Int. J. Environ. Res., 5(2):277-284, Spring 2011
ISSN: 1735-6865

Analysis of the Environmental Projects Risk Management Success Using Analytical Network Process Approach

Najafi, A. [1] **and Afrazeh, A.** [2*]

[1] Department of Industrial Engineering (I.E.), Amirkabir University of Technology, Hafez Ave., P.O. Box 15875-4413, Tehran, Iran

[2] Department of Industrial Engineering (I.E.), Amirkabir University of Technology, Hafez Ave., P.O. Box 15875-4413, Tehran, Iran

Received 12 April 2009; Revised 14 Sep. 2010; Accepted 25 Sep. 2010

ABSTRACT: It is commonly recognized that knowledge is the only source of core competence of Environmental Projects in the knowledge based companies, but the productivity rate of knowledge workers is always Low. Based on knowledge workers' characteristics, in this paper, we seek to identify knowledge workers factors influencing on the Environmental Projects Risk Management success (EPRM), then Knowledge strategies present for EPRM Success. Finally, the best strategy selects using Analytical Network Process (ANP) approach. It is hoped that this paper will help Environmental Projects managers to implement different corresponding measures. A case study is presented where this model measures and validates at the Daru-Pakhsh Company.

Key words: Environmental Projects, Risk Management, knowledge, Analytical Network Process

INTRODUCTION

Activities done in the fields of Environmental Projects Risk Management are in the early stages of its growth (Bredin, 2008, Nasr *et al.*, 2009, Dehghani *et al.*, 2010, Malmasi *et al.*, 2010, Nouri *et al.*, 2010). One of the ways that EPRM can be successful is that it brings first make sure the Environmental Projects technically have the ability to run. Human resource management is therefore important in any organization. Environmental Projects are no different in this regard (Abbaspour *et al.*, 2009). Studies done by the PMI Institute in 2007 identified more than 90 percent lead Environmental Projects implemented have adhered to this requirement, secondly factors affecting successful management Environmental Projects should be identified. Basic research has proven that human resources are the most important factor for Environmental Projects success. Nowadays, human resources position in Environmental Projects not only revised their strategic role in the successful management Environmental Projects has been gradually accepted, but have concluded that human factors over technical issues led to successful Environmental Projects (Hassani *et al.*, 2008). Despite these findings, only a small ratio of the number of empirical research has been done so far (Raiden *et al.*, 2006). In the past, Environmental Projects success has been analyzed based on three main factors, including cost, time and performance (Belout *et a.l*, 2004). One of the fundamental problems of the past approach is lack of attention to other aspects of the Environmental Projects (Scott-Young and Samson, 2008). The study tried to examine the most important dimensions of Environmental Projects success such as human resources. Human resource management process contains the necessary coordination of human resources in the Environmental Projects. These processes include needs for designing, providing, advice, allocation of staff time and clearance Environmental Projects. All this process depending on the activity that assigned to them. Activities can be as intellectual and manual. Intellectual work required due to specific knowledge will have a lot of complexity. Therefore; human resources involved in intellectual will spend more resources. If management is not suitable for the Environmental Projects affects output quality. The other hand, the increasing interest around knowledge worker and has caused a significant body of empirical research to emerge, examining the impact of different knowledge workers factors on EPRM success. However, minimum attention has been given

*Corresponding author E-mail: afrazeh@aut.ac.ir

to the conception or understanding of the specific strategies through which knowledge workers factors influence EPRM. Improving the productivity of knowledge workers is one of the most important challenges for companies that face the transition from the industrial economy to an economy based on information and knowledge (Nabi Bidhendi, 2007). Knowledge workers are obviously non-manual workers and are usually employed by Environmental Projects managers to carry out innovative activities. Knowledge Worker is a member of the Environmental Projects organization who uses knowledge to be a more productive worker (Stuhlman Daniel, 2006). A knowledge worker is anyone who works for a living at the tasks of developing or using knowledge (Adkoli, 2006). An Environmental Projects managers that aims to continually improvement in Environmental Projects, they should be consider the knowledge workers' factors as a part of the management process and as a strategic element in Environmental Projects. The factors of knowledge workers are divided to three sections (will, can, May) in Environmental Projects. A scientific method is needed to classification of knowledge workers' factors in Environmental Projects. We use the Analytical Network Process (ANP), which measures strategic factors' inter-dependence (Dainoff, 2009). Knowledge workers require mental ability, creativity, analytical ability, high educational attainment, programming capability, problem-solving and decision-making skills, as well as qualities required for specific duties. There are different classifications for knowledge workers based on their duties. In sum, knowledge workers are the staff who work with intangible resources and can be active in all sections of an organization (Massingham *et al.*, 2009). EPRM success is achieved in six steps of knowledge management in Table 1.

Table 1. EPRM process

Process	Factors
Identification of knowledge	PMS_{id}
Creation of knowledge	PMS_{cr}
Capturing of knowledge	PMS_{ca}
Application of knowledge	PMS_{ap}
Sharing of knowledge	PMS_{sh}
Saving & Storage of knowledge	PMS_{ss}

MATERIALS & METHODS

It was decided to adopt a case study approach for this paper as there is little existing research on identification of Knowledge Workers factors influencing on EPRM Success. It has been based on the descriptive Research. This descriptive type research has been carried out using the questionnaire as the research tool for gathering the required data. Data gathering involved both reference material and a questionnaire survey. Sampling was simple random sampling and the data gathering instrument was the questionnaire. The author had already undertaken research in this field which had stimulated the measurement tools and the theoretical framework used to analyze this case study, based on ANP Method.In March 2007 a request for interviews and questionnaires was sent to a number of the managers and staff in the Daru-Pakhsh company Environmental Projects. Prior to the interview and fill the questionnaire, the author explained the purpose of the research and made it clear that this information would be in the public domain, so any confidentiality concerns could be noted. To ensure internal validity the interview and questionnaire was transcribed and sent to and staff in t the Daru-Pakhsh company Environmental Projects for confirmation of accuracy and to check that no commercially sensitive information had been included.

In selecting respondents, diversity was paramount so that opinions from a number of employment situations could be gathered. Consequently, different occupational groups in different sections were targeted. The employers included four public sectors in the company. The size of the Daru-Pakhsh Company ranged from a low of 150 employees to a high of 450 with a mean size of 300 employees. Knowledge worker interviewees were in temporary or fixed-term employment contracts, representing independent contractors, short-term Environmental Projects employees hired by the organization, and seasonal employees, also hired directly by the organization. Occupations included accountants, engineers, human resources specialists, information technology specialists (programmers, developers), quality assurance specialists, Environmental Projects managers, researchers, planners, and resource conservation officers. In terms of gender, the contingent worker interviewees included 45 men and 30 women, and ages ranged from people in their early 20s to those who were near retirement. The education of respondents included seven individuals with no postsecondary degree, eight with a college or technical diploma, 40 with an undergraduate degree, and 20 possessing a graduate degree. Managers were chosen from amongst a group who were responsible for the hiring and/or supervision of the selected contingent knowledge workers in each organization, and represented the departments of the occupations listed above. Overall, 15 of the managers were male, while 10 were female, and their ages ranged from 36 to 58s.

Semi-structured, in-depth interviews were conducted with the contingent workers and their managers. Average length of interviews was 45 minutes in any month, with half conducted face-to-face, and half via telephone. Questions for the knowledge workers primarily explored their perceptions of the contingent employment relationship, and included the more typical organizational measurements of overall satisfaction with the employment arrangement, pay, and hours of work. Secondly, due to various earlier discussions with contingent knowledge workers, research respondents were asked to rate how being in a contingent position affected their work/life balance, social distance (organizational socialization and integration), and knowledge sharing. Finally, because traditional empirical measurements of psychological contracts include notions of advancement, training and career development, and more recent work has examined commitment, trust and work behavior, knowledge workers were asked to rate the effect of contingent work on their career goals, personal finances, promotion opportunities, training and development opportunities, autonomy on the job, and organizational commitment. Overall, these measures were chosen so as to provide results relative to a number of different personal and job dimensions. A four-point forced choice scale was used for this aspect of the data collection. In total, all factors affecting the productivity of knowledge workers through interviews and questionnaires were extracted.

For the qualitative interview data, two researchers independently analyzed it to identify key issues and themes. For selection of strategies are used the ANP method. ANP is established by Saaty and is proposed as a generalization of AHP. Like AHP, which provides a framework for hierarchical structures with one-directional relationships, ANP allows for internal complex relationships among various decision-making and criterion levels (Yüksel and Dağdeviren 2007). ANP is considered comprehensive and explanatory for multipurpose decision-making discussions and also for solving complex decision-making issues. The network model used in this research is presented in Fig. 1.

where w1 is the vector of goal or aim effect, for example, selecting the best strategy according to element factors, W2 is the element factors' internal dependence matrix, W3 is the effect matrix of element factors on each of the element sub-factors, W4 is the index of element sub-factors' effect on the strategic options. The matrix functions detail the algorithm steps. The proposed algorithm using ANP and the matrix functions is derived as follows.

Step 1: Determine the element sub-factors and strategic options according to sub-factors

Step 2: Assume that no dependencies among element factors exist, then the importance degree of element factors is shown by the numerical scale of 1 to 9

Step 3: Determine the element factors of the internally dependent matrix by the numerical scale of 1 to 9, and consider other factors by schematic view and internal dependencies among them. (W2 calculation)

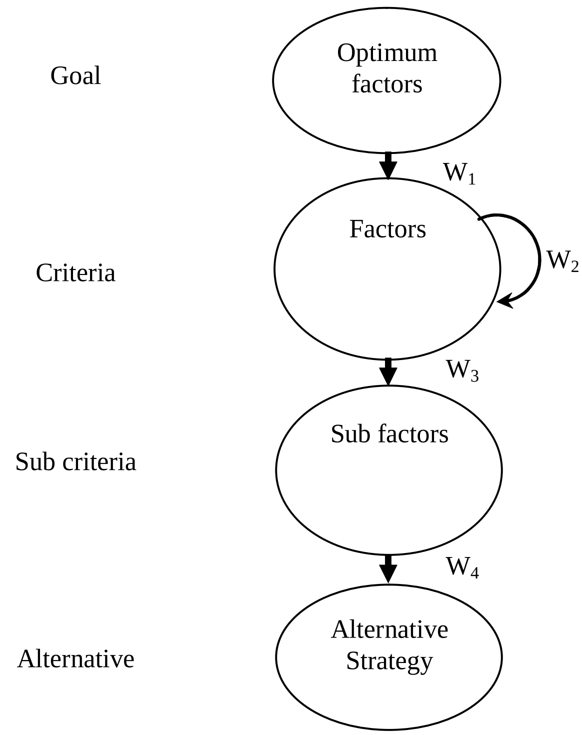

Fig. 1. Network model structure

$$W = \begin{array}{l} \text{Goal} \\ \text{Factors} \\ \text{Sub Factors} \\ \text{Alternative} \end{array} \begin{bmatrix} 0 & 0 & 0 & 0 \\ \mathbf{w}_1 & \mathbf{W}_2 & 0 & 0 \\ 0 & \mathbf{W}_3 & 0 & 0 \\ 0 & 0 & \mathbf{W}_4 & \mathbf{I} \end{bmatrix}$$

Step 4: Specify the internal dependencies' priorities, that is, calculate $w_{factors} = W_2 \times w_1$

Step 5: Specify the importance degree of element sub-factors using the numerical scale of 1 to 9.

Step 6: Specify the importance degree of sub-factors

Step 7: Specify the importance degree of options, considering each sub-factor, on the scale of 1 to 9

Step 8: Calculate the final priority of options derived from the internal relationships among element factors.

$w_{alternatives} = W_4 \times w_{sub-factors(global)}$

RESULTS & DISCUSSION

Daru-Pakhsh Company established in 1974, Tehran. This company is one of the largest producers in the Middle East of drugs sections.

Step 1: First, the issue is depicted as a hierarchical structure, which contains the strategic options and sub-factors for the next calculations using ANP. (See Fig. 2). The goal is chosen at the first level of the ANP Model and the element factors (identification, creation, acquisition, application, sharing and maintenance) are determined at the second level. The third level contains the three element sub-factors of CAN, WILL and MAY. Furthermore, 13 strategic options are given in the fourth level. The strategic options are as follows: **A-C** Spiritual and financial motivation based on the output work level,

A-D Authority designation to knowledge workers and awkward rule omission, **A-E** Communicative and creative environment based on trust, **A-F** Considering knowledge workers as piece workers, not day workers, **B-D** Staff training and development, **B-E** Work cycling in organization, **B-F** Bonus and evaluation framework for organizational staff, **C-D** Creating flexible structures, **C-E** Activity transparency and intellectual property right ownership, **C-F** Creating suitable informative and communicative structures, **D-E** Creating collaboration opportunities, **D-F** Improving organizational atmosphere, **E-F** Creating job security. Knowledge worker factors at Daru-Pakhsh Co are defined in Fig. 2.

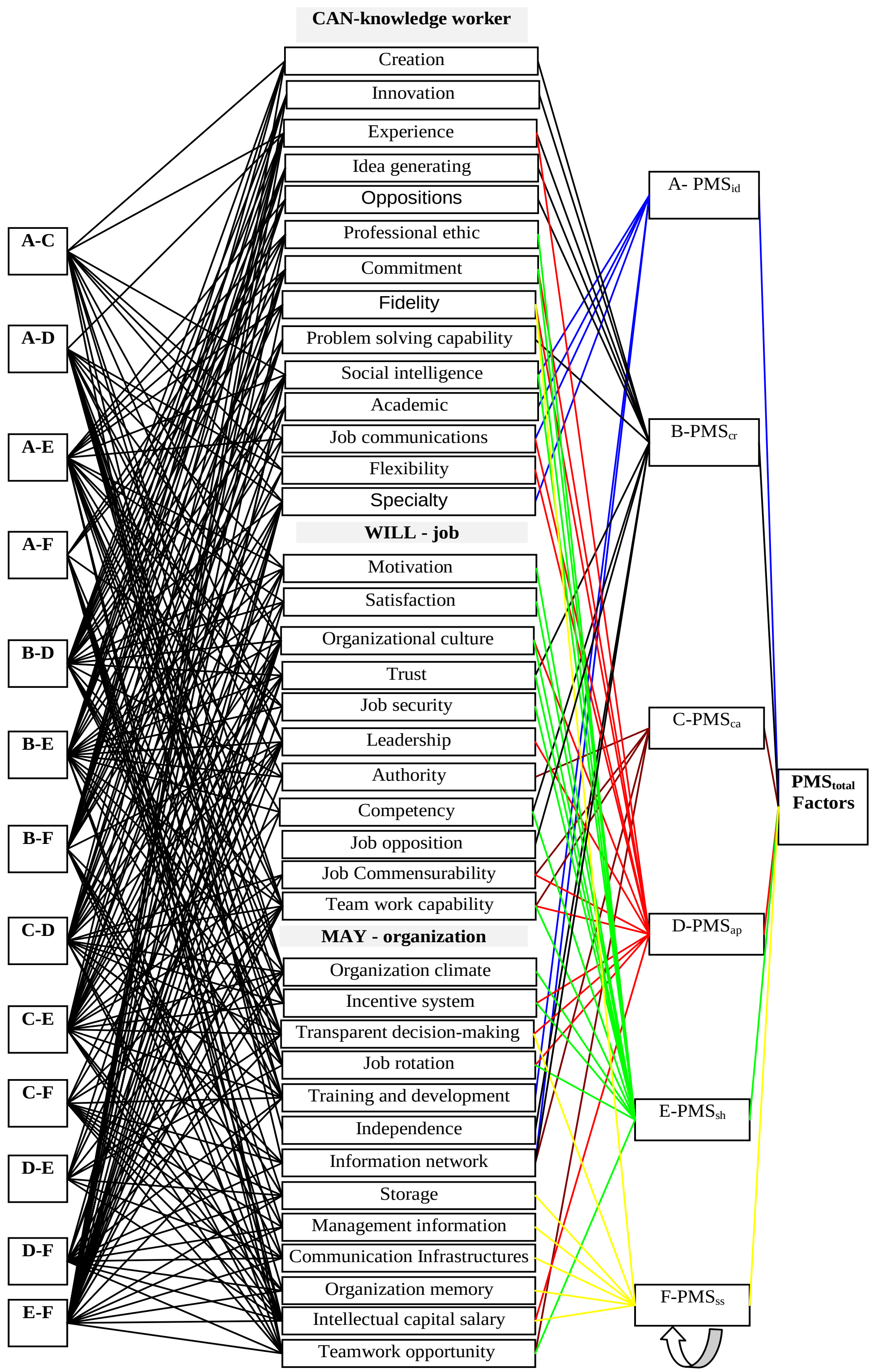

Fig. 2. Knowledge worker factors influencing on EPRM

Step 2: Assume that there is no dependency among the element factors. Determine the factors' pair comparison matrix using the numerical scale of 1 to 9. All the pair comparisons are completed by a team of experts. The pair comparison matrix is analysed using Expert Choice software and the following special vector is obtained.

$$W_1 = \begin{bmatrix} A \\ B \\ C \\ D \\ E \\ F \end{bmatrix} = \begin{bmatrix} .366 \\ .231 \\ .170 \\ .114 \\ .078 \\ .041 \end{bmatrix}$$

Step 3: The internal dependency among element factors is determined by comparing the effect of each factor on other factors. As mentioned in the preface, considering independence among the element factors is not always possible. Suitable and realistic results are obtained from the ANP technique and element analysis. An analysis of internal and external environment elements reveals the element factors' dependencies as shown in Fig. 3.

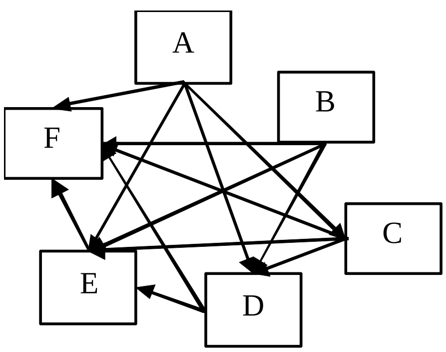

Fig. 3. Internal dependency of factors

$$W_2 = \begin{bmatrix} 1 & 0 & .565 & .44 & .422 & .490 \\ 0 & 1 & 0 & .307 & .329 & .249 \\ .53 & 0 & 1 & .029 & .039 & .042 \\ .31 & .055 & .056 & 1 & .078 & .081 \\ .117 & .173 & .089 & .067 & 1 & .138 \\ .042 & .772 & .290 & .157 & .131 & 1 \end{bmatrix}$$

Step 4: Priorities for internal dependencies among the factors are calculated as follows:

$$w_{factorsw} = W_2 * W_1 =$$

$$\begin{bmatrix} 1 & 0 & .565 & .44 & .422 & .490 \\ 0 & 1 & 0 & .307 & .329 & .249 \\ .53 & 0 & 1 & .029 & .039 & .042 \\ .31 & .055 & .056 & 1 & .078 & .081 \\ .117 & .173 & .089 & .067 & 1 & .138 \\ .042 & .772 & .290 & .157 & .131 & 1 \end{bmatrix} * \begin{bmatrix} .366 \\ .231 \\ .170 \\ .114 \\ .078 \\ .041 \end{bmatrix} = \begin{bmatrix} .565 \\ .302 \\ .372 \\ .260 \\ .189 \\ .312 \end{bmatrix}$$

The significant differences observed in the above results when compared with those are due to the lack of information about internal dependencies. According the priorities, it defines vector of sub factors.

$$W_{sub-fdactors-A} = \begin{bmatrix} 0.308 \\ 0.192 \\ 0.151 \\ 0.133 \\ 0.108 \\ 0.108 \end{bmatrix} \quad W_{sub-fdactors-C} = \begin{bmatrix} 0.35 \\ 0.29 \\ 0.15 \\ 0.13 \\ 0.08 \end{bmatrix} \quad W_{sub-fdactors-F} = \begin{bmatrix} 0.342 \\ 0.211 \\ 0.178 \\ 0.105 \\ 0.077 \\ 0.055 \\ 0.032 \end{bmatrix}$$

$$W_{sub-fdactors-B} = \begin{bmatrix} 0.352 \\ 0.181 \\ 0.150 \\ 0.110 \\ 0.150 \\ 0.062 \\ 0.031 \\ 0.028 \\ 0.022 \\ 0.015 \\ 0.009 \end{bmatrix} \quad W_{sub-fdactors-D} = \begin{bmatrix} 0.255 \\ 0.202 \\ 0.132 \\ 0.123 \\ 0.102 \\ 0.095 \\ 0.085 \\ 0.072 \\ 0.033 \\ 0.028 \\ 0.018 \\ 0.012 \\ 0.008 \end{bmatrix} \quad W_{sub-fdactors-E} = \begin{bmatrix} 0.208 \\ 0.119 \\ 0.113 \\ 0.122 \\ 0.106 \\ 0.095 \\ 0.084 \\ 0.052 \\ 0.034 \\ 0.025 \\ 0.018 \\ 0.012 \\ 0.008 \\ 0.003 \\ 0.001 \end{bmatrix}$$

Step 6: General priorities of the element sub-factors are calculated by multiplying the internal dependency priorities, obtained in Step 4, by the local priorities of element sub-factors, obtained in Step 5.

Step 7: The degree of strategic options' importance is calculated from each element's sub-factor viewpoints. Special vectors are calculated from the analysis of this matrix and matrix W4.

Step 8: Finally, the general priorities of strategic options are calculated considering the internal dependencies of element factors, as follows:

$$w_{alternatives} = \begin{bmatrix} A-C \\ A-D \\ A-E \\ A-F \\ B-D \\ B-E \\ B-F \\ C-D \\ C-E \\ C-F \\ D-E \\ D-F \\ E-F \end{bmatrix} = W_4 * w_{sub-factors(global)} = \begin{bmatrix} 0.076 \\ 0.080 \\ 0.085 \\ 0.081 \\ 0.063 \\ 0.071 \\ 0.078 \\ 0.086 \\ 0.097 \\ 0.089 \\ 0.095 \\ 0.066 \\ 0.078 \end{bmatrix}$$

The general results can be organized from the highest score to the lowest. Then, according to the information in Table 2, they can be analysed.
The results of ANP analysis show that the most important strategy for EPRM success is strategy C-E or Activity transparency and intellectual property right ownership whose score is 0.097.

This study faced many challenges in its model validation test. The first is that the ANP model's factors are not naturally quantitative. ANP is a technique for solving multi-criteria decision making by using the dependence among quantitative and qualitative factors. However, it is not always possible to apply numerical and quantitative amounts to elements in decision making. It is also that for each calculation, different amounts resulted. This may be due to the different viewpoints among the experts who evaluated the matrix. Thus, it seems impossible to obtain similar amounts based on the data obtained from different studies. These limitations are exacerbated by the nature of decision making. It is natural that in different circumstances, there are different priorities. It should be noted that the existent differences among the pair comparison amounts, which are due to the differences in expert viewpoints, are not sufficient reason for rejecting the proposed model's validity in ANP discussions (Chung, Lee and Pearn, 2005; Ngai, 2003). Another problem is that the validity of this model has not been tested using the latest data and that is because those data are available only to special managers. The comparison matrix which is the input for the proposed model was composed under definite conditions; hence, results may differ due to the pair comparison matrix's composition in different time periods (Saaty *et al.,* 2003). This model may be improved as the factors and sub-factors keep changing. Each management team should apply these strategies to the model according to the strategic factors in play. Second, the amount of dependence among factors and sub-factors may vary based on the management type. For example, in Daru-Pakhsh, only the dependence among important element factors is evaluated. The inconsistent ratio resulting from the pair comparison matrix also confirms this model. The inconsistent ratio or CR is based on the inconsistency index and Random index. Inconsistency index or CI can be obtained through the following formula:

$$CI = (\lambda_{\max} - n)/(n - 1)$$

where $\lambda_{\max}$ is the highest special amount and n is the matrix dimension. Inconsistency ratio (CR) is composed of two parameters: inconsistency index (CI) and Random index (RI). The relationship between RI and n is as follows: RI = 1.98 * [(n – 2) / n]
where 1.75 is the ratio of average amount of all numbers for n=3 till n=15, each having been multiplied by (n-2)/

Table 2. Final scores of Environmental Projects success strategies

EPRM success strategies	Score
C-E Activity transparency and intellectual property right ownership	0.097
D-E Creating the collaboration opportunities in organizations	0.095
C-F Creating suitable informative and communicative structures	0.089
C-D Creating flexible structures in organization	0.086
A-E Communicative and creative environment based on trust	0.085
A-F considering the knowledge workers as piece workers, not day workers	0.081
A-D Authority designation to knowledge workers and awkward rule omission	0.080
B-F Bonus and evaluation framework creation for organizational staff	0.078
E-F Creating job security in organizations	0.078
A-C Spiritual and financial motivation creation based on the output work level	0.076
B-E Work cycling in organization	0.071
D-F Improving the organizational atmosphere	0.066
B-D Staff training and development	0.063

n. The calculated amount for the inconsistency ratio in ANP should not be less than 0.1. The inconsistency ratio of the pair comparison matrix is calculated using Expert Choice. All inconsistency ratio amounts are less than 0.1. The most important elements in knowledge workers for EPRM success are activity transparency and intellectual property right ownership. The organization's compiling the mental ownership document and implementing them is important as well. This analysis of knowledge workers' factors for EPRM success using the proposed model is the first of its kind and is hence considered unique. This method was tested using Cronbach's alpha (its value was more than 98.03); it has been validated and confirmed by 87% of the experts, 88% of the managers, and by company directors.

The current study provides insights on how knowledge workers manage their professional workers, whose tasks are inherently knowledge based. It also demonstrates that the alignment between structure, culture and HRM can be important in explaining how knowledge workers perform. A robust EPRM system requires employees to set goals, which are aligned closely with the objectives of the knowledge workers in which they work. This alignment engenders professionals to engage in strong work ethics to achieve both personal and organizational goals. Furthermore, employees should be recognized and rewarded for contributing to this alignment.

CONCLUSION

The current study also highlights the importance of adopting knowledge workers factors influencing on EPRM measurement and prediction. This orientation allows a firm to compete effectively in a highly competitive industry sector. In this context, knowledge-based workers must be treated as a valuable resource, which is a view consistent with the resource-based view of the firm and knowledge workers management in knowledge-based industries. This also highlights the need to use the management of knowledge as a source of competitive advantage.

This research set out to understand the best strategy for EPRM success, which is a defining characteristic of the new world of work. The retention cognitions of a large sample of these employees were established, supplying information on the high level of individualism, the need for challenge and the career management desires of this new breed of worker. This study may contribute to the understanding organizations and academics have of more effective methods for managing EPRM, which are unique and increasingly important contributors to the knowledge based economy.

We have defined and classified the effective elements of knowledge worker for EPRM success and analysed them using ANP. Consequent to this analysis, we have presented strategies for improving knowledge worker factors, which were verified and validated in a case study of Daru-Pakhsh Company Environmental Projects.

One possible follow-up is the comparison of the proposed method with other models, such as the fuzzy topics and neuron fuzzy methods.

ACKNOWLEDGEMENT

This work was supported by a grant from Amirkabir University of Technology, Tehran, Iran.

REFERENCES

Abbaspour, M., Hosseinzadeh Lotfi, F., Karbassi, A. R., Roayaei, E. and Nikoomaram, H. (2009). Development of the Group Malmquist Productivity Index on non-discretionary Factors. Int. J. Eenviron. Res., **3 (1)**, 109-116.

Adkoli, A. (2006). An agenda for ICT-enabled education. Indian Management, pp 44-50.

Belout, A. and Gauvreau, C. (2004). Factors influencing project success: the impact of human resource management. International Journal of Project Management, **22**, 1-11.

Bredin, K. (2008). People capability of project-based organizations: A conceptual framework. International Journal of Project Management, **26**, 566-576.

Chung, S. H., Lee, A. H. L. and Pearn W. L. (2005). Analytic network process (ANP) approach for product mix planning in semiconductor fabricator. International Journal of Production Economics, **96**, 15-36.

Dainoff, M. J. (2009). Can't we all just get along? Some alternative views of the knowledge worker in complex HCI systems. International Journal of Human-Computer Interaction, **25**, 328-347.

Dehghani, M., Farshchi, P., Danekar, A., Karami, M. and Aleshikh, A. A. (2010). Recreation Value of Hara Biosphere Reserve using Willingness-to-pay method. Int. J. Environ. Res., **4 (2)**, 271-280.

Hassani, A. H., Seif, S., Javid A. H. and Borghei, M. (2008). Comparison of Adsorption Process by GAC. Int. J. Eenviron. Res., **3 (1)**, 1-12.

Yüksel, I. and Metin Dag, D. (2007). Using the analytic network process (ANP) in a SWOT analysis – A case study for a textile firm. Information Sciences., **177 (16)**, 3364-3382.

Malmasi, S., Jozi, S . A., Monavari, S .M. and Jafarian, M. E. (2010). Ecological Impact Analysis on Mahshahr Petrochemical Industries Using Analytic Hierarchy Process Method. Int. J. Environ. Res., **4 (4)**, 725-734.

Massingham, P. and Diment, K., (2009). Organizational commitment, knowledge management interventions, and learning organization capacity. The Learning Organization, **16 (2)**, 122-142.

Nabi Bidhendi, Gh. R., Torabian, A., Ehsani, H., Razmkhah, N., and Abbasi, M. (2007). Evaluation of Industrial Dyeing Wastewater Treatment with Coagulants. Int. J. Eenviron. Res., **1 (3)**, 242-247.

Nasr, D., Massoud, M. A., Khoury, R. and Kabakian, V. (2009). Environmental Impacts of Reconstruction Activities: A Case of Lebanon. Int. J. Environ. Res., **3 (2)**, 301-308.

Ngai, E. W. T. (2003). Selection of web sites for online advertising using the AHP. Information and Management, **40**, 233-242.

Nouri, J., Omidvari, M. and Tehrani, S. M. (2010). Risk Assessment and Crisis Management in Gas Stations. Int. J. Environ. Res., **4 (1)**, 143-152.

Raide´n, A. B., Dainty, A. R. J. and Neale, R. H. (2006). Balancing employee needs, project requirements and organizational priorities in team deployment. Construction Management and Economics, **24**, 883-895.

Saaty, T. L.,Vargas, L. G. and Dellman, K. (2003). The allocation of intangible resources: the analytic hierarchy process and linear programming. Socio-Economic Planning Sciences, **37**, 169-184.

Scott-Young C. and Samson D. (2008). Project success and project team management: Evidence from capital projects in the process industries. Journal of Operations Management, **26**, 749-766.