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The Evaluation of the Organization Unit Performance Based on the Intellectual Capital and the Organizational Commitment with DEA: Case Study of a Manufacturing Company

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ABSTRACT

In today's knowledge-based economy, intellectual capital has been used for organizations. Knowledge has been replaced with other capitals as the most important capital. The role of man power is notable as an effective factor and the most important capital. Also, organizational commitment has a considerable effect on the improvement of organization effectiveness and many variables. On the other hand, the function of organizations should be investigated for the purpose of maintaining their survival. Data enveloping analysis is one of the techniques which is used in this field. The aim of this study is to evaluate the function of organizational units based on the intellectual capital and organizational commitment with the use of DEA. In this study, units of operation, warehouse, design and manufacturing, production planning, quality assurance and education, laboratory and law enforcement became efficient and their efficiency ranks were identified with the use of AP method. Units of design and manufacturing, production and planning, quality assurance and education, operation, and laboratory were respectively ranked from first to fifth place and the rank of warehouse and law enforcement units were not identified. Also, the intensity of input effects on the organizational commitment was included customer capital, structural capital, and human capital

1. Introduction

Nowadays, organizations are entering a knowledge-based economy [1] The economy in which knowledge and intangible assets are considered as the most important factors of the production and competitive advantage is recognized [2] as the most important resource of the innovation for the organizations [3]. In knowledge-based economy, the intellectual capital has been used to

create value for the organizations. Knowledge has been replaced with the financial and physical capital as the most important factor [4]. On the other hand, qualified and knowledge-based manpower is the most important competitive advantage and the rarest resource [5] and it is considered as an important capital in each organization and the higher quality the capital has, the more probability of success, survival and promotion the organization has [6].

Also, efficiency improvement is one of the most important goals of organizations and every organization is trying to improve it [7]. Therefore, we should identify the relevant factors and amplifiers in order to improve the performance of the organization and achieve to these goals. One of these factors is organizational commitment because it affects many variables such as: job satisfaction, absenteeism, turnover, job stress and performance [8].

In the current competitive environment, the performance evaluation of the organizations and managers are more concerned and different indicators are considered as a criterion for the performance of the organizations and managers. So organizations ought to improve their efficiency and evaluate their performance in order to survive. In general, the performance evaluation is a process that organizations are always looking for its calculation and trying to improve their process through it. This process is an important part of the improvement productivity cycle in the management process [9].

The performance measure has always been of interest to researchers due to its importance in evaluating the performance of the organizations. To achieve this goal, a technique that is welcomed by many managers, is the data envelopment analysis [10].With regard to the fact that the performance evaluation of the organization and its parts are less measured based on all components of intellectual capital and also the considerable effect of these parts on the human resource criteria including organizational commitment, we want to evaluate the performance of the organization units using data envelopment analysis technique. For this purpose, we use the questionnaire of the intellectual capital evaluation of Bontis(1998) to estimate the components of the intellectual capital, including human capital, structural capital, and customer capital as inputs and independent variables [11] and their effect on organizational commitment, which is considered as the dependent variable and output, is measured. It should be noted that the organizational commitments is measured with the use of Allen and Meyer's questionnaire (1990) [12] and finally, the performance of each of the units is determined based on the inputs.

2. Literature review

2.1.Intellectual capital

Nowadays, organizations are entering into a knowledge-based economy [1]. An economy in which knowledge and intangible assets are considered as the most important factors of the production and competitive advantage [2]are also considered as the most important resource of the innovation for the organizations [3]. In fact, the interest in the extensive study of the intellectual capital is a response to the importance of the intangible values and assets of the organization [13]. The intellectual capital management will bring up more success to the organizations and institutions in the competitive markets of the future perspective. Today, intellectual capital has been converted to a vital stimulus for the stability of the system reliability in today's competitive environment [14] .Intellectual capital is an intellectual part of the organization in twenty-first century. This capital is known as a theory – based resource and also viewed as a strategic resource [15]. In general, organizations have three types of capital. These three types of capital are financial, physical, and intellectual. Financial capital is

considered as net assets or equity. Physical capital is the productive capacity or the organization service. Intellectual capital is born in the realm of knowledge and science [16]. Bontis and his colleagues defined intellectual capital in an article in 2002. They said that Intellectual capital showed a reserve of knowledge that exists in an organization at a certain point of time. In this definition, the relationship between intellectual capital and organizational learning is considered [17]. From the perspective of the management, intellectual capital is the sum of human and structural capital like knowledge, practical experience, organizational technology, relationship and professional skills which bring the organization into the market with creating a competitive advantage. Edvinsson and Malone also define the intellectual capital as the knowledge applied to work in order to create a value [4]. In short, intellectual capital is a non – monetary and non-physical asset but it has a value and can make profits and benefits in the future [16]. Scholars have offered numerous definitions of intellectual capital components that we explain some of them in the next part. Brooking has presented the intellectual capital within the framework of market assets, intellectual assets, human-based assets, and infrastructure assets. Market assets are included the services, manufacturing brand names, and customer loyalty. Intellectual assets are included the patents, secret formula, something like that. Human–based assets are included training, job knowledge, professional attributes and characteristics. Infrastructure assets are included the management philosophy, participation culture, networking systems. Edvinsson and Malone have divided the capital into human and structural categories. Also, they put customer and organizational capital in structural capital. Stewart knows human, customer and structural capital for intellectual capital structures. Roos and his colleagues put the intellectual capital into four categories. These four categories are human, structural, innovation and communicative development [4].Chen and his colleagues believed that intellectual capital was included of four categories. These four categories were human, customer, innovation and structural capital [17]. In the research done by Dewi and his colleagues defined spiritual capital as a new section along with the other three components of intellectual capital (including human , structural and communicative capital) [19]. However, in the view of scholars and experts, the most considered opinion is that of Bontis. He believes that the intellectual capital is created with the interaction between each of the elements of human, structural and relational capital. It means people create and keep knowledge in the organization (human capital) and this knowledge will be promoted among them through interaction (structural capital) and also it is presented outside of the organization and improved outside relations (relational capital). In general, intellectual capital creates the knowledge organized by the organization and this knowledge is flowing constantly among these three kinds of capital [20]. Therefore, due to different definition of intellectual capital and its components, we can state that intellectual capital can be divided into three categories which are human capital, structural (organizational) capital and relational or customer capital due to definition of intellectual capital and its components. Human capital in its simplest definition implies the intensity of the labor's knowledge. One of the most important resources in each organization is human capital which improves the efficiency to make the competitive advantage .Based on Martin's theory, successful companies can mostly help themselves through keeping strong, active, and experienced human resources in team works [21]. The most important indicator of human capital include professional qualifications of key personal, education, experience, the number of people included in previous related fields and the exact distribution of responsibilities in relation to the clients [18]. Structural capital relates to the mechanism and the structure of a business entity and can help the employees in optimal mental performance. In this way, the organization can make its performance better [22]. In general,

unlike the human capital, the structural capital is a supportive infrastructure for human resources and its owner is the company and can engage in its trade [16]. Customer or relational capital includes the external dependencies such as customer loyalty, reputation and relationship with the suppliers of the company. This is done through customer perceived value of a business with the organization [18]. Customer capital is considered as a bridge and an organizer of the intellectual capital and it is a determining factor in the converting the intellectual capital to the market value [22]. This capital defines formal and informal relationship of an organization with external stakeholders and their perception of the organization and also determines the information sharing between the organization and external stakeholders [23]. Measuring the intellectual capital also has several branches and is examined from different perspectives such as the economic, strategic, accounting, financial, reporting, marketing, human resources, information and legal systems and intellectual attributes [4]. As we mentioned earlier, in this study, the direct method approach of intellectual capital has been used .Another applied tool was the questionnaire of the intellectual capital evaluation made by Bontis in 1998, and was consisted of 52 close questions and it is rated with five-item Likert scale (1=very) low 2= low 3= moderate 4 = high 5 = very high) this questionnaire measures three components which are human capital, structural capital and relational (customer) capital among the organization managers. Also, this questionnaire has already used in Asia insurance company and some of its questions are merged together due to the similarities between some of the questions. So, this questionnaire has been reduced to 42 questions and the reliability of the source is obtained with Cronbach's alpha 0.82.

2.2.Organizational commitment

Organizational commitment is an important organizational and business view that has been the interest of many researchers in the fields of organizational behavior and psychology, especially social psychology during the last years. Organizational commitment has serious and potential effects on the organization performance and can improve the effectiveness of an organization. So, ignoring it is detrimental to the organization. Suitable information can be obtained through measuring the organizational commitment and its effect on employee job behaviors such as absenteeism, replacement and leaving work. This information can help the managers to decide on human resources tasks such as planning, maintenance, improvement and evaluation of human resources [24]. There is a considerable disagreement in the definition and measurement of organizational commitment .Although different definitions have been offered for the organizational commitment, each of them reflects three general subjects which are emotional dependency, perceived costs and a sense of duty. Organizational commitment is considered as a kind of emotional dependency on the organization. So, a person who is severely committed gets his identity from the organization and participates with it and enjoys it [25]. Porter and his colleagues identified the organizational commitment as the relative degree of person identity and his participation in it. In this definition, organizational commitment includes three dimensions which are belief in goals and values of the organization, tendency to attempts in the organization and tendency to continue the membership in the organization. They define the organizational commitment as the acceptance of the organization values and involvement in the organization. they define the measurement criteria as the motivation, desire to continue the work and the acceptance of its values [26] .In another definition by Estron, organizational commitment is the positive or negative attitudes of people toward the organization (not a job)

in which they work . In organizational commitment, the person has a strong sense of loyalty toward the organization and recognizes it. Meyer defines the commitment as people willingness to share power and loyalty in the service of social system [27]. Allen and Meyer know commitment as an inner state that has at least three separable affective, continuous, and normative components which each component has function of preconditions and determinant [12]. Organizational commitment has different dimension which are presented by scholars and are developed during the studies done on them. Also, they have been categorized into one or and multi-dimensional models. One of the multi-dimensional models is Meyer and Allen's three-dimensional model. This model categorizes the organizational commitment into three parts of emotional, continuous and normative commitment. Emotional commitment includes emotional dependency of employees, identification with the organization and involvement in the activities of the organization [28]. This kind of commitment is created in a condition that one person like to work in the organization due to the emotional dependency [29].This commitment is considered as the emotional and psychological dependency to the organization whereby a person who is strongly committed, identifies himself in the organization, participates in it and enjoys being in it. Normative commitment is people's feelings about the importance of staying in the organization [28]. This kind of commitment refers to the values of an employee in an organization. It means that the employee is believed that he is indebted to the work place [12]. In this way, the employee feels that he should stay in the organization and this is a right action [30]. In this commitment, the person knows that doing his activity is his duty [24]. Continuous commitment is because of the increase in the lost costs in an organization. So, if a person has continuous commitment, he may be sensitive to the increase of these kinds of costs. In other words, this kind of commitment is based on the costs of turnover. In this regard the more investment on the staff, the less likely to leave. It means that with spending more time and people are not simply willing to leave their job and necessarily continue their job [28]. As we mentioned earlier in this study, Allen and Meyer's organizational commitment questionnaire has been used to measure the organizational commitment that evaluates the organizational commitment in three emotional, continuous, and normative dimensions. This questionnaire has 24 questions that each of its eight questions measures one of these three dimensions and they are placed based on a Likert scale in a 5 degree range from strongly disagree (1) to completely agree (5). [27].

2.3.DEA (Data Enveloping Analysis)

This method was introduced by Charnes, Cooper and Rhodes based on the Farrel model in 1978. They defined data enveloping analysis as a mathematical programming model for the observed data that is a new method for an experimental estimate of weight ratio or efficiency frontier like production function that is the foundation of modern economic [31]. DEA is a nonparametric method that calculates the performance of a set of units with identical inputs and outputs. In this method, the efficiency of each unit is measured without the need for a specific function and only by comparison with the best unit in the set. If one decision making unit has the best relative performance, it would be called efficient or otherwise [32]. In fact, DEA is a mathematical programming technique for measuring the relative efficiency of the organizational units which have similar tasks and use several inputs to generate several outputs. DEA calculates the relative efficiency of each decision making unit through calculating the ratio of weighted outputs to the sum of weighted inputs [33].

DEA is a mathematical programming technique to evaluate the decision marking units (DMUs), Decision making units (DMUs) is an organizational unit and a separated organization which is run by a boss, manager, or office responsible in case this unit or organization has a systematic process. DEA assumes that decision making units use similar inputs to produce similar outcomes under the consideration of DMUs [34] .In this method, weights are determined in such a way that the performance of the evaluated unit (DMU0) is reached to a maximum level in relative to other units to assess the efficiency of DMUs. It starts from making a production line (PPS) and then produces the image of each company or DMU in the efficiency frontier. This frontier shows the maximum outputs which can be obtained with an input or the minimum input which is necessary for reaching some outputs. The units which are on this frontier (line) are called efficient and the others are inefficient. An inefficient DMU can be reached to the efficient frontier through decreasing inputs or increasing outputs. In short, DEA is the tool based on the linear programming which is used for evaluating the relative performance of the similar existences and are extensively used in the strategic analysis, continues improvement and benchmarking [35].

One of the capabilities of data envelopment analysis is to use different models corresponding to return with different scales as well as the measurement of the returns to the unit scales. Return to scale indicating a link between inputs and outputs of a system. Return to scale can be constant or variable. A constant return to scale means each multiple input produces the same multiple of outputs [10]. In general, DEA is divided into two input-driven and output -driven or combinational groups. Wherever the evaluation of a model is constant with return to scale, technical efficiency is the same in the output-driven and input-driven modes but when the used model is variable with return to scale, technical efficiency is different in output -driven and input -driven mode. In other words, if it is tried to minimize the inputs through keeping the outputs fixed in the evaluation process, the used model nature is input. If it is tried to increase the outputs through keeping the inputs fixed in the evaluation process, the used model nature is output and if it is tried to increase the outputs and decrease the inputs in the evaluation process, the used model nature is combinatorial [10]. When return to scale isn't constant, the BCC model is used in which return to scale may be variable. This model evaluates relative efficiency of the units with variable returns to scale and its structure is different in output- driven and input -driven modes, due to the primitive and secondary problem[10].

3-2 and 4-2 relations show multiple and coverage form of this model in modified input driven mode.

The multiple form of BCC in modified input-drive nature:

Min Z = $\sum_{r=1}^{s} u_r\, y_{rp}$ + w

S.t

$\sum_{i=1}^{m} v_i x_{ij} = 1$ (r =1,2,…,s)

$\sum_{r=1}^{s} u_r\, y_{rj} - \sum_{i=0}^{m} v_i x_{ij}$ + w≥ 0 (j =1,2, …,n)

$U_r \geq \varepsilon$ (i =1,2,…,m)

$V_i \geq \varepsilon$ Relation 1

The coverage form of BCC in modified input -driven nature:

Max Z= θ – ε ($\sum_{i=1}^{m} S_i^- + \sum_{r=1}^{s} s_r^+$)

$$\sum_{j=1}^{n} \lambda_j x_{ij} + S_i^- = \theta x_{ip}$$

$$\sum_{j=1}^{n} \lambda_j y_{ij} - S_r^+ = y_{rp}$$

$\sum_{j=1}^{n} \lambda_j$ =1

$\lambda_j \geq 0$ (j=1,2,….,n)

$S_r^+, S_i^-, \lambda_j \geq 0$ Relation 2

DEA divides the units under the study into two groups. These two groups are efficient and inefficient units. Inefficient units can be ranked with the efficiency advantage while the efficient units which their efficiency advantage is one cannot be ranked with the classical models of DEA. So the methods like Anderson – Peterson method have been presented to rank efficient units [10].

3. Methodology

From the goal view, this study is applied and shows the application of a quantitative procedure in the evaluation of the performance and the efficiency of the organization units. Also, its results are useful in the improvement of the organization performance and the introduction of the effective components of the intellectual capital .Collection time of data is sectional and collected data from the organization units in 1393 are considered. In this study, the nature of the data is quantitative-quantitative and the data collecting tool is a questionnaire which its Intellectual capital components include the human capital, structural and customer capital are evaluated through Bontis intellectual capital evaluation questionnaire (1998) and considered as input factors and independent variables. Also, their effect on the organizational commitment is measured with the use of Allen and Meyer's questionnaire (1990) and considered as an output factor and dependent variable. We can also place the present research in the analytical-descriptive studies because it describes the organization unit status and offers some suggestions to improve the presentation by their comparison. This study evaluates the organization unit performance with the intellectual capital approach and the organizational commitment. Also, it follows the ranking of the effectiveness of capital components to promote the employee commitment in the organization units. To do this, we study and collect the data related to the intellectual capital components and the organizational commitment in the company. The results are analyzed with DEA technique. As we mentioned earlier, each DEA model includes inputs, outputs and decision-making units (DMUs). Based on the entries presented in the previous sections, it is clear that the improvement of this capital result in the growth and improvement of the employee's organizational commitment. So in this study, intellectual capital components as the model inputs, independent variables and the organizational commitment dimensions (based on Allen and Meyer model) were considered the model outputs and dependent variables. Also, the organizational units were selected as the decision making units (DMUs). Hence, the

statistical population in this study is the units of the manufacturing company which are included the operation, manufacturing, human resources, designing and manufacturing, warehouse, production planning, maintenance, health and safety, quality affairs, internal and financial affairs, laboratory, quality assurance and training, after- sale services, sales, purchases, informatics, and enforcement units. In general, the research model is shown in figure 1.

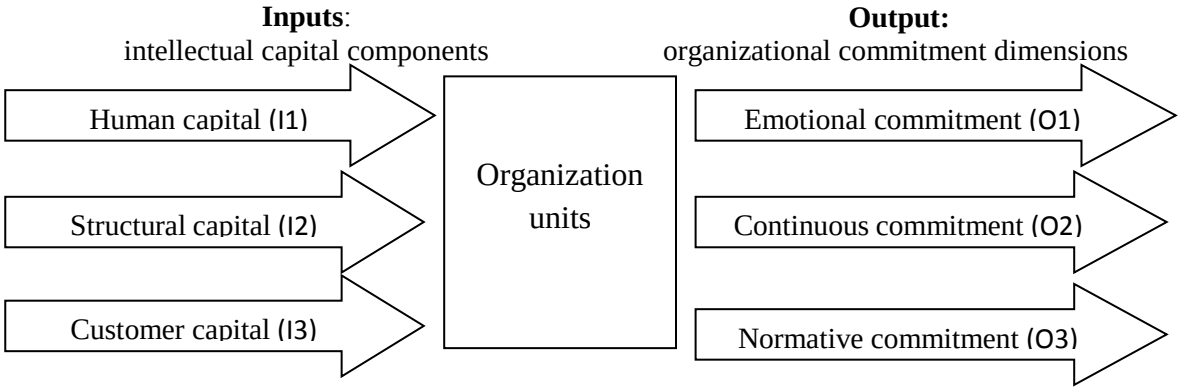

Fig 1. The DEA model evaluates the performance of organization units with the intellectual capital approach and organizational commitment

In this study, the ratio of return to data scale was variable and its results were shown in table 1.

Table 1. The results of return to scale's units in this research

Return to scale	DMU name	Return to scale	DMU name
Decreasing	internal affairs	Decreasing	Operation
Increasing	Financial affairs	Increasing	manufacturing
Constant	laboratory	Increasing	Humane resource
Constant	quality assurance and training	Decreasing	Warehouse
Decreasing	After- sale services	Constant	design and manufacturing
Decreasing	sales	Constant	Production planning
Decreasing	purchases	Increasing	Maintenance
Increasing	informatics	Decreasing	health and safety
Decreasing	Law enforcement units	Decreasing	quality affairs

The efficiency of DMUs is evaluated with the use of DEA technique. This research was done based on the coverage -input-driven BCC model because the return to scale is variable in BCC model. Since the goal of this study was to improve the inputs, the input driven mode was used in this study. Also, the data were analyzed with the DEA Frontier. After the questionnaires had been completed and the data had been collected about the inputs and the outputs of each unit, the results were obtained based on the table 1. The results which were included the operation, warehouse, design and manufacturing, production planning, quality assurance and education, laboratory units were recognized as efficient DMUs and the others are inefficient (Table 2).

Table 2. The evaluation of units' efficiency based on BCC coverage-input-driven model

DMU no.	DMU name	efficiency based on BCC coverage-input-driven model	Return to scale
1	Operation	1.00000	Decreasing
2	manufacturing	0.79375	Increasing
3	Humane resource	0.75342	Increasing
4	Warehouse	1.00000	Decreasing
5	design and manufacturing	1.00000	Constant
6	Production planning	1.00000	Constant
7	Maintenance	0.78537	Increasing
8	health and safety	0.79489	Decreasing
9	quality affairs	0.82069	Decreasing
10	internal affairs	0.91047	Decreasing
11	Financial affairs	0.75100	Increasing
12	laboratory	1.00000	Constant
13	quality assurance and training	1.00000	Constant
14	After- sale services	0.99928	Decreasing
15	sales	0.82636	Decreasing
16	purchases	0.72361	Decreasing
17	informatics	0.77546	Increasing
18	Law enforcement units	1.00000	Decreasing

There are different methods for ranking efficient units such as Anderson-Peterson method with strong efficient approach, cross efficiency method, and Makui and his coworkers' method. The most conventional method is AP which efficient units are ranked with strong efficient approach. Therefor in this research, the efficient units were ranked with AP technique (table 3).

Table 3. The ranking of the efficient DMUs with the AP technique

DMU no.	DMU name	efficiency based on BCC coverage-input-driven model
1	Operation units	1.03333
2	Warehouse	infeasible
3	design and manufacturing	2.36364
4	Production planning	1.34429
5	laboratory	1.02426
6	quality assurance and training	1.03727
7	Law enforcement units	infeasible

As it is seen in table 3 results, the design and manufacturing unit is in the highest rank. Production planning unit is in the second place. Quality assurance and education unit is in the third place. Operation unit is in the fourth place. Laboratory unit is in the fifth place among the

efficient DMUs. The ranking of Warehouse and law enforcement units are not clear because of being infeasible.

In addition, in order to analyze the sensitivity of the input effectiveness and importance on the output results, we solve the model and calculate the total distance from the basic BCC model and compare the result by omitting one of the inputs in each phase. Based on the results, the intensity and the level of the effectiveness of the inputs are included the customer capital, the structural capital and the intellectual capital respectively (Table 4).

Table 4. The sensitivity analysis of the input effectiveness level on the efficient and inefficient units

DMU name	Basic BCC efficiency	BCC efficiency by removing I1	BCC efficiency by removing I2	BCC efficiency by removing I3
Operation	1.00000	1.00000	1.00000	0.86170
manufacturing	0.79375	0.79375	0.74257	0.73862
Human resources	0.75342	0.75342	0.70851	0.73171
Warehouse	1.00000	1.00000	1.00000	1.00000
design and manufacturing	1.00000	1.00000	1.00000	1.00000
Production planning	1.00000	1.00000	1.00000	1.00000
Maintenance	0.78537	0.78537	0.77674	0.72045
health and safety	0.79489	0.79489	0.76854	0.79489
quality affairs	0.82069	0.81096	0.81522	0.82069
internal affairs	0.91047	0.87115	0.91047	0.74769
Financial affairs	0.75100	0.75100	0.73444	0.71348
laboratory	1.00000	1.00000	1.00000	1.00000
quality assurance and training	1.00000	1.00000	0.90697	1.00000
After- sale services	0.99928	0.99360	0.96610	0.99928
sales	0.82636	0.82636	0.75052	0.81316
purchases	0.72361	0.69282	0.72361	0.63533
informatics	0.77546	0.77546	0.67491	0.76726
Law enforcement units	1.00000	1.00000	1.00000	1.00000
The total distance from the main BCC		0.05120	0.17700	0.25058

4. Discussion and conclusion

The purpose of this study was to evaluate the performance of the organization units based on the intellectual capital, organizational commitment and DEA. In this way, the efficiency status of each unit and the effectiveness intensity of the input factor were determined on the output results and the operation units, warehouse, design and manufacturing, production planning, quality assurance and training, laboratory and low enforcement units were recognized as efficient units of DMUs and the level and the intensity of the input effectiveness were determined as customer capital, structural capital and intellectual capital respectively. With

regard to the fact that the efficient and inefficient units are determined from the intellectual capital and the organizational commitment dimensions with the use of this model, we can specify the defects of each unit by analyzing the results and the sensitivity to get to the efficiency frontier. The organization management can determine the effective indicators on the employee's organizational commitment and do the effective measures with the use of obtained results and formulate the policies and the ranking of the development programs of the organization performance in different aspects of human resources management and intellectual capital. It is suggested that the organization recognizes the customer's needs and uses the comments and the ideas in the production, sales and after- sale service circle by Setting the customer relation management system (CRM). The employee's commitment which can be increased with the improvement of the infrastructure quality, facilities, information, the use of the modern technology in organization's processes and finally the employee's career development and the improvement of their skills and knowledge can increase the organizational commitment because the increase in the organizational commitment will lead to the improvement of other variables such as the decrease of absenteeism, work leave, the decrease of job stress, satisfaction incensement, the improvement of employees' participation, loyalty, skills, relations, innovation, high interaction between the employees and the managers, the decrease in the labor costs and ultimately the increase in the effectiveness of human resources. In general, the employees with high organizational commitment will be happier in their work, spend less time on tasks unrelated to their jobs and are less likely to leave their organization [27]. With regard to the positive correlation of the organizational commitment with the job satisfaction and the employees' loyalty, we can use this technique to evaluate the performance on the loyalty or satisfactory of the employees.

This technique can also evaluate the other human resources dimensions such as job satisfaction and employees' loyalty along the other commitment measurement tools and provide managers to rank their units or employees based on these indicators.

5. Research Limitations and Recommendations for Future Studies

With regard to the research methodology and conditions, some research limitations are as follows:

- The results of this study are confined to the population of research sample and they are not generalizable to other organizations.
- Research findings are confined to the time duration of data collection.
- In this study, confirmed data are used in designing the questionnaires of intellectual capital and organizational commitment.
- In this study, only the dimensions of intellectual capital are considered.

Also, with regard to the mentioned limitations, some recommendations are given for future studies.

- Using suggestive methods in many organizations
- Using phase data for designing the questionnaires
- Using other ranking methods in the model of data enveloping analysis
- Considering other intangible assets as well as intellectual capital as an input variables of this study

6. Resources

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