>
<td>0.911**</td>
<td>Structural Capital</td>
</tr>
</tbody>
</table>
| **Correlation is significant at 0.99 confidence level**

As shown in the table 2, we see all relationships are significant at the 99% confidence level, so we can say any increase (decrease) in each component of intellectual capital and intellectual capital will increases (decreases) intellectual capital or its components.

The third objective was to rank and prioritize the components of intellectual capital. To achieve this, Friedman test used. The results shown in Table 3 and 4.

Table 3. Results of Friedman test for the components of intellectual capital

<table>
<thead>
<tr>
<th>Chi-square</th>
<th>Df</th>
<th>Asymp.sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.329</td>
<td>2</td>
<td>0.000</td>
</tr>
</tbody>
</table>

As shown in the table 3 the Asymp.sig (0.000) that is less than 5 percent. So it can be said that the importance of each of the components of intellectual capital is not the same according to the survey respondents. You can also see this result in at the Friedman test (Table 4):

Table 4. The ranks of intellectual capital and its components based on Friedman test

<table>
<thead>
<tr>
<th>Component</th>
<th>Mean Rank</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Capital</td>
<td>2.15</td>
<td>1</td>
</tr>
<tr>
<td>Structural Capital</td>
<td>2.14</td>
<td>2</td>
</tr>
<tr>
<td>Customer Capital</td>
<td>1.72</td>
<td>3</td>
</tr>
</tbody>
</table>

As shown in the table 4 that average rating of human capital is higher than the other two components.

Discussion and Conclusions

The main objective of this study was to evaluate intellectual capital among nursing staff in the Social Security Hospital of Zahedan, in order to achieve this objective, we used the t test and the results showed that the level of human capital, structural capital, customer capital and intellectual capital as a whole, are desirable. These results are not aligned with the results of Bahrami et al (2011), in their study, they concluded that intellectual capital level and its components in public universities of Isfahan are below average (Bahrami et al, 2011). Moreover, they are not aligned in some cases with the results of Najati Aji and Mansoori (2011), they concluded that Human Studies Faculty, in all aspects except for human capital, is below average. On the other hand, Engineering Faculty, only in the customer capital, has good condition and in other components, it score below average (Najati Aji and Mansoori, 2011). Moreover, the results are not
aligned with Kavoussi and Timori (2011), they concluded that human capital level, is low at Ibne Sina cultural center. Structural capital levels are at desirable level (Kavoussi and Timori, 2011).

Another objective of this study was to investigate the relationship between intellectual capital and its components (human capital, structural capital and customer capital). The Pearson correlation results showed that all of the relationships between intellectual capital and its components are significant and positive at 99% confidence level and all relationships were strong, thus with increase (decrease) of the components of intellectual capital we can expect that intellectual capital or its components increase (decrease). These results aligned with Bahrami et al (2011), Kavoussi and Timori (2011) and Rezayian et al (2011) results. All of these researchers in their research concluded that relationships between human capital, structural capital and customer capital are positive and significant.

The third and final objective of this study was to prioritize and determine the importance of intellectual capital components. Friedman test results showed that intellectual capital components do not have the same importance among Social Security Hospital of Zahedan nursing staff, human capital is at the first priority, and customer capital is the last priority. These results are not aligned with the (Najati Ai and Mansoori, 2011) results. In their study, they concluded that body capital, structural capital and human capital components are rated first, second, and third respectively in the Ibne Sina Cultural Center staff.

**Recommendations**

- Given the importance of the issue and knowing that unfortunately, the nursing staff of Social Security Hospital of Zahedan has no detailed information on intellectual capital, it is recommended that at the first step to establish a separate unit to measurement and manage intellectual capital to exploit these non-tangible assets.

- From the respondents perspective, human capital is the most important component of the intellectual capital that as well it is considered as a major capital in the health management section, thus it is recommended that arrange circumstances to satisfy human resources or human capital in organizations and certain strategies that can be offered in this respect are:
  - Individuals appointed in posts more according to experience and expertise and less based on relationships.
  - Establish a correct relationship between the rights and benefits and these aspects,
  - Meritocracy,
  - Organizational promotions be based on clear criteria,
  - Design a system to measure job satisfaction in organizations,
  - Encouraged and supported staff innovation and creativity,

- Given the importance of structural capital, use specific strategies to increase the capital of the organization:
  - Increase efficiency of human resources, raw materials, equipment and design a system for encouragement.
  - Eliminate troublesome laws and regulations, wasteful working methods and extra-long and complex hierarchies and to reduce the level of waste in the corporate bureaucracy.
  - Identify key processes that have the highest value for customers.
  - Key processes be documented and experiences of domestic and foreign competitors be identified and implemented
  - Use advanced and modern structures like structures and project teams in different parts of the organization.

- Customer capital placed at the last priority based on respondents, and this is surprising because most experts on intellectual capital, see customer capital, as the most important aspect of intellectual capital. According to the importance of this component, measures considered to increase its capital, so it is recommended to:
  - Customer and patients’ loyalty should be measured.
  - A recommendation system within the organization and outside the organization used to receive employee feedback is customer feedback.
  - Feedback from patients and customers to be published.
  - Communication with hospitals and health care institutes and organizations is developed in other areas.

- Finally, is proposed that by holding various conferences and seminars in the field of intellectual capital, intellectual capital components and intellectual capital management help to introduce this variables, the
philosophy and the relationship of these variables and their impact on the effectiveness of hospital staff become clearer.

References


