

Identifying and Ranking the Criteria for Evaluating the Performance of Operating Managers of Iran Khodro Company Using Analytical Hierarchy Process (AHP) and TOPSIS

Behzad Behzadi,

Master of Science in Industrial Management, Islamic Azad University, Central Tehran Branch

Jalal Haghighat Monfared

Assistant Professor, School of Management, Islamic Azad University, Central Tehran

ABSTRACT – In the current study we identify the criteria for evaluating the performance of operating managers of Iran Khodro Company and rank such criteria using the techniques of TOPSIS & AHP. Criteria for performance evaluation are divided to 5 components (cognitive skills - technical skills, human skills, knowledge dimension and ability dimension) which generally include 30 sub-indices. First, the main criteria weights (5 components) in the form of paired comparisons questionnaire were identified using AHP by industry experts and university professors, also the following indicators in the form of a questionnaire of 48 logistics operations manager of Iran Khodro Industrial sites, were surveyed and tested. All respondents were operational managers in the category of foreman, headman, experts and authorities of Iran Khodro. After distributing and collecting the questionnaires, the validity and reliability of the questionnaire were studied. With the 96/4%, it was concluded that Questionnaire has high credit rating. Using TOPSIS technique, data were analyzed and it was concluded that among the measures proposed, the following indicators received the highest rating: Allocation of resources, the division of labor. In another analysis ranking of the five basic dimensions (cognitive skills, technical skills, human skills, the knowledge dimension and ability dimension) were investigated. It was found that among these indicators, technical skills was in the first place, human skills ranked second, then third was knowledge dimension, the ability dimension was the fourth and the fifth was the perceptual skills.

KEYWORDS: Performance Evaluation, the Analytical Hierarchy Process, TOPSIS, Operational Managers

Introduction

Qualified human resources are an integral part of an organization. Obviously, goals, strategies and plans of an organization is not possible without highly qualified managers and leaders. (Ghurchian, Mahmoudi, 1383). The importance of the role of managers as designers, leadership and major managing organizations is obvious and the implementation of effective systems, selection, recruitment and retention, evaluation and development are important and special (Daneshvar -1385). Performance evaluation can cause awareness of the progress in improving performance and As a result, provide motivation and opportunity to improve the quality of performance of organizations (Moon and others, 2010). Naturally, in the past classic managers did performance evaluation only to monitor employee, while today, aspect of guiding of this practice becomes more important and The main objective of evaluating the performance of is that Essential information about the employees in the organization to be collected And be available to managers (Khosravi, 1384). Many companies such as Ptymvn 2001, Robert, 2003, Austin 2008, Simons 2005, Gryfl-Tatj 2008 have been able to choose the right method for evaluating employee performance and achieve success. In contrast, companies are also like Blackmore 2005, McAdam 2005, which have tasted the taste of defeat by its wrong choice. With regard to evidence, the researcher sought to answer some of those questions which are:

- A. What are the main indicators for evaluating the performance of managers?
- B. How are Categories criteria for each indicator?
- C. How will be the result of evaluating the performance of managers based on the TOPSIS and AHP?

Theoretical Foundations

Performance Evaluation

Overall performance evaluation and performance management are the process that through which we can obtain useful information about how to effectively work to reinforce positive behavior and eliminate inappropriate and unnecessary behavior.

- The evaluation process is a series of formal procedures to assess employee performance in a given time interval and consists of individual behavior in relation to his performance in the period of time. (Doaei, 1374). The purpose of the performance evaluation is the process that by it, staff labor is evaluated and assessed periodically and formally (EsfandiarSaadat, human resource management, 1386, p. 214). Usually evaluating the performance of the organization is synonymous with

effectiveness of the activities. The purpose of the effectiveness is the achievement of the objectives and programs with efficient features of the activities and operations (Rahimi, 1385, p. 36). Generally performance assessment refers to the process of measuring the performance of the devices in certain periods so that the judged expectations and indicators for evaluating device be clear and already it be announced (Tabarsa, 1378, p. 4).

- Performance evaluation is systematic and regular assessment of individual work in relation to the task of assigned jobs and determine their potential for growth and improvement. (Mirsepassi, 1383).

With the conclusion of the above definitions, we can say that evaluate the performance of individuals:

1. A process that must continually be targeted.
2. It focuses on the qualitative and quantitative aspects and does not see appearances.
3. It considers the frequency of time.
4. It has clear criteria that focus almost majority.
5. It has two organizational and individual goals and never intended to damage or catch anyone. (Victim et al., 1381).

Criteria for evaluating the performance of managers

For evaluating the performance of managers, theoreticians and large organizations to set standards and criteria for the evaluation of its work, which is as follows:

1. Employees' job satisfaction and motivation: good manager is who provides relative job satisfaction within his organization and thereby motivate employees.
2. The achievement of the objectives while complying with laws and regulations: provided that the contradiction between laws are minimized.
3. Creativity of manager: how much the Manager has innovation and not enclosed himself within the framework of organization.
4. The work ethic: strengthening organizational values and faith
5. Material prosperity: reach level of material well-being that actually prevent many violations.

Literature Review

In a study entitled designing a Model evaluating for the performance of managers in public organizations which was carried out to evaluate the performance of managers, The model suggested that has the benefits of three main trends and due to the use of data Envelopment Analysis Approach, is completely objective, accurate and capable in the field of executive (Fazli and Azar, 1381). In a study entitled 360-degree feedback, refers to the study of the lack of performance evaluation system in organizations that create problems for employees, management and organization (Fanny and, 1382). Sergiovanni (Sergiovanni, 2003) defines indicators to assess the managers as the number of innovative solutions, the ability to be creative in problem solving, the ability to motivate staff to achieve the goals. Luthans (2005 Luthans,) in his studies to identify effective management employed two criteria. A. achieving the goals of the organization with quantitative and qualitative high standards, B. creating satisfaction and commitment in employees. Achieving the goals of the organization is one of the most important measures of Manager Performance. What is important in this context is management's commitment to the mission and philosophy of the organization. Although the main criterion for evaluation manager is the quality of his performance in achieving the goals of the organization. Shirley, (Shirley, 2003) in his study showed: The manager needs to note indicators such as assessment, the achievement of goals, motivation and communication with clients. (Ahmadnia, 2006) The most important objective of performance evaluation system is improve satisfaction, improve performance and ultimately the effectiveness of the activities of the organization. To achieve the above objectives must continually try to improve its mechanisms, the outcome of this effort to create a self-assessment, establishing scientific and right reward and punishment system methods, steer the organization toward excellence, and ultimately achieve goals to improve organization goals faster. In the decision-making techniques group study to assess the performance of the organization, Mr Wang Ping Liu and Chvchy (2007) suggest a group decision-making methods and AHP techniques. Hwang Jung (2009) in an article entitled linear programming model to be a substitute for policy making of determining the weight of index is used to assess performance. Thornton (2007) in a study showed that Managers, that had evaluating training and then served as assessor for three months (experimental group) compared to managers who have no experience or training in this area (control group) wears better skills in an interview to learn information, information assessment, oral communication, and proving their information. Researches of Chnhal (2005) and Vaydnr (2007), made relationship between the use of strategic performance measurement systems, such as the balanced scorecard framework and the organization's ability to respond effectively to the external environment and learn from it. Chnhal (2005) found that an integrated strategic performance evaluation system, education, interpretation, distribution and storage of information improves. Vydnr findings (2007) showed that senior financial executives with strategic performance measurement systems reacts to strategic ambiguity in diagnostic and interactive manner.

Research Methodology

This Research, in terms of purpose, is applied and the results are used in identifying criteria to evaluate the performance of the logistics operations managers of Iran Khodro Industrial sites. The population consisted of all the logistics operational managers of production sites of Iran Khodro Company. Considering that study population was below 100, so there is no need to sample and questionnaires have been distributed among all members of the research community, which is 48 people. The main tool to collect data in this study is the use of questionnaires and interviews. Cronbach's alpha value of the inventory is 96.4%, which is located the domain of excellent reliability.

Results

Descriptive statistics

Highest proportion means 45.8% of the sample were age 40 and older. Highest proportion means 79 percent of the sample had between 3 and 5 years of work experience. Highest proportion means 52 percent of the sample were high school graduates. About 79 percent of the sample are working with head positions. About 92 percent of the sample had more than 15 years of relevant work experience.

Deductive statistics

Weighting on AHP Method

The results of the questionnaire were aggregated through the geometric mean and output has become a paired comparison table.

Table 1. Paired comparisons of operating managers' performance evaluation criteria

knowledge skills	ability skills	Human skills	Perceptual skills	Technical skills	
				1	Technical skills
			1		Perceptual skills
		1			Human skills
	1				ability skills
1					knowledge skills

Paired comparison Questionnaires were analyzed using the software Expert Choice 11 and the incompatibility rate of 0.08 is obtained. The incompatibility rate is the mechanism by which reliability the answers of respondents to a comparison matrix is examined. This mechanism determines that how much is reasonable reliability of the response of respondents to compare the sub-criteria with the replacement. Inconsistency rate in AHP of less than 0.1 is considered. Calculating incompatibility rate of comparison matrix if the number of respondents is more than one person will be based on geometric mean answers of respondents. Coefficient of the importance of each of the respondents considered the same. Finally weight of each factor is given in Table 2.

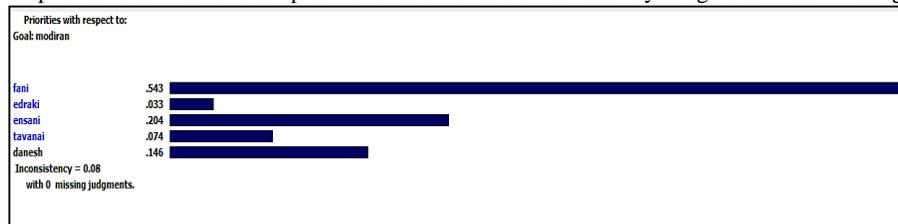


Chart 1. The output of Expert Choice 11 software for weighting the effective factors on the evaluating the performance of operations managers in Iran Khodro Co.

Table 2. The results for weighting the effective factors on evaluating the performance of operating managers of Iran Khodro Company

Row	Factor	Weight	The incompatibility rate
1	Technical skills	0.543	0.08
2	Human skills	0.204	
3	Knowledge Skills	0.146	
4	Ability Skills	0.074	
5	Perceptual skills	0.033	

In Chart 2, the values of the weights together, indicate a higher priority of technical factor than other factors. This amount will be effective as weight in the ranking indexes.

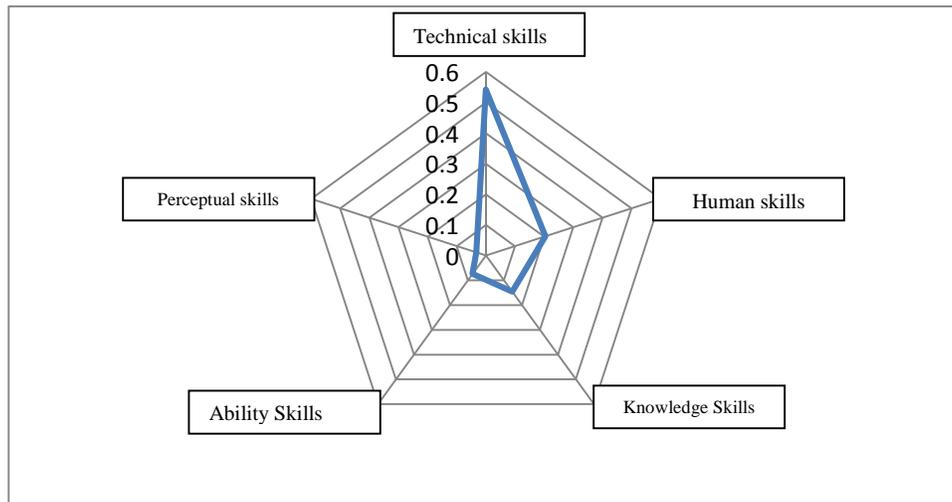


Chart 2. The results for weighting the effective factors on evaluating the performance of operating managers of Iran Khodro Company

Weighting the operative indexes of technical skills

In this section, weighting the each of the sub-criteria (indexes) will be discussed for each factor. As well as the method for weighting the factors, AHP method is used for weighting the sub-criteria. The output of Expert choice software for each factor is listed in the below tables.

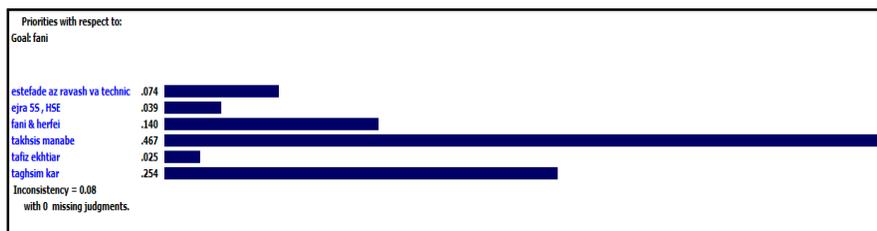


Chart 3. The output of Expert choice software for weighting the operative indexes of technical skills

Table 3. The results for weighting the sub-criteria of technical skills

Row	Sub-criteria	Weight	The incompatibility rate
1	Using the methods and techniques	0.074	0.08
2	The implementation of the 5S, HSE and Ergonomics	0.039	
3	Vocational training of staff	0.14	
4	The allocation of resources: human resources and facilities management	0.467	
5	Delegation: Devolution of power to another	0.025	

Weighting the operative indexes of perceptual skills

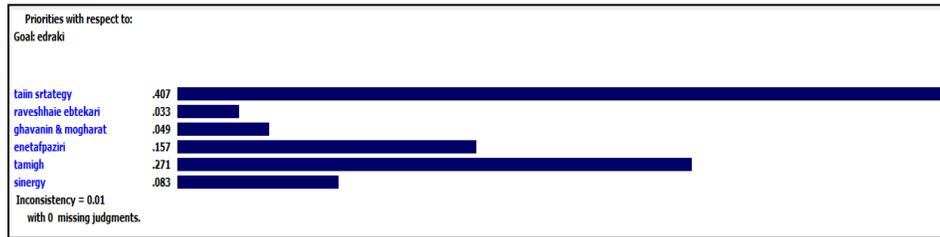


Chart 4. The output of operative Expert choice software of Perceptual skills

Table 4: The results of weighting the sub-criteria of perceptual skills

Row	Sub-criteria	Weight	The incompatibility rate
1	Determining the strategic and long-term goals	0.407	0.01
2	Using the innovative methods	0.033	
3	Knowledge of laws and regulations	0.049	
4	Flexibility	0.157	
5	Ponder : Contemplation	0.271	
6	Synergies and Synergy	0.083	

Weighting the operative indexes of human skills

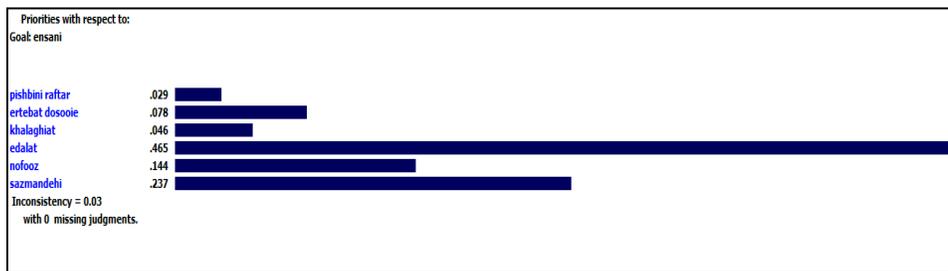


Chart 5. The output of Expert choice software for weighting the operative indexes of human skills

Table 5. The results for weighting the sub-criteria of human skills

Row	Sub-criteria	Weight	The incompatibility rate
1	Predicting the future behavior	0.029	0.03
2	Bidirectional communications	0.078	
3	Foster creativity	0.046	
4	Justice in behavior	0.465	
5	Influence on people	0.144	
6	Organizing	0.237	

Weighting the operative indexes of ability skills

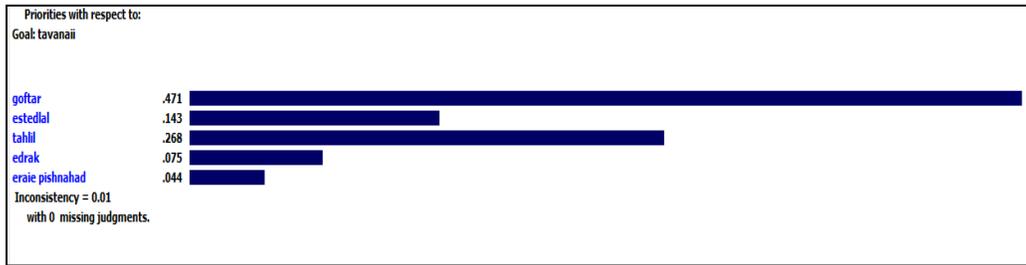


Chart 6. The output of Expert choice software for weighting the operative indexes of ability skills

Table 6. The results for weighting the sub-criteria of ability skills

Row	Sub-criteria	Weight	The incompatibility rate
1	Speech ability (ability to speak so that the audience understand the speaker's speech)	0.471	0.01
2	Reasoning ability (influence on planning and problem-solving information)	0.143	
3	Ability to analyze (the ability to analyze the issues and problems)	0.268	
4	Perceptual ability (the ability to learn the organizational information)	0.075	
5	The ability to offer the constructive suggestions	0.044	

Weighting the operative indexes of knowledge skills

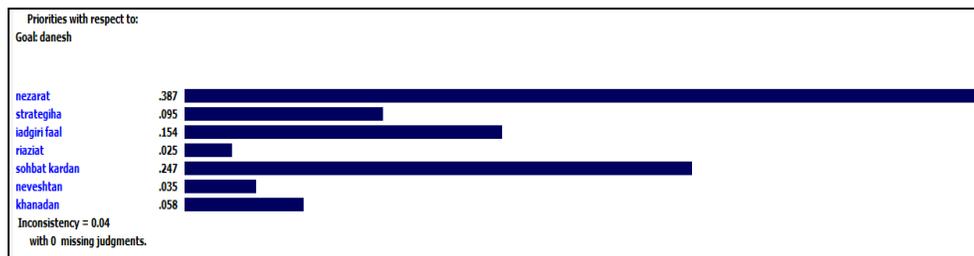


Chart 7. The output of Expert choice software for weighting the operative indexes of knowledge skills

Table 7. The results for weighting the sub-criteria of knowledge skills

Row	Sub-criteria	Weight	The incompatibility rate
1	Controlling the monitoring (monitoring the organization and own self to improve the performance)	0.387	0.04
2	Learning the strategies (selecting and using the appropriate methods to position of organization , learning and teaching it)	0.095	
3	Active learning (understanding the cause of the current and future problems in decision-making and problem-solving)	0.154	
4	Mathematics (using the mathematical techniques to solve the problems)	0.025	
5	Talking (talking to others to convey the information effectively)	0.247	
6	Writing (effective communication through writing)	0.035	

Table 8. The results for weighting the effective factors on evaluating the performance of operating managers of Iran Khodro Company

Factor	Sub-criteria	Weight of sub-criteria	Weight of factor	Total weight	The normalized total weight
Technical skills	Using methods and techniques	0.074	0.543	0.04	0.042
	The implementation of the 5S, HSE and Ergonomics	0.039	0.543	0.021	0.022
	Vocational training of staff	0.14	0.543	0.076	0.08
	The allocation of resources: human resources and facilities management	0.467	0.543	0.254	0.267
	Delegation: Devolution of power to another	0.025	0.543	0.014	0.014
	Division of work: Using a person according knowledge Properly	0.074	0.543	0.04	0.042
Perceptual skills	Determining the strategic and long-term goals	0.407	0.033	0.013	0.014
	Using the innovative methods	0.033	0.033	0.001	0.001
	Knowledge of laws and regulations	0.049	0.033	0.002	0.002
	Flexibility	0.157	0.033	0.005	0.005
	Ponder : Contemplation	0.271	0.033	0.009	0.009
	Synergies and Synergy	0.083	0.033	0.003	0.003
Human skills	Predicting the future behavior	0.029	0.204	0.006	0.006
	Bidirectional communications	0.078	0.204	0.016	0.017
	Foster creativity	0.046	0.204	0.009	0.01
	Justice in behavior	0.465	0.204	0.095	0.1
	Influence on people	0.144	0.204	0.029	0.031
	Organizing	0.237	0.204	0.048	0.051
Ability	Speech ability (ability to speak so that the audience understand the speaker's speech)	0.471	0.074	0.035	0.037
	Reasoning ability (influence on planning and problem-solving information)	0.143	0.074	0.011	0.011
	Ability to analyze (the ability to analyze the issues and problems)	0.268	0.074	0.02	0.021
	Perceptual ability (the ability to learn the organizational information)	0.075	0.074	0.006	0.006
	The ability to offer the constructive suggestions	0.044	0.074	0.003	0.003
Knowledge	Controlling the monitoring (monitoring the organization and own self to improve the performance)	0.387	0.146	0.057	0.059
	Learning the strategies (selecting and using the appropriate methods to position of organization , learning and teaching it)	0.095	0.146	0.014	0.015
	Active learning (understanding the cause of the current and future problems in decision-making and problem-solving)	0.154	0.146	0.022	0.024
	Mathematics (using the mathematical techniques to solve the problems)	0.025	0.146	0.004	0.004
	Talking (talking to others to convey the information effectively)	0.247	0.146	0.036	0.038
	Writing (effective communication through writing)	0.035	0.146	0.005	0.005
	Reading (reading and understanding the organizational documents)	0.387	0.146	0.057	0.059

Ranking the sub-criteria in the TOPSIS way

In Table 8, the results of the ranking of effective dimension on evaluating the performance of operational managers of Iran Khodro Company based on the model are shown.

Table 9. The results for ranking the effective factors on evaluating the performance of operating managers of Iran Khodro Company

Rank	Factor	Index	S_i	S_i^+	S_i^-
1	Technical skills	The allocation of resources: human resources and facilities management	1	0	0.331
2	Technical skills	Division of work: Using a person according knowledge Properly	0.538	0.154	0.18
3	Human skills	Justice in behavior	0.385	0.204	0.128
4	Technical skills	Vocational training of staff	0.285	0.237	0.095
5	Knowledge	Controlling the monitoring (monitoring the organization and own self to improve the performance)	0.215	0.26	0.071
6	Human skills	Organizing	0.194	0.267	0.064
7	Technical skills	Using methods and techniques	0.145	0.284	0.048
8	Ability	Speech ability (ability to speak so that the audience understand the speaker's speech)	0.137	0.286	0.045
9	Knowledge	Talking (talking to others to convey the information effectively)	0.134	0.287	0.045
10	Human skills	Influence on people	0.112	0.294	0.037
11	Knowledge	Active learning (understanding the cause of the current and future problems in decision-making and problem-solving)	0.082	0.304	0.027
12	Ability	Ability to analyze (the ability to analyze the issues and problems)	0.076	0.306	0.025
13	Technical skills	The implementation of the 5S, HSE and Ergonomics	0.074	0.307	0.024
14	Human skills	Bidirectional communications	0.059	0.312	0.019
15	Perceptual skills	Determining the strategic and long-term goals	0.05	0.315	0.016
16	Knowledge	Learning the strategies (selecting and using the appropriate methods to position of organization , learning and teaching it)	0.048	0.315	0.016
17	Technical skills	Delegation: Devolution of power to another	0.044	0.317	0.015
18	Ability	Reasoning ability (influence on planning and problem-solving information)	0.038	0.318	0.013
19	Human skills	Foster creativity	0.032	0.32	0.011
20	Perceptual skills	Ponder : Contemplation	0.031	0.321	0.01
21	Knowledge	Reading (reading and understanding the organizational documents)	0.026	0.322	0.009
22	Human skills	Predicting the future behavior	0.019	0.325	0.006
23	Ability	Perceptual ability (the ability to learn the organizational information)	0.018	0.325	0.006
24	Perceptual skills	Flexibility	0.016	0.325	0.005
25	Knowledge	Writing (effective communication through writing)	0.014	0.326	0.005
26	Ability	The ability to offer the constructive suggestions	0.009	0.328	0.003
27	Knowledge	Mathematics (using the mathematical techniques to solve the problems)	0.008	0.328	0.003
28	Perceptual skills	Synergies and Synergy	0.007	0.329	0.002
29	Perceptual skills	Knowledge of laws and regulations	0.002	0.33	0.001
30	Perceptual skills	Using the innovative methods	0	0.331	0

Summary and conclusion

Based on the results of the analysis of data in the fourth quarter and based on priority of the main indicators and sub-indicators these proposals are presented. It is proposed to improve the managers' performance evaluation system in this study; a written plan is created based on importance and priority of managers' performance evaluation indicators. Since the components of technical

skill have the highest priority of managers' performance evaluation indicators, functional managers must be more aware of technical skills. Most of operational managers' success depends on their skill level; training managers will increase their skill levels, so companies need to enhance their technical skills by setting up the training courses. Based on the results of data analysis, importance and priority of items of any structure in the organizational culture has been shown based on the above table. Therefore, it is recommended that in planning to improve the organizational culture the aforementioned factors considered more important and using them in organization, an effective progress will be done in the institutionalization of organizational culture. It is proposed to improve the performance evaluation system in the studied population, based on the priority and importance of the mentioned components, planning, budgeting and necessary efforts done to take some important steps with minimal cost and time to promote the organization level. Based on the results of the data analysis, the most importance and priority of Iran Khodro managers' performance evaluation indicators have been shown based on the above table, Therefore, it is recommended in planning managers' performance evaluation system improvement these factors are considered more important and using them in the company an effective step would be taken in institutionalizing optimal managers' performance evaluation system.

- 1- Reviewing the development of performance evaluation indicators to encourage managers and employees and to remove obstacles
- 2- Giving suitable jobs to people regarding the knowledge by operational managers
- 3- Suitable background and creating the necessary space for taking charge for staff would be recommended.
- 4- Participation of employees in programs in order to provide suitable opportunities and new ways to create an environment or atmosphere of sufficient trust between managers and employees.
- 5- managers' more attention in communicating with staff and having public meetings in order to create a favorable climate for finding the problems and information of partners and providing needed support in times of need.
- 6- Acquiring general information on the living conditions of workers by managers
- 7- According to providing ample opportunity to raise new perspectives new recommendations, to foster creativity, it is recommended to achieve this important issue by strengthening the internal suggestion system among the various units' staff of Iran Khodro Company.
- 8- Vocational training and training for staff should be on managers' agenda.

References

1. Adams, C. Roberts P. (1991). *You Are What You Measure*. Manufacturing Europe.
2. Ahmadnia, H. (2006). *Development Of Effectiveness in Assessment of Personnel's Function*. Thesis of MA from Isfahan University. (In Persian).
3. Akkermans, H., & Von Oorschot, K. (2000). *Developing A Balanced Scorecard with System Dynamics*, Journal Of The Operational Research Society, May.
4. Alvany, Mehdi, *General Management*, Tehran, Ney Publication, p157, 1372\
5. Ardebili, Joseph (1376), *Evaluation methods in public and private sectors*, Be'sat Institute, printing, Tehran
6. Ashish C, Zachary F, "Utilization of Performance Appraisal System in Health Care Organizations and Improvement Strategies for Supervisor".
7. Baghaiee, Iman, identifying criteria for evaluating the managers' performance of Azad University of Tehran and prioritizing them by fuzzy TOPSIS method 1391
8. Behrangi, Mohammadreza, *modern management*, Ney Publication, 1370
9. Bradley, J. (2008). *Management Based Critical Success Factors In The Implementation Of Enterprise Resource Planning Systems*. International Journal of Accounting Information Systems. VOL: 9, P: 175–200
10. Doaie, Habibullah, *human resource management (functional approach)*, the first edition, Mashhad, Ferdowsi University Press, 1374
11. Gholami, Hossein, Noor Alizadeh, Hamid Reza, *Comparison of performance evaluation methods*, Proceedings of the First national Conference on Performance Management, Tehran JahadDaneshgahi, Management School of Tehran University, 1381.
12. Haghghi, Mohammad Ali and Ranaiy, Habibollah *Labor productivity*, Computer Research Center, No. 69, pages 17 to 18, Bahman 1384
13. Harker, P. (1989); "The Art and Science of Decision Making the AHP." Chapter2 of *Analytical Hierarchy Process* by Golden, B. L, Wasil, E. A. And Harker.
14. Hwang, C.L&K.Yoon (1981), *Multiple Attribute Decision Making; Method & Application*. New York, Springer-Verlag14-Dessler. G. "*Human Resource Management*" 3rd Ed. Houghton Mhtlin
15. Irannezhad, Parizi, Mehdi, *research methods in the social sciences*, Fourth Edition, Modiran publication 1388
16. Irannezhad, Parizi, Mehdi., *human resource management*, Modiran publication., 1373
17. Javaddedin, SayyedRaza, *personnel and human resource management*, Negah-e- Danesh Publications, pp 514.1381
18. Kaplan, R. S., &Norton, D. P. (1996). *The Balanced Scorecard: Measures That Drive Performance*. Harvard Business Review(January–February), 71–79
19. Khsrvy, Amir. *A review on the staff performance evaluation*. Tose'e Modiriati Publication, Computer Research Center, Issue 69, pages 17 to 18, Bahman 1384
20. Mirkamali, Sayed Mohammad, *training leadership and management*, Tehran, Ramin publication, 1373.....
21. Neely, A. D., Gregory, M., Platts, K. W. (1995), "*Performance Measurement System -Design: A literature Review and Research Agenda*", International Journal of Operations &Production Management.
22. Widener, S. (2007). *An Empirical Analysis of the Levers of Control Framework*. Accounting, Organization and Society32:757-788