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The relationship between human capital management and employees' performance

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ABSTRACT

This study investigates the relationship between human capital management and employees' performance. For measuring variables three separated questionnaires were designed and after proving their validity and reliability, distributed among participants. The results of applying Spearman test show positive and meaningful correlations between human capital dimensions with employees' performance. Also Chi Square test illustrates no relationship between employees' demographic characteristics and their performance. In continue by Binomial test all variables' levels were surveyed in which all of them apart from employees' creativity. And finally the results of utilizing fuzzy TOPSIS technique human capital indices were ranked in which employees' abilities for management, learning technical employees and employees' abilities to associate were selected as the most important ones.

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1. Introduction and problem statement

In a scientific economical system, products and organizations' lives are dependent on knowledge and the most successful organizations are which use this intangible property in a better manner and higher speed. Studies have shown that knowledge is a genuine resource which leads to business performance increase, in contrary to efficiency reduction of traditional resources (money, land, machinery equipment, and etc.) Nowadays and from a strategic point of view, intellectual capital is used to create and improve organizational worthiness and organizational success depends on how this crucial capital is applied and managed in the system (Bontis et al, 1999).

One of the most important intangible assets is human capital which is a part of intellectual capital. Appropriate managing of intellectual capital make employees more satisfied and increase human resource productivity. In Karaj municipality, managers do not have proper understanding about intangible assets and human capital, so human capital management has not been accomplished. Therefore in this paper we are trying to survey the relationship between human capital management and employees' performance.

The main question of research can be considered as:

Is there any relationship between human capital management and employees' performance in Karaj municipality?

2. Literature review

2.1. Human capital

By apearing "information technology" revolution and forming information and network society and also developing and growing higher technology, development pattern of global economy has been changed. In result of these changes, knowledge has been substitute of financial and physical capitals. In a knowledge based organization, accounting traditional methods are not sufficient to evaluate intellectual capitals. Intellectual capital as a new discipline is a new domain for organization' researchers which focus on creating new measuring mechanisms like human capital, organizational capital customer satisfaction and innovation (Ghelichli, 2006).

In a simple definition, intellectual capital is difference between market value and clerical value of an organization's assets (Seetharaman et al, 2002). In other definition, intellectual capital contains all processes and assets which usually record in balance sheet. It has bees classified in different ways. In the most important categorization intellectual capital has three main dimensions: human, organizational and relational capital.

Human capital is one of the most important and in deeds the most important intellectual asset in organizations, because these assets are creativity resources. The capital includes employees knowledge in an organizations contain competencies, skills and abilities (Bontis et al, 2000). The organizations are not owners of these capitals and employees exiting of organizations face them with new treatments (Bontis, 1998).

Human capital which called human resources capital (Shun Wang, 2011) is backbone of intangible assets and is considered as a vital element in organizations' value (Royal & O'Donnell, 2008). It includes all intellectual assets of organizations like employees' knowledge and expertise (Roos et al, 1997) which enable them to solve organizational problems and meet customers' needs and desires (Skandia, 1994; Sullivan, 1998).

This kind of capital is remembered as the most important criterion of intellectual capital (Cornachione, 2010) illustrates organizations' ability to find the best solution by focusing employees' knowledge (Bontis, 1998).

Human capital shows knowledge inventory of employees (Bontis et al, 2002) and is a vital resource of strategic innovation (Bontis, 1998).

Chen et al (2004) believes that human capital has 3 main dimensions in include employees' "competencies", "creativity

and innovation" and "attitude". The sub criteria of human capital have been presented in table 1:

Employees' competency	Management strategic leadership, employees' characteristics, employees learning ability, employees' learning efficiency, employees' abilities to associate in decision makings, employees abilities for management, employees' skills and expertise, learning technical employees
Employees' creativity	Employees' creativity ability, creative thinking income, employees' innovation
Employees' attitude	Acquiring identity from organization's values, employees satisfaction, leaving rate, useful working lives' average

Table 1: Human capital indices (Chen et al, 2004)

2.2. Performance

Organizations' role in achieving cultural, political, social and economical goals is absolutely important. In deed organizations are considered as necessary factors in human life. They serve people and enable them to do some things which employees could not do that without organizations (Daneshvar, 2006).

To promote performance quality, employees' stress should be at optimal level and when their stress is more or less than optimal level, performance would decrease. One of vital factors affecting on performance is motivation (Shafiei, 2008).

There are lots of definitions about performance which some of them are represented:

- Performance is result of employee activities in doing his or her tasks in determined time (Armstrong, 1999).

- Performance is result of an activity or goals fulfillment in which activity is doing the task that should be done (Abtahi, 2002).

- Performance is a set of related behaviors to jobs which employees show (Moorhead & Griffin, 1998).

- Performance is function of power, intention, job identification, organization support and environmental consistency (Khakzadian, 2008)

The term "performance" usually explains a system yield. It is an activity which done both for doing works and result of doing that (Yameini, 1992). Some of researchers believe that when employees found organization' decisions are not fairly and in base of justice, not only their commitment and motivation do not increase, but also their performance and productivity will be dropped (\bigcirc Daneshvar, 2006).

Armstrong (1999) introduced 5 affecting factors on performance:

1-Managers and their leadership styles,

2-Organizational structure,

3-Physical condition at workplace,

4-Relationship with coworkers and

5-Individual differences and needs (Armstrong, 1999).

According to accomplished researches commitment, motivation, creativity and job satisfaction are vital factors which affects on employees' performance and improve it (Daneshvar, 2006).

2.3. Conceptual framework and hypotheses

The chart below shows the influence of human capital and its indices on employees' performance. In the model, human capital, employees' competency, creativity and attitude are considered as independent variables and performance is dependent one.



Conceptual framework of research

1-There are positive and meaningful relationship between human capital management and employees' performance.

1-1-There are positive and meaningful relationship between employees' competency and their performance.

1-2-There are positive and meaningful relationship between employees' creativity and their performance.

1-3-There are positive and meaningful relationship between employees' attitude and their performance.

3. Research methodology

Society for this research is 98 employees who work in Karaj municipality (8th domain). This number seems to be adequate, so no sampling strategy was utilized. For gathering the data library method (to refer to books, articles, theses and etc) and fieldworks (questionnaire) was being applied. Three questionnaires were designed for measuring human capital and employees' performance and ranking human capital indices; 15 questions in human capital, and 16 questions in performance. Also 4 questions about demographic characteristics and 1 open one were invented.

To analyze the data SPSS 17 and Kolmogorov-Smirnov, Spearman, Chi-square, Binomial tests and fuzzy TOPSIS technique were utilized. The management experts were being asked to evaluate the questionnaires validity. For determining the questionnaires' reliability, the 'Cronbach Alpha technique' was applied. For this purpose, 30 people were chosen by random (from the samples) and the questionnaires were given to them. The 'Cronbach Alpha' values for the questionnaires were calculated 0.91 and 0.87 for human capital and performance respectively.

3.1. Fuzzy TOPSIS technique

Decision making process steps by fuzzy TOPSIS technique are shown below (Hwang and Yoon, 1981): Step 1: calculating weights vector w~i

$$\mathbf{R} = \begin{bmatrix} \mathbf{P}_{ij} \\ \mathbf{P}_{ij} \end{bmatrix}_{m \times n}$$
⁽¹⁾

Normalizing the calculated matrix

 $B \subseteq \{1, ..., n\}$ is related to benefit-based indices and $C \subseteq \{1, ..., n\}$ is related to cost-based indices.

$$\begin{aligned}
P_{ij}^{\prime o} &= \left(\frac{a_{ij}}{d_{j}^{*}}, \frac{b_{ij}}{d_{j}^{*}}, \frac{c_{ij}}{d_{j}^{*}}, \frac{d_{ij}}{d_{j}^{*}} \right), \quad j \in B \\
P_{ij}^{\prime o} &= \left(\frac{a_{j}^{-}}{d_{ij}}, \frac{a_{j}^{-}}{c_{ij}}, \frac{a_{j}^{-}}{b_{ij}}, \frac{a_{j}^{-}}{a_{ij}} \right), \quad j \in C \end{aligned} (2)$$

Step 2: so normalized weighted matrix is calculated as formula 4:

$$V^{\text{M}} = \begin{bmatrix} v_{ij}^{\text{M}} \end{bmatrix}_{m \times n}, \quad i = 1, 2, ..., m, \quad j = 1, 2, ..., n$$
$$v_{ij}^{\text{M}} = P_{ij}^{\text{M}} \otimes w_{j}^{\text{M}}$$
(4)

Step 3: determining the fuzzy positive ideal solution \tilde{v}_{j}^{*} (FPIS) and fuzzy negative ideal solution \tilde{v}_{j}^{-} (FNIS) (formulas 5, 6):

$$\widetilde{v}_{j}^{-} = \begin{cases} \min_{j=1,...,m} \widetilde{v}_{j}; j \in B \\ \max_{j=1,...,m} \widetilde{v}_{j}; j \in C \end{cases} \widetilde{v}_{j}^{+} = \begin{cases} \max_{j=1,...,m} \widetilde{v}_{j}; j \in B \\ \min_{j=1,...,m} \widetilde{v}_{j}; j \in C \end{cases}$$
$$FNIS = \{\widetilde{v}_{j}^{-} \mid j = 1,...,n\} \end{cases}$$
(5)

$$FPIS = \{\widetilde{\nu}_j^* \mid j = 1, ..., n\}$$
⁽⁶⁾

Step 4: calculating the alternatives from positive and negative ideal by applying formulas 7, 8 and 9:

$$D\left(\partial_{3}\partial_{2}^{0}\right) = \sqrt{\frac{1}{4}\left[\left(a_{1}-b_{1}\right)^{2}+\left(a_{2}-b_{2}\right)^{2}+\left(a_{3}-b_{3}\right)^{2}+\left(a_{4}-b_{4}\right)^{2}\right]}$$
(7)

$$d_{i}^{*} = \sum_{j=1}^{n} d(\tilde{v}_{ij}, \tilde{v}_{j}^{*}), i = 1, ..., m$$

$$d_{i}^{-} = \sum_{j=1}^{n} d(\tilde{v}_{ij}, \tilde{v}_{j}^{-}), i = 1, ..., m$$
(8)
(9)

Step 5: Calculating the relative closeness to the ideal solution:

$$Cc_{i} = \frac{d_{i}^{-}}{d_{i}^{-} + d_{i}^{+}}$$
(10)

4. Data Analysis and Discussion

4.1. Kolmogorov-Smirnov test

To survey statistical society normality, Kolmogorov- Smirnov test was applied which its results are shown in table 2:

Table 2. Kolmogorov-Smirnov test result

Variables	Ν	Sig
Human capital	89	0.029
Employees' competency	89	0.031
Employees' creativity	89	0.012
Employees' attitude	89	0.024
Performance	89	0.000

As all variables are less than research error (0.05) so normality of statistical society is rejected. So for analyzing data, some nonparametric tests were utilized.

4.2. Spearman test

To survey the relationship between human capital and its dimensions with performance, Spearman test was used. The results are presented in table 3:

As table 3 shows, there are positive and meaningful correlations between human capital and its indices with employees' performance.

4.3. Chi-square test

Chi-square test was utilized to survey the relationship between demographic characteristics of participants with their performance.

Table 4 shows that no relationship was found between employees' demographic characteristics and their performance. **4.4. Binomial test**

To survey variables' levels, Binomial test was applied. The results are presented below:

Table 5 illustrates that all variable apart from employees' creativity are placed in favorable levels.

4.5. Fuzzy TOPSIS technique

To rank human capital sub criteria fuzzy TOPSIS technique was utilized. Linguistic variables for the important weight of each criterion are shown in table 6: By applying formulas 8, 9 and 10, positive and negative ideal solutions, closeness index and final ranks of variables were calculated. The results are shown in table 7:

Table 7 shows that among human capital indices employees' abilities for management, learning technical employees and employees' abilities to associate in decision makings were selected as the most important ones.

5. Conclusion and suggestions

The study was done in a society includes 98 employees of Karaj municipality. After applying Kolmogorov-Smirnov test the normality of data distribution was rejected. So to analyze data some non parametric tests were utilized.

5.1. Findings

5.1.1. Spearman test

First of all by applying Spearman test the positive and meaningful relationship between human capital and its dimensions was proved.

5.1.2. Chi Square test

After that the results of applying Chi Square test showed there is no relationship between employees' demographic characteristics and their performance.

5.1.3. Binomial test

To survey variables levels Binomial test was utilized in which all ones apart from employees' creativity were placed in high levels.

5.1.4. Fuzzy TOPSIS technique

Finally by utilizing fuzzy TOPSIS the indices were ranked in which employees' abilities for management, learning technical employees and employees' abilities to associate in decision makings were chosen as the top sub criteria.

5.2. Suggestions

5.2.1. Employees' competency:

Making educational courses for employees, involving them in decision making, delegation and making them more meaningful in self confidence by appreciating systems.

5.2.2. Employees' creativity:

Welcoming and supporting employees' new ideas, allocating some budget to implement their applicable ideas and posing employees in appropriate and related situation to their skills and expertise.

5.2.3. Employees' attitude:

Making employees more satisfied by enhancing their wage, respect them and providing quiet work place for all employees. **Reference**

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Correlation	Spearman r	P-Value	Test result
Human capital with performance	0.49	0.000	Positive and meaningful correlation
Employees' competency with performance	0.58	0.000	Positive and meaningful correlation
Employees' creativity with performance	0.47	0.000	Positive and meaningful correlation
Employees' attitude with performance	0.43	0.000	Positive and meaningful correlation

Table 3: the correlation between job satisfaction and OCB

Table 4: Results of using Chi-square test

Independent Variable	Dependent Variable	P-Value	Standard Error	Results
Age	Performance	0.153	0.128	Rejected
Gender	Performance	0.246	0.354	Rejected
Educational level	Performance	0.219	0.274	Rejected
job experience	Performance	0.367	0.302	Rejected

Table 5: Results of using Binomial test

Variables	Observed prop	Test prop	Sig	Results
Human capital	0.7		0.000	High level
Employees' competency	0.9		0.000	High level
Employees' creativity	0.3	0.5	0.085	High level
Employees' attitude	0.6	0.0	0.000	High level
Employees' performance	0.6		0.000	High level

Table 6: Linguistic variables for the importance weight (Saeedi et al, 2012)

Very Low	VL	(0, 0, 1, 2)
Low	L	(1, 2, 2, 3)
Medium Low	ML	(2, 3, 4, 5)
Medium	М	(4, 5, 5, 6)
Medium High	MH	(5, 6, 7, 8)
High	Н	(7, 8, 8, 9)
Very High	VH	(8, 9, 10, 10)

Table 7: Positive and negative ideal solution, closeness index and final ranks

Variables	\mathbf{D}_{i}^{+}	D _i -	Cc _i	Rank
Management strategic leadership	1.656351037	1.954446463	0.541278336	8
employees' characteristics	1.30461278	1.799454094	0.579708546	4
employees learning ability	1.638597053	1.459315467	0.47106413	11
employees' learning efficiency	1.562851582	1.522391616	0.493442986	10
employees' abilities to associate in decision makings	1.244497072	1.862374927	0.599437289	3
employees abilities for management	1.06730376	2.074588982	0.66029911	1
employees' skills and expertise	1.343813341	1.81333661	0.574358722	5
learning technical employees	1.058597056	2.054894568	0.659996819	2
Employees' creativity ability	1.693250262	1.449481039	0.46121698	12
creative thinking income	1.358352771	1.758328361	0.564166909	6
employees' innovation	1.779763232	1.286497041	0.419565505	14
Acquiring identity from organization's values	1.374914583	1.742423092	0.558945893	7
employees satisfaction	1.708184709	1.369972619	0.445062573	13
leaving rate	1.547003917	1.570608731	0.503785719	9
useful working lives' average	1.865726692	1.225693716	0.396482378	15

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