

Weighting employee's performance appraisal indicators aiming intellectual capital development in public sector organizations

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Abstract: Intellectual capital (IC) was being recognized as a determining factor in success or failure of an organization and organizations are trying to find a good niche in competitive fields via the resource-based view. This paper's aim is weighting and prioritizing employee's performance appraisal indicators that have most effect on IC development in public sector organizations. For this, most important influential criteria for developing IC are investigated and a new hierarchical structure for this development is proposed. Then employed analytical hierarchical possess method to such goal.

A sample (N=52) of scholars and practitioners involved in performance appraisal systems was used as expert poll in this research. Findings suggest that for develop human capital, the indicator of proficiency, for organizational human capital, the indicator of interpersonal relation and for develop relational capital, the indicator of customer service have most effective role. All in all indicator of proficiency was recognized as the most effective indicator for IC expansion.

Keywords: Intellectual capital development, Employee's performance appraisal, Analytical hierarchy process, Public sector organizations

1 . Introduction

In today's competitive business world, with complex work relations, organizations can not satisfy growing environment's demands only by using traditional resources (Becker *et al.*, 2001). Intangible assets which were not noticed as important factors in traditional performance appraisal models and accounting systems, now in the last two decades have attracted researchers' attention. They believe in the most organizational aspects, performance of these resources has greater effect (Baker, 2008). These resources under the title of intellectual capital(IC) are considered as a tool for sustainable development and main drivers of value creation (Peppard, 2005; Serenko and Bontis, 2004). IC is main asset of successful organizations that their potentials cannot be ignored easily (Brennan and Connell, 2000). Nowadays managing of IC has become a key strategy for most organizations.

Public service sector organizations in most of the countries have a wide range of responsibilities and duties. In private sector, organizations are worried about their financial performance but in contrast, public sector organizations are judged by how well they provide service. It seems that in this kind of organizations choosing a resource based strategy can be the best way to achieve long term goals.

Organizations in order to implement a comprehensive strategy to develop IC must employ available tools to exploit, manage and improve it. One of the most useful tools in this procedure is performance appraisal. Firms can dictate their strategies to staffs by implementing a purposeful appraisal. The staffs have the right and are also interested to know what the organization's priorities are. In absence of an appropriate appraisal system, it would not be reasonable to expect human resources to follow an integrated strategy and resolve the firm's problems.

In planning a performance appraisal system, the primary step is to identify of performance indicators. The most important characteristic of such indicators is their consistency with organizational strategy (Armstrong and Baron, 1998).

Many authors have proposed different methods for evaluating employees' performance. Nevertheless, only a few studies have examined indicators of performance follow a given strategy. In more special, there is no research that investigates a set of indicators with appropriate weights that aids organizations to develop their IC. A weighted system of performance appraisal can align human resource activities.

The purpose of this paper is to propose a framework for weighting and prioritizing the employee's performance indicators aiming to maximize organization's IC in public sector organizations.

The weighting of indicators is a multi attribute decision making issue. The hierarchical analysis process (AHP) is one of the most suitable techniques for such application which is used in this study. The basis of this method is pair wise comparisons of factors in different level of the hierarchical.

The remainder of this paper is organized as follows. The next section provides a brief review of IC concept and its components suggesting a hierarchical structure of criteria which have effect on IC development. Then we describe employee's performance appraisal systems and identify seven most important indicator of employee's performance in public sector organizations. In next sections we present paper's methodology and results and at the end, some conclusions are presented.

2 . Intellectual Capital

The market value of a company consists of both tangible and intangible assets. There is no accepted definition of the term "Intellectual capital" in relevant literature (Kaufmann and Schneider, 2004). Some of IC definitions are as follows:

- "Intellectual material – knowledge, information, intellectual property, experience – that can be put to use to create wealth." (Stewart, 1997, p. xx).

- “An intangible asset is a claim to future benefit that does not have a physical or financial (a stock or a bond) embodiment.” (Lev, 2001, p. 5).
- “IC may properly be viewed as the holistic or meta-level capabilities of an enterprise to coordinate, orchestrate, and deploy its knowledge resources towards creating value in pursuit of its future vision.” (Rastogi, 2003, p. 230)

As Pedrini (20007) noticed, the high capacity of IC to value creation is due to following characteristics:

- Scalability in simultaneous use by more than one subject at a time without physical barrier of scarcity. They can be used again and again without being consumed.
- Increasing scale of return from a process of accumulation.
- Difficulty to imitate due to casual ambiguity, the dependency path and time compression.
- Network effect which states the advantages of inclusion grow as the number of people involved grows.

Many of the researchers and practitioners talk about the importance of IC for knowledge and added value creation (Bontis, 1996, 1998, 2001; Edvinson and Malone, 1997; Stewart 1997; Sveiby 1997; Rose et al., 1998; O'Regan *et al.*, 2001), but organizations use these resources very limitedly.

The Components of IC

Researchers have divided IC into different components. Sveiby (1997) believes IC consists of the employee competence (skills, education and experience) and their capacity to act in a wide variety of situations; internal structure (management, structure patents, concepts, models, research and development capability and software); and external structure (image, brands, customers and supplier relations). Haanes and Lowendhal (1997) divide IC into competence and relationships. Edvinsson and Malone (1997) have developed model of Scandia that break IC into structural and human capital. Rastogi (2003) states that it is impossible to have a clear cut classification, meanwhile he believes IC is influenced by human capital, social capital and knowledge. Lev's (2001) classification of IC consists of discovery, organizational practices, and human resources. Michalisin, Kline, and Smith (2000) consider reputation, know-how and organizational culture as the most necessary intangible components.

In spite of these diversities, generally used method to classify IC is to split it into human capital, organizational (structural or internal) capital and relational (customer or external) capital (Bontis, 1996, 1998; Canibano et al., 1999; Edvinsson and Sullivan, 1996; Mouritsen et al., 2002; Sanchez et al., 2000; Ordonez de Pablos, 2003, Stewart, 1997). These capitals themselves consist of varying subcomponents. A comparison between five most important models of IC is presented in table 1.

Take in table 1

Human capital

Many believe that human capital is the most important intangible resource of an organization and other intangibles are highly affiliated to it (Ahonen, 2000; Chen *et al.*, 2004). Human capital enhances the operational activity of tangibles (tools and equipments) and also intangibles (Fitz-enz, 2001). Bontis (1998) knows human capital as the firm's collective capability to extract the best solutions from the knowledge of its individuals. Mayo (2001) describes three different aspects of human capital as follow: capability and potentiality; motivation and commitment; innovation and learning. Six components of capability are personal behavior; business know-how; human network; professional qualification; experience; and personal value and attitude. Influencing factors on motivation and commitment are leadership effectiveness; practical

support; work group; learning and development; and rewards and recognition. Also education, training, experience and learning from others are four mode of learning. Becker (2001) has indentified five main attributes of talent, integration, enabling a performance-based culture/climate, capability and leadership to maximize human capital. Bozbura, Beskese, and Kahraman (2007) developed Becker's model and proposed some sub collections for its attributes.

This paper divides human capital into personal competence, employee's attitude and person-environment (P-E) fit. Experience, work quality and learning capability are components of personal capability and motivation, commitment and behavior patterns show the different aspects of employee's orientations. Authors prefer P-E fit as one of important criteria can influence on human capital improvement. Scholars indicate there is a strong relation between P-E fit and many other aspects of human capital such as job satisfaction, organizational commitment and turn over rate (Boxx *et al.*, 1991, O'Reilly *et al.*, 1991). P-E means the correspondence between persons and characteristics of their jobs, vocations, or organizations (Kristof, 1996). Tow different ways to conceptualize P-E fit include the needs-supplies and demand-abilities distinction (Muchinsky and Monahan, 1987). The person-job (P-J) fit, person-group (P-G) fit and person-organization (P-O) fit are the most important types of P-E fit (Kristof, 1996; Kristof *et al.*, 2005; Morley, 2007; Parkes *et al.*, 2001). P-J fit means the match between person's knowledge, skill and abilities and the requirements of a specific job (French *et al.*, 1974). P-G fit is defined as 'the compatibility between individuals and their work groups' (Kristof, 1996). P-O fit is the congruence of an individual's beliefs and values with the culture, norms, and values of an organization.

Organizational or structural capital

Organizational capital consists of all non-human knowledge resources in organization such databases, organizational charts, process manual, strategies, routines and any other thing that its value to the organization is more than its material value (Bontis *et al.*, 2000). Roos *et al.* (1998) described it as "what remains in the company when employees go home for the night". It is only type of IC that is wholly owned by the organization (Baker, 2008). Organization uses it as the convertor of human capital into wealth. An appropriate structural capital which has a supportive culture, leads the workers to risk taking after their failures, it will reduces costs and increases productivity (Bozbura 2004).

In spite of the great importance of human resources, organizations are not the owners of employees. Today staffs are able to leave the organization easily and consequently would take away a part of organizational memory which would threat the organization. Thus an organization which wants to attain a sustainable development has to convert the practical knowledge of its staff into a common knowledge in all organizational levels (Cohen and Kaimenakis, 2007).

To establish hierarchical structure authors broke organizational capital into knowledge management, organizational culture and organizational structure. Knowledge management consists of knowledge creation, knowledge sharing, knowledge utilizing and management information system. Two factors that have a significant effect on organizational culture are existence of a proper culture and engagement of employees in organizational culture. Also organizational structure includes operational process quality and strategic definition.

Relational or customer capital

The third component of IC is relational capital which can be considered as the ability of an organization for positive interaction with other parties who are present in the environment.

This kind of capital is consists of present knowledge in all relationships which an organization would have in his commence with environment in relation with customers, rivals, suppliers or government (Bontis *et al.*, 2000).

As like as tow other capitals authors specified three components for relational capital: customer consideration; market intensity; and social consideration. Customer consideration consists of customers' database, customer satisfaction, customer loyalty and customers' needs identification. Market intensity includes organization reputation, marketing channels, market share and appropriate relation with environment (e.g., government, rivals, suppliers, shareholders ...). At the end, social considerations as last component of relational capital was not broken into any sub criterion.

3 . The Proposed Hierarchical Framework for IC Development

As mentioned above, proposed hierarchical structure for IC development in public sector organizations at this study have three main criteria in second level, nine sub criteria in third level and 24 sub criteria in forth level (figure 1).

Take in Figure 1

4 . Employee's Performance Appraisal

One of the most critical practices for managing human resources is management and evaluation of the employee performance. Performance means "a basic instructional method in which the trainee is required to perform, under controlled conditions, the operation, skills, or movement being taught" (Tracey, 1998). Casio (1998) defined performance appraisal as regulatory description of weak or strong points in performance of a person or a group in relationship with related duties. If such appraisal be carried out appropriately all staffs and the organization can benefit from it. Performance management strategy is concerned with performance improvement, employee development, satisfying needs and expectations of all the organization's stakeholders and communication and involvement (Armstrong, 2000). The importance of performance appraisal for organizational actions such as selection, training, motivation, and compensation has been widely discussed.

Take in Figure 2

Employee's performance should be evaluated regularly. Employees want to know what their supervisors think about their work. Regular performance evaluations not only provide feedback to employees, but also provide employees with an opportunity to correct deficiencies and get along with the organization's goals. To implement each performance management system five processes is required. (Figure 3)

Take in Figure 3

In phase of setting criteria except identifying the proper criteria, it is needed to weight each criterion for better outline of specific organizational strategy.

After studying related literature, authors identified seven indicators which can best indicate performance of an employee in the public sector organizations. These indicators are as follow:

- Responsibility: the degree of supervision necessary to complete work, commitment to quantity over quality, the capability of keeping organizations confidential information.
- Proficiency: understanding craft, systems and processes, quick problem solving, accuracy and dependability of results of work, diligence in work, initiating independent actions, good judgment in establishing priorities, utilizing resources efficiently, attentive to all aspects of assignment/workflow
- Interpersonal relations: employee's cooperativeness, tact and courtesy, teamwork ability, generating enthusiasm in others, listening, understanding and expressing him/herself well, conflicts managing.

- Customer service: number of customers complaints, guiding and helping customers and trying to solve their problems, having good behavior toward them.
- Regulation: number of absences, work arrival and departures, lunch periods and breaks, using annual and sick leave in accordance with organization policy.
- Innovativeness: Initiative spirit, self-motivated, developing new and creative methods and procedures.
- Flexibility: changing acceptance, self-controlling (maintaining composure and performing well under pressure), accepting criticism.

6 . The Analytic Hierarchy Process

The AHP is a method developed by [Saaty, 1980](#) T.L. Saaty, The analytic hierarchy process, McGraw-Hill, New York (1980). Saaty (1977) to structure the experience, intuition, and heuristic based decision making into a well define methodology on the basis of sound mathematical principal (Bhushan and Rai, 2004). AHP allows considerations of both qualitative and quantitative aspects of judgments (Badri, 2001).

Three principles of AHP are decomposition, comparative judgment, and synthesis. Of specifications of this method is the reduction of subjective judgments by ascribing numerical value for choices based on the relative importance of criteria. Until now AHP has been applied in variety of decision making scenarios such as selection on an alternative, prioritization or weighting, resource allocation, benchmarking and quality management (Bhushan and Rai, 2004).

This method is also used in human resource issues for performance appraisal. Hun and Hun (2004) for prioritization and selection of IC measurement indicators in the mobile telecommunications industry used an AHP model. Rajabzadeh, Khodadad, and Parvizian (2005) used an AHP based approach to construct a performance appraisal system in banking industry. Bozbura, Beskese, and Kahraman (2007) expanded a model of performance appraisal aiming to maximize human capital by using AHP.

Authors first established the pair wise comparison matrixes among criteria. Then the local and overall weights of the criteria were abstained. In next step consistency rate of comparisons was calculated (table 4). Finally weight and rank of each performance appraisal indicator in developing of IC was derived from the expert poll.

Pair wise Comparison Matrix

In this research a linguistic discrete scale from 1 to 9 (Table 2) was used for pair wise comparisons (Saaty, 1977). Because there are three criteria in level two, three pair wise comparisons are created to construct matrix of relevance level. Similar to this, there were need nine pair wise comparisons for three matrixes in third level and 29 comparisons for eight matrixes in fourth level. These comparisons were organized into square matrixes $n \times n$ where n is the number of elements was compared. The diagonal elements of the matrix are 1. The criteria in the i th row is better than criteria in the j th column if the value of element (i,j) is more than 1; otherwise the criteria in the j th column is better than in the i th row. The (i,j) element of matrix is the reciprocal of the (j,i) element.

$$A = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & \vdots \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1} & \dots & \dots & a_{nn} \end{bmatrix} \text{ where } a_{ij} > 0, a_{ii} = 1 \text{ and } a_{ij} = 1/a_{ji} \quad (1)$$

With using eigenvector method for each matrix local weight of each element is obtained (Saaty, 2000 T.L. Saaty, Fundamentals of Decision Making and Priority Theory with the Analytic Hierarchy Process,

RWS, Pittsburgh (2000). Saaty, 2000). Eigenvector corresponding to the largest eigenvalue of the pair wise comparisons matrix gives the relative weight of the elements.

$$(A - \lambda_{\max} \times I) \times w = 0 \quad (2)$$

Where $w = (w_1, w_2, \dots, w_n)$ is the normalized vector of weights of elements and λ_{\max} is the maximum eigenvalue. Results of this step are represented in table 4.

Consistency Index (CI)

To verify the coherence of the comparisons, the consistency index has to be calculated. The largest eigenvalue λ_{\max} is a measure of consistency in judgments. The closer λ_{\max} is to n , the more consistent the result is. The deviations from consistency are calculated as follow:

$$CI = \frac{\lambda_{\max} - n}{n - 1} \quad (3)$$

Where n is order of the matrix. This CI can be compared with a random value from table 3 (Saaty, 1977). CR is the random ratio of consistency.

$$CR = (CI/RI) * 100\% \quad (4)$$

Take in Table 3

A consistency index of 0.10 or less generally indicates that the judgments are consistent (Saaty, 1994). As it has been shown in table 4, all consistency rate values of this study were less than 0.1; therefore all the judgments were consistent.

7. Data Collection and Results

Authors used "expert poll" to obtain comparison matrixes for performance indicators. Fichtner (1986) believes that an "expert poll" would be as the best source for the sample data used in AHP, because AHP would be a method used mainly in organizations for decision making. Our poll in this study consisted of 38 human recourse academics (all with master or doctoral degree in management field) in four Iranian universities and 23 practitioners (managers or secretaries of human resources department) in 12 Iranian public sector organizations.

In spite of high capacity of AHP method for getting human judgments, by increasing the criteria or alternatives in hierarchy structure, the number of comparisons increases rapidly. In this research, the conventional model of AHP needed 546 comparisons per each respondent. Because of the high number of questions to reduce the burden on respondents, authors decided to utilize graphically comparison capability of Expert Choice 2000, instead of the questionnaire of pair wise comparisons. Expert Choice is a group decision support software product based on the AHP. In this way respondents compared all seven alternatives in respect of one criterion at same time. With this modification in methodology, each one answered to only 26 questions that contain a comparison between seven alternatives. Also average time consumed for each interview reduced to 19 minutes.

There are two different methods to aggregate experts' judgments in AHP; one is the aggregation of individual judgments (AIJ) the other is the aggregation of individual priorities (AIP). Also the most commonly used procedures to gain aggregation in those methods are the geometric mean and the weighted arithmetic mean (Aull-Hyde *et al.*, 2006). In this paper the AIP with the geometric mean was used.

Table 4 lists the local weight (LW), overall weight (OW), CR and racking of each criteria and sub criteria of hierarchical structure, while Table 5 shows importance weight of seven performance indicators in respect of criteria and sub criteria in first, second, third level, and 13 highest ranked sub criteria in fourth level.

Take in Table 5

8 . Discussion and Conclusion

This paper applied AHP method to evaluate the importance weight of seven categories of performance indicators that have the most contribution on better management of IC in public sector organizations. The contribution of this paper is to establish a new framework based on analytical hierarchy for this goal. This framework would aids managers, especially human resource managers to choose the best performance indicators for evaluation of staffs in according to their internal and external situation and their strategies. The present research is the first study that investigates the importance of employee's performance indicators for intellectual capital development. Though some previous investigations tried to prioritize such indicators but no study exists that considers all components of IC integrally. Indeed, a proper integrity between human, organizational, and relational capitals can aids organizations to succeed.

We modified data collection method in conventional AHP and instead of pair wise judgment, the respondents was requested to compare all alternatives at one time. This modification gives paper possibility to implement. Another way to escape this problem is using TOPSIS or ELECTEREE methods instead of AHP in comparison of alternatives phase, because these methods don't use pair wise comparisons. We come to the conclusion this method is more able to get the opinions of interviews and they can better express their thoughts in comparison to mentioned methods.

In this article the number of performance indicator was decreased to seven main categories. It is clear that to obtain more exact and customized results more varies indicators can be considered.

Although focus of this investigation was on public sector organizations, this does not mean proposed model is not efficient in other types of organizations. This framework can be modified to satisfy different organizations' specifications. Also it can be used in different performance appraisal techniques such as MBO, trait checklist, forced choice rating, critical incident or 360 degree.

Results indicated for human capital and organizational capital development, indicators of proficiency and responsibility are orderly the most important indicators. Also interpersonal relations and responsibility are so effective for enhancing the relational capital. In sum, indicators of proficiency and responsibility with approximately equal contribution (19.5% and 19.2%) have been recognized as the highest ranked indicators for IC development. The lower ranked indicators are orderly as follow: interpersonal relations (15.7%); regulation (14.7%); flexibility (13.4%); customer service (9.4%); and innovativeness (8.2%).

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TABLE 1. IC Elements (Cohen and Kaimenakis, 2007)

	The Konrad Group (1988)	Roos and Roos (1997)	Bontis (1998)	Mayo (2001)	Skandia (1994, 1995a, b, 1996a, b, 1997, 1998)
Human capital sub-domain					
Capabilities and skills	✓	✓	✓	✓	✓
Loyalty and commitment		✓		✓	✓
Employees' satisfaction			✓	✓	✓
Values and culture	✓			✓	✓
Organizational capital sub-domain					
Knowledge management	✓	✓	✓	✓	✓
Corporate culture			✓	✓	✓
Organizational process efficiency	✓	✓	✓	✓	✓
Customer capital sub-domain					
Customer appropriateness	✓	✓	✓	✓	✓
Customer satisfaction (and market orientation)		✓	✓	✓	✓

Table 2. Gradation Scale for Quantitative Comparison of Alternatives (Saaty, 1980)

Option	Numerical value(s)
Equal important	1
Moderately more important	3
Strongly more Important	5
Very Strongly more Important	7
Extremely more important	9
Intermediate values to reflect fuzzy inputs	2, 4, 6, 8

Table 3. Consistency Indices of Randomly Generated Reciprocal Matrices (Saaty, 2000)

n	1	2	3	4	5	6	7
RI	0	0	0.58	0.90	1.12	1.24	1.32

Table 4 . Important Weight (Local and Overall Weights) and CR of Main and Sub criteria

level	Criteria/ sub criteria	CR	L W	O W	rank
1	Intellectual Capital	0.06	1	1	1
2	Human Capital	0.01	0.493	0.493	1
2	Organizational Capital	0.04	0.311	0.311	2
2	Relational Capital	0.06	0.196	0.196	3
3	Personal Competence	0.05	0.163	0.081	6
3	Employee's Attitude	0.05	0.540	0.266	1
3	P-E Fit	0.04	0.297	0.147	3
3	Knowledge Management	0.09	0.540	0.168	2
3	Organizational Culture	0.00	0.163	0.051	8
3	Organizational Structure	0.00	0.297	0.092	5
3	Customer Consideration	0.02	0.649	0.127	4
3	Market Intensity	0.03	0.072	0.014	9
3	Social Consideration		0.279	0.055	7
4	Experience		0.140	0.011	19
4	Work Quality		0.333	0.027	15
4	Learning Capability		0.528	0.043	7
4	Motivation		0.547	0.146	1
4	Commitment		0.345	0.092	3
4	Behavior Patterns		0.109	0.029	14
4	P-J Fit		0.258	0.038	9
4	P-G Fit		0.105	0.015	17
4	P-O Fit		0.637	0.093	2
4	Knowledge Creation		0.055	0.009	20
4	Knowledge Sharing		0.201	0.034	12
4	Knowledge Utilizing		0.528	0.089	5
4	MIS		0.216	0.036	11
4	Culture Existence		0.250	0.013	18
4	Employees' Engagement		0.750	0.038	9
4	Process Quality		0.333	0.031	13
4	Strategic Definition		0.667	0.092	4
4	Customers' Database		0.134	0.017	16
4	Customer Satisfaction		0.465	0.059	6
4	Customer Loyalty		0.074	0.009	20
4	Customers' Needs Identification		0.327	0.042	8
4	Organization Reputation		0.287	0.004	23
4	Marketing Channels		0.125	0.002	24
4	Market Share		0.061	0.001	25
4	Environment Relationship		0.527	0.007	22

Figure 2 . Performance appraisal as a focal point for integration of human resources activities (Armstrong 2000)

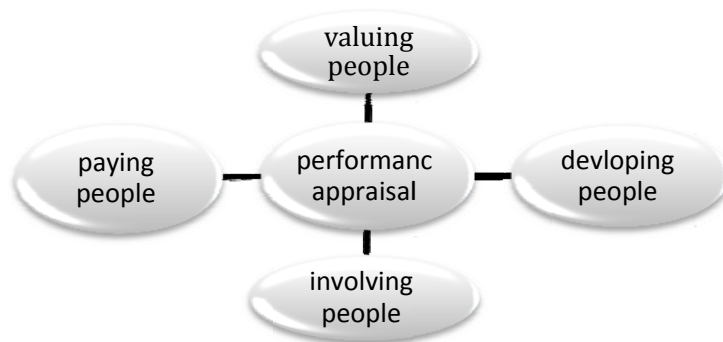


Figure 3 . Key components of a performance management

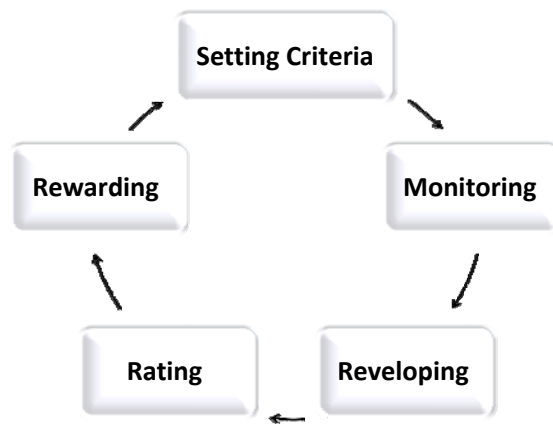


Table 5. Important weight of seven performance indicators in respect of main criteria and sub criteria(I : The highest ranked indicator and I :The second highest ranked indicator)

	Intellectual capital	Human capital	Organizational capital	Relational capital	Personal Competence	Employee's Attitude	P-E Fit	Knowledge Management	Organizational Culture	Organizational Structure	Customer Consideration	Market Intensity	Social Consideration
Overall weight	1.000	0.493	0.311	0.196	0.081	0.266	0.147	0.168	0.051	0.092	0.127	0.14	0.055
1 Responsibility	0.192	0.190	0.192	0.196	0.143	0.198	0.200	0.215	0.177	0.160	0.198	0.158	0.200
2 Proficiency	0.195	0.195	0.206	0.177	0.272	0.187	0.168	0.236	0.176	0.167	0.174	0.216	0.173
3 Interpersonal Relations	0.157	0.161	0.173	0.121	0.174	0.194	0.093	0.147	0.250	0.176	0.151	0.063	0.068
4 Customer Service	0.094	0.075	0.048	0.217	0.078	0.070	0.082	0.053	0.055	0.035	0.197	0.217	0.264
5 Regulation	0.147	0.146	0.178	0.100	0.075	0.117	0.237	0.084	0.214	0.329	0.074	0.176	0.140
6 Innovativeness	0.082	0.083	0.084	0.073	0.174	0.075	0.049	0.118	0.026	0.054	0.074	0.067	0.074
7 Flexibility	0.134	0.150	0.120	0.116	0.083	0.159	0.171	0.147	0.101	0.080	0.132	0.104	0.082

	Motivation	P-O Fit	Commitment	Strategic Definition	Knowledge Utilizing	Customer Satisfaction	Learning Capability	Customers' Needs Identification	P-J Fit	Employees' Engagement	MIS	Knowledge Sharing	Process Quality
Overall weight	0.146	0.098	0.092	0.092	0.089	0.059	0.043	0.042	0.038	0.038	0.036	0.034	0.031
1 Responsibility	0.148	0.229	0.287	0.148	0.288	0.289	0.098	0.114	0.181	0.160	0.173	0.092	0.182
2 Proficiency	0.182	0.112	0.178	0.139	0.252	0.176	0.233	0.202	0.331	0.190	0.232	0.220	0.225
3 Interpersonal Relations	0.298	0.065	0.064	0.186	0.119	0.231	0.166	0.091	0.056	0.261	0.107	0.284	0.156
4 Customer Service	0.042	0.079	0.125	0.038	0.042	0.059	0.059	0.316	0.083	0.054	0.031	0.072	0.028
5 Regulation	0.031	0.311	0.226	0.346	0.074	0.033	0.037	0.052	0.134		0.160	0.044	0.294
6 Innovativeness	0.097	0.027	0.039	0.060	0.101	0.049	0.295	0.104	0.070	0.026	0.151	0.087	0.042
7 Flexibility	0.201	0.178	0.081	0.083	0.123	0.164	0.112	0.121	0.145	0.122	0.145	0.201	0.073

Figure 1. Proposed hierarchical structure for IC development in public sector organizations

