



## Identify and rank the factors in empowering employees by hierarchy (AHP)

Saber YOUSEFI KANGARLOOYI<sup>1,\*</sup>, Mohsen KHALIFEH<sup>1</sup>

<sup>1</sup>Human Resource Management, Allameh Tabataba'i University, Iran

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**Abstract.** In development approaches to human resource management, the importance and position of human factors in organization have been clearly discussed. If there are appropriate situations for the growth of individual talents, organization's asset (that is; human resource) will has better performance. One of the most effective factors in improvement of employee's performance, is the growth of sense of empowerment among them. The present research reviews and identifies the factors in empowerment of employees of urban beautification organization of Urmia municipality in hierarchy method (AHP). For doing so, first literature and related concepts in empowerment were reviewed, and then the effective factors were studied. Then, a questionnaire was prepared to identify the factors in research population. In the next stage, the stability of questionnaire and the relationship between 19 factors with empowerment were reviewed through SPSS 15. In the following, AHP was used to rank the factors of empowerment. The results of factors ranking indicate that at the first 3 positions are training, capability, and skills of employees, respectively, and job significance, flexibility and information availability are placed in ranks 17-19. Managers should manage the employees' empowerment based on weight and rank of each factor.

**Keywords:** Empowerment, approaches, hierarchy (AHP), factors of empowerment

### 1. INTRODUCTION

In today competitive world, human element is one of the important tools for creating evolution, organization survival and achieving goals. Human resource is something that creates evolution, and guarantees the organization survival, the fact is that if we do not have creative, knowledgeable, and opportunistic employees in our organization, we will lose the opportunities. In order to reach to the goal of globalization and staying in this level, it is necessary to nurture and replace of new employees in order to continue growth route (Talebian, Ahmad Ali & Vafayi, Fteme, 2010).

One of the strategies which prove the requirements for using the potential of human resources in organizations, is empowerment issue. Empowerment is a term that has gained high acceptability in recent years. Generalization of empowerment viewpoint has made some authors to define 90's decade as empowerment era (Abdolahi, Bijan, 2006).

In last two decades, attitude of organizations toward humans has been increasingly changed. In today organizations, human is not a worker, and exclusively a mechanical energy. Organizations have reached to a great belief and that is human. We may say that human has been re-discovered in organization, so that employees of professional organizations have been changed into the main players of job processes and partners of the organization. Therefore, not only the managers should have leadership skills, but also employees should learn the methods to proceed toward to their own strategies (Roy & Sheena, 2005).

To achieve these features, organizations should empower the most important source and competitive tool of organization (that is; human) (Davodi & Rezaei, 2002). Applying traditional methods of management results in deprivation of creativity and innovation sense in employees, increase in work volume and limitations for them. On the other side, complete

\*Corresponding author. Email address: Saberyousefi67@gmail.com

freedom of employees results in irregularity and libertinage in tasks. The outcome of these two modes is that material and spiritual resources of organizations are not properly used, and organization would not reach to its desirable effectiveness (Peterson & Zimmerman, 2004).

Empowerment of employees is very important in effectiveness and innovation of organizations (Spreitzer, 1995).

Empowerment has challenged the effectiveness of traditional management roles and traditional organizational structure. Empowerment is impossible without applying proper changes in traditional bureaucracy hierarchy, and it needs a flat organizational structure with lower hierarchy levels and improvement in relationship between teams. Empowerment is defined as authority resignation task together with responsibilities about doing the duties. Empowerment of employees is considered as power transmission in organization, allowing subordinates to participate in leadership, improving the effectiveness through increasing power and finally increasing internal motivation in work (Abdolahi, Bijan, 2006).

Empowerment needs to designate the authority of decision-making to the lowest possible level. The main goal of empowerment is to decrease traditional bureaucracy hierarchy. But on researchers' perspective, the reasons behind the study of empowerment are as follow:

- Studies of management skills show that empowerment of employees is a main portion in managerial and organizational effectiveness.
- Analysis of power and control in organizations indicates that incorporation of employees in power and control, improves the organizational effectiveness.
- Experiences about formation of groups in organization indicate that employees' empowerment strategies play a significant role in formation and survival of a group (Abdolahi, 2006).

### **Problem Statement**

Nowadays, human life includes surprising developments and changes. Organizations, as a subset of human life, prepare themselves to face these developments for survival (Amabil et al., 2002). Unless, they will be removed from competition world. Organizations need a competitive advantage in order to survive and develop. Organization needs some preparations. Such preparations do not mean equipment and technological preparation, but they should empower human resource as the main assets for competitions (Abdolahi Bijan, Nave Ebrahim Abdorahim, 2007).

Since human resource is very important in the growth of organizations, it is the most valuable factor and the most important asset of each organization (Mir Sepasi, Naser, 2006). In other words, in the new era, human is considered as a "endless capital"; because organizations' managers have realized well that decrease in human asset results in decrease in efficiency and production. Hence, it should be said that human resource is a strategic and generating resource, and the competitive advantage of each organization. So, human resource programming is one of the main organizational programs (Ahmadi, Parviz, 2008). Empowerment as a new method of motivation is changed into a hot topic in management. In the era of competitive advantage of learner organizations, researchers and managers pay more attention to empowerment and its related managerial tasks (Haji Karimi, 2005). Employees of professional organizations have been changed into the main players of work flow and organization's partners, so not only the managers should have leadership skills, but also the employees should learn the methods through which they can proceed toward self-direction (Roy & Sheena, 2005). Applying traditional methods of management results in irregularity and libertinage in tasks (Peterson & Zimmerman, 2004). In fact, empowerment is a tool which lines up the individual's goals with

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the organization's goals, and make the employees believe that organization growth and development include their resources too (Rahmanpoor, 2004).

The results indicate that in interactions between employees' characteristics and environmental necessities, organizations have to get far away from their current situations and change into an organization which, as Charles Hendi says, has lower similarities with traditional organizations.

Undoubtedly, in competitive space of municipalities of the province's towns, empowerment of employees can be a factor which has a direct effect on increase in efficiency and satisfaction of clients.

Some of the problems of beautification organization of Urmia municipality, which are the reason behind this research, are the environmental developments such as technological developments, the need to use the maximum potential of individuals, while decreasing human force. Moreover, in today competitive atmosphere, factors including increase in job satisfaction, enhancement of life quality, enhancement in quality of services to citizens, efficiency, profitability and competitive preparation are the benefits of empowerment and at the same time the problems of beautification organization of Urmia municipality.

In the present study which is named "identify and rank the factors of employee empowerment in beautification organization of Urmia municipality" it is tried to review the relationship between empowerment of task force and its effective factors. In fact, this research is going to identify and rank the factors of empowerment of employees of beautification organization of municipality, which is a public service provider organization.

Since the empowerment of employees is one of the manifest duties of each organization, and it improves the performance, effectiveness and motivation of organization's asset (that is; human), and it also enable the organization to achieve to the organization's goals through empowerment of employees, this research has tried to rank the best and the most appropriate factors of empowerment through hierarchy method and identifying the priorities. This method can help the managers of human resources in identifying the factors which affect the organization's employees.

Finally, the main issue of this research is defined as: how much is the importance and weight of each factor (out of 19 factors) in the empowerment process of employees of beautification organization of Urmia municipality?

### **Research Objectives**

The purpose of this research is to rank the effective factors on empowerment of employees. The target of empowerment is to facilitate the achievement to the organizational goals. Anyway, any increase in power should not result in increase in conflict between managers and employees (Mohammadi, 2001).

The purpose of empowerment is to present the best intellectual resources related to each context of organizational performance. Moreover, the goal is that the most skillful employees have the highest level of influence in the most appropriate method.

The purpose of empowerment is not to incorporate more individuals in decision-making processes of organization, but it is to use employees' thoughts in order to find the better methods and make the the best possible decisions. The purpose of empowerment is not to organize and develop the teams, but it is to increase the competence in order to create new ideas and solve the problems through interaction of team members.

## **Requirements**

Environmental changes and increase of global competition has drawn the attentions of managers toward employees' empowerment issue. Because organizations with capable, engaged, skilled, and motivated employees can adapt to changes more easily. Empowerment is the safest method to incorporate other employees in power. Through this method, the sense of trust, energy, pride, commitment and self-reliance will be created in individuals and the sense of partnership in organizational tasks will be increased, and subsequently, it leads to better performance (Jahangiri, 2007).

An organization should has skilled, creative, and motivated employees to compete with other organizations. Human resources consist the fundamental of real wealth of an organization. (Sajedi, 2007).

## **Definitions and concepts of empowerment**

The majority of managers imagine that they are familiar with empowerment concept; while only a few of them are familiar with its concept and application. The word "empower" is defined as to become powerful in sth, and to grand the power to sth/sb. Researchers have provided diverse definitions for empowerment; some of them know it as a synonym for power, job enrichment, employees' incorporation and submission of authority, and some of them believe that it is some thing other than these definitions (Beigi Nia, Abdoreza et al., 2010).

Based on different opinions, different definitions have been provided, here there are some of these definitions:

- Empowerment of employees is defined as creating a set of required capacities in employees to enable them to develop added value in organization and perform their duties, together with efficiency and effectiveness (Conger & Kanugo, 2002).
- Empowerment is to design and create the organization in such a way that individuals are prepared to accept more responsibilities while doing their duties (Thomas & Judith, 2002).
- Empowerment is not only giving authority to employees, but it causes that employees improve their performance through learning knowledge, skill, and motivation. Empowerment is a valuable process which continues from top management to the lowest rank of employees (Scot & Jaf, 1996).
- Empowerment is the process of achieving to continuos improvements in organization's performance through development and deployment of influence based on individual's competence , which affects their performance and the overall performance of organization (Kinla, Denis C, translated by Mehdi Irannejad Parizi, 2011).

## **Research history and concepts**

Considering different definitions of empowerment, this topic is seen from two approaches. The first approach is to pay attention to empowerment as activities which are performed by organization in order to incorporate the employees in power resources and decision-making. In this dimension, the purpose is to provide conditions to empower the employees. The second approach reviews the issue from psychological perspective, that is; creation of an internal sense in individuals so that they can make some decisions independently in their work processes.

In an overview, the different definitions can be divided into two domains. In the first category there are scientists such as Desler, Sholtz, Chai, Karston, Blok, Peters, etc. who define the empowerment as a structural construct, and believe that it is the managers' responsibility to

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support the employees' empowerment process; and they perform empowerment through providing organizational facilities and tools.

In the second category there are scientists such as Kanger & Kanengo, Thomas & Velthouse, Espritz, Zimmerman, etc. who has proceeded in this way through considering the internal dimensions of empowerment, and they believe that individual's perception about empowerment is prior to any other things. So, empowerment approaches can be categorized into two classes: structural empowerment (hard or external empowerment), and motivational and psychological empowerment (soft or Baruch empowerment) (Ahmadi, Parviz et al., 2010).

### **a) Structural empowerment:**

In this approach, management is responsible for empowerment of employees. He/she determines the level, size and quality of establishment of this culture among employees. He/she manages any activity which results in empowerment of employees through providing the required tools, creating the proper situations, suitable support, power distribution among employees, participation in decision-making, participation in information flow, training and knowledge distribution. This is a top-to-down approach in organizational empowerment. In this approach, the management is mainly seen as an external motivation factor.

In this approach, the manager develops the culture of empowerment. Such a culture requires the following infrastructures:

- Participation in information as a common vision, clear objectives, a specific decision-making framework, clarity of the results of attempts and the level of their influence.
- The potential to obtain resources when needed to perform the tasks effectively.
- Development of competence in empirical and educational form.
- Providing support in the form of coaching, which increases the cultural support and risk-seeking of individuals when working (Ahmadi, Parviz et al., 2010).

### **b) Motivational and psychological empowerment:**

This approach which is known as motivational, psychological, and organic empowerment, is different from the previous one. Psychological empowerment includes creation of the required situations to enhance the individual's motivation toward performing their duties, through training competence sensation or decreasing the powerlessness feeling in them. For the first time, Thomas & Velthouse in 1990 according to works of Kanger & Kanengo, considered this kind of empowerment. They believe that power may be used to explain the competence, or as Kanger & Kanengo state self-sufficiency. Brif & Eldog defined the empowerment as "the process of increase in internal motivation of job" using "job internal motivation" statement. Job internal motivation addresses the positive experiences which individual gain directly from their duties, and it includes energetic situations which are in direct relationship with that duty. Such experiences include:

- The feeling of being positive.
- The feeling of significance.
- The feeling of having right to choose.
- The feeling of having competence.

Different researchers and experts present different dimensions and components of empowerment in their researches. Some of these dimensions are shown in the following table.

**Table 1.** Dimensions and components of empowerment.

| Researcher                   | Year | Empowerment dimensions   |
|------------------------------|------|--|
| Counter                      | 1983 | Information, authority, gaining experience, resource availability, clarity of goals and policies, self-confidence, reward, manager's support |
| Blanchard, Zigarmi & Zigarmi | 1985 | Clarity of goals and policies, manager's support, information availability, resource availability, training, leadership method               |
| Kanger & Kanengo             | 1988 | Self-confidence, lack of focus, partnership, assignment of significant and inspiring goals   |
| Thomas & Velthouse           | 1990 | Job significance, impact, competence, self-will  |
| Baun & Loveler               | 1995 | Information, reward, knowledge, authority  |
| Queen & Espritz              | 1997 | Open flow of information, team work, clarity of goals and policies, organizational support, feeling of security and stability in work        |
| Cabrigue et al               | 199  | Authority, leadership method, support and guide of manager, job enrichment, team work  |
| Wikio                        | 2000 | Clarity of goals and policies, partnership   |
| Hiojenski & Baus Anan        | 2001 | Authority, job enrichment, responsibility, partnership, leadership method  |
| Ro & Biarz                   | 2003 | Authority, lack of focus   |

Empowerment approaches overview:

**Table 2.** Empowerment approaches.

| Approach                     |               | Goal                                   | Strategy  | Theorists                                       |
|------------------------------|---------------|--|---|---|
| Mechanical (communicational) |               | Empowerment of employees               | Power submission to subordinates  | Foy (1997), Blanchard et al (1996), Shol (1993) |
| Organic                      | Motivational  | Increasing the motivation of employees | Feeling of self-efficiency (competence)   | Kanger & Katango (1998)                         |
|                              | Psychological | Increasing the internal motivation     | Feeling of competence, feeling of significance, feeling of being useful, feeling freedom in tasks | Thomas & Velthouse (1990), Espritzerz (1995)    |
|                              |               |  | Feeling of trust  | Veten & Cameron (1998)                          |

**Global history of empowerment**

In management, the history of empowerment term gets back to the industrial democracy, and interference of employees in organizational decisions through different justifications such as team making, participation and comprehensive quality management, the last changes which were performed on this issue was named “empowerment of employees” (Hardy Q Leiba & Sulliram, 1998).

Empowerment is one of the main components of management and the center of analysis, and it tries to increase the management control through better quality and more democracy. Empowerment creates a potential situation to ensure labour provisions, and it has close links with human resource management in philosophy. Empowerment happens when the workers get familiar with power concept. Empowerment is not fundamentally limited to physical reconstruction of organizations, but the initial programs of empowerment is to change the control structure (Collins, 1996).

**History of empowerment in bureaucracy of Iran**

In bureaucracy of Iran, employees` empowerment can be found in policies and programs of development and administrative reforms. The first development plan (1989-1994) has presented some plans to reform and organize the situations of human force and systems. In the second development plan (1994-1999), some policies about increasing the efficiency and training of human force in state sector have been presented. Such policies include: 1) increasing the

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efficiency executive organizations and decreasing general costs, 2) emphasis on training and selecting the proper and efficient managers, supervising their performances, and applying reward and punishment policies to increase the efficiency, 3) reformation of salary system based on efficiency plan suitable for Country's economic situations.

Moreover, in the third development plan (2000-2004), many actions have been performed to reform the official and managerial structure to correct bureaucracy. The fourth development plan (2004-2009) includes seven articles regarding empowerment. In the fifth development plan (2009-2014), some programs have been designed based on existing situations, to empower the employees in organizations.

In summary, administrative reform plans have changes the situation of human force in bureaucracy several times; the interesting point in employees' empowerment is the lack of sufficient scientific resources, and also lack of reliable pattern when implementing empowerment programs in organizations. Lack of research plans in this regard has caused that managers do not participate in it.

Considering what was said above, the effective factors on empowerment of employees are as follow:

- **Specifying the goals, responsibilities, and authorities i organization:** the employees should be informed about their responsibilities, the goals and mission of organization, and the work processes of organization.
- **Enrichment of jobs and promotion of employees:** the organization should do something to update technical information of employees and also to increase their job content. Moreover, the organization should use work cycle techniques to meet the principle of succession.
- **Spirits and organizational membership:** in order to meet this factor, the employees should be respected and helped to solve their problems. Proper situations should be provided to build innovation and creativity in employees, and the organization's top management should ensure that employees are attracted to the tasks which are assigned for them.
- **Trust, intimacy, and honesty:** the organization should create a positive atmosphere and friendly job relations between employees, and it should also increase the trust between managers and employees.
- **Determination and appreciation:** proportionality of salaries and rewards with the tasks which employees do, and proper distribution of recreational facilities, and proportionality of employees' promotion with their competence, can cover the mentioned factor in organization.
- **Partnership and team work:** applying the ideas and opinions of employees in decisions, and their corporations in improvement of organizational tasks, submission of authority to employees in different levels, participation of employees in proposing new methods for doing the things better, and controlling the tasks performed by employees by themselves, partnership factors, can be effective in increasing empowerment of employees.
- **Communications:** it includes building relationship and easy access of employees to managers and supervisors, clarity of work relations of employees with managers, and employees' awareness from current tasks of organization.
- **Working environment:** it is one of the effective factors which is more or less focused in organizations. Paying attention to safety and health of employees in working environment, creating proper situations for promotion of employees, decreasing the pressures and challenges of working environment, are some factors regarding working environment.

- **Optimization of processes and working methods:** clarity of working cycle and information in organization, documentation of working methods and periodical revise, modification of working methods and simplification of tasks, are some factors regarding optimization of processes and working methods.
- **Job information, knowledge and skill:** in order to supply this factor, the existence of facilities to develop job skills in organization, the existence of effective and efficient training in organization, and having technical information about job positions, may be useful.

### **Research hypotheses**

1. There is a significant relationship between the level of required information and empowerment.
2. There is a significant relationship between rewarding system and empowerment.
3. There is a significant relationship between flexibility of jobs and empowerment.
4. There is a significant relationship between job significance and empowerment.
5. There is a significant relationship between job security and empowerment.
6. There is a significant relationship between submission of authority and empowerment.
7. There is a significant relationship between self-confidence and empowerment.
8. There is a significant relationship between giving responsibility to employees and empowerment.
9. There is a significant relationship between organizational attachment and empowerment.
10. There is a significant relationship between organization's environment and empowerment.
11. There is a significant relationship between clear policies of organization and empowerment.
12. There is a significant relationship between leadership method and empowerment.
13. There is a significant relationship between support and guidance of managers and empowerment.
14. There is a significant relationship between job enrichment and empowerment.
15. There is a significant relationship between training and empowerment.
16. There is a significant relationship between organizational communications and empowerment.
17. There is a significant relationship between encouragement of employees and empowerment.
18. There is a significant relationship between abilities and skills of employees and empowerment.
19. There is a significant relationship between partnership and team work with empowerment.

### **Research variables**

In analytical model of research, independent variables include access to information, authority, team work, support and guidance, leadership method, lack of focus, partnership, job significance, job enrichment, respecting the employees, giving responsibilities, organizational attachment, self-confidence, clarity of goals and policies, training, organizational communications, encouragement, access to resources, and dependent variable includes empowerment.



### **Research methods and materials**

In this section, first research method, population, sampling method, and calculation method of samples are provided, then data gathering tool and work instruments and finally data analysis method have been presented.

### **Research population and statistical sample**

Population of this research includes a number of 80 employees of beautification organization of Urmia municipality with education levels of associate's degree, Bachelor's degree, and master's degree. Based on topic, a questionnaire consisting of 19 questions was designed. The present research includes a survey descriptive research. so, questionnaire has been used, as the most common tool for data gathering, to gather data. Due to lack of time, high research costs, and unavailability of documents and reports, questionnaire has been used. Cochran sample size estimation has been used to obtain sample size. Considering that the statistical error is (d=0.085).

$$n = \frac{Nz^2 pq}{Nd^2 + z^2 pq}$$

In which:

N= the number of population

Z= assurance level which is equal to 1.69

### **Measurement and data gathering tools**

In this research, two questionnaires have been used to collect data, one of effective factors on empowerment of employees and the other one is used in the form of decision-making matrix. The questionnaire, regarding the effective factors on empowerment of employees, is designed to obtain the level of reliability and stability of questions and variables, and the questionnaire of decision-making matrix is designed to gather the data needed for measurement of importance and rank of variables.

In the questionnaire regarding the effective factors on empowerment, question options are in very low to very high range.

### **Reliability of questionnaire**

The concept of reliability refers to the accuracy of measurement tools, and it answers the question that how much the measurement tool measures the desired specification. That is; measurement tool measures something which has been made for it. According to the opinions of professors and experts, the reliability level is good. In total, this questionnaire has been consisted of 19 questions.

### **FINDINGS**

Characteristics of respondents: in regard of job position, they were all employees. In regard of educational level they include 47.4% Bachelor's degree, 35.6% Associate's degree, and 17% Master's degree. In regard of job experience, they were as below: 69.86% between 10-20 years, and 18.2% between 1-10 years, an 11.94% between 20-30 years (table 3).

**Table 3.** Frequency distribution of respondents

| Respondents' status |                  | Frequency | Percentage |
|---------------------|------------------|-----------|------------|
| Sexuality           | Male             | 34        | 84.93      |
|                     | Female           | 12        | 15.08      |
| Education           | Bachelor's       | 25        | 61.64      |
|                     | Associate's      | 11        | 28.78      |
|                     | Master's         | 10        | 9.58       |
| Job experience      | Up to 10 yrs     | 12        | 19.18      |
|                     | 10-20 yrs        | 26        | 69.86      |
|                     | More than 20 yrs | 8         | 10.96      |

Pearson's correlation coefficient is used to review the correlation between effective factors on empowerment and to test the hypotheses. According to Pearson's correlation coefficient, there is a significant relationship in the level of 1%, between empowerment of employees and issues being studied.

**Table 4.** Pearson's correlation coefficient value and the results of hypotheses in issues being studied.

| Relations between variables     |                                   | Value of correlation coefficient | Significant level | Hypothesis                     | Test result                    |
|---------------------------------|-----------------------------------|----------------------------------|-------------------|--------------------------------|--------------------------------|
| <b>Empowerment of employees</b> | Information availability          | 0.554                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Rewarding system                  | 0.879                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Leadership method                 | 0.995                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Job flexibility                   | 0.879                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Job significance                  | 0.829                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Job security                      | 0.895                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Submission of authority           | 0.840                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Self-confidence                   | 0.878                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Giving responsibility             | 0.718                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Job attachment                    | 0.754                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Organization environment          | 0.764                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Specifying the goals and policies | 0.847                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Leadership method                 | 0.762                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Support and guides of managers    | 0.825                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Job enrichment                    | 0.835                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Training                          | 0.745                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Organizational communication      | 0.647                            | <0.0001           | Rejected                       | There is a direct relationship |
|                                 | Encouragement                     | 0.682                            | <0.0001           | Rejected                       | There is a direct relationship |
| Partnership and team work       | 0.753                             | <0.0001                          | Rejected          | There is a direct relationship |                                |

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Considering the above table, it can be concluded that there is a direct relationship between mentioned issues and empowerment of employees.

### Data analysis method

Hierarchy analysis (AHP), developed by Thomas Al Saati in 1980, is one of the most efficient techniques in decision-making. Based on pair comparisons, this technique makes it possible for managers to review different scenarios. Data analysis is done through AHP (analytical hierarchy process). This is one of the best multi-variable decision-making models. AHP analysis technique is a tool which not only help to better understanding of problems in scientific processes, but also it proposes the best solution for such problems. The present research is an applied descriptive research, which ranks the effective factors on empowerment of employees through multi-criteria decision-making and AHP techniques.

### AHP overview

1. development of decision-making tree
2. formation of decision-making matrix
3. comparison of decision-making factors
4. comparison of each item with each factor
5. extraction of priorities and ranking of factors through comparative tables
6. decision-making and final ranking
7. measurement of consistency ratio of matrix

Decision-making tree specifies the strategy of decision-making in graphical form. In decision-making tree of this research, there will be two kinds of node; the first one is the node of research goal, that is; empowerment of employees in the highest level. The second one is related to decision-making items, that is; effective factors on empowerment such as training, encouragement, submission of authority, etc. (in total, 19 items which are placed in the lowest level). After development of decision-making tree, it is time to perform the calculations. The purpose of calculations is to calculate the weight of each item when achieving the goals. That is; the weight of all nodes of a lower level should be calculated.

In order to weight the criteria, the numbers which are specified for each situation should be used.

**Table 5.** Numerical value of preferences

| Preferences                   | Numerical value |
|-------------------------------|-----------------|
| Very much                     | 9               |
| Much                          | 7               |
| Little                        | 5               |
| Very little                   | 3               |
| Equal                         | 1               |
| Preferences between distances | 2, 4, 6 & 8     |

### The first stage: decision-making tree

### The second stage: formation of decision-making matrix

For pair comparison of criteria, the following matrix is used. This matrix is provided to compare the importance of one factor with another one. Numbers being above in matrix triangle are in the form of whole number, and the numbers being below, considering the corresponding comparison, are in the form of a reverse fraction of numbers. Reverse condition: if the

preference of element A on element B is equal to n, the preference of element B on element A will be equal to 1/n.

**The third stage: preference judgement (pair comparisons)**

After performing comparisons between different items of decisions according to each index, and performing judgement about the importance of decision index (after designing the hierarchy of decision issue), decision maker should create a set of matrix which measure the importance of relative preference of indexes. It is done using two by two comparisons between decision elements (pair comparison) and through assignment of numerical points which indicate the importance or preference between two elements.

**The fourth stage: calculations of relative weights**

Spesifying the weight of “decision elements” through a set of numerical calculations, is the next step in AHP. Summary of mathematical operations in this stage, is presented in the following.

First, we calculate the sum of all numbers in each column, then we divide each column to the overall numbers of that column. A new matrix which is obtained through this operation is called “normalized comparisons matrix”.

We calculate the average of numbers is each line of normalized comparisons matrix. This average presents the relative weight of decision elements with matrix lines.

In order to rank the decision elements, the relative weight of each element should be multiplied in the weight of upper elements, to obtain the final weight. The final weight value will be obtained through performing this step for each item.

We should have the weight of 19 effective factors on empowerment of employees to rank the related components. The results obtained from ranking of effective factors on empowerment are specified. Considering the calculations performed on decision matrix through AHP, the results which are shown in the following table may be concluded:

**Table 6.** Ranking the effective factors on empowerment through AHP.

| Effective factors on empowerment of employees | Weight/importance level by AHP technique | Ranking |
|---|--|---------|
| Training                                      | 0.11                                     | 1       |
| Encouragement                                 | 0.091                                    | 2       |
| Employees` skill                              | 0.086                                    | 3       |
| Rewarding system                              | 0.081                                    | 4       |
| Self-confidence                               | 0.078                                    | 5       |
| Job security                                  | 0.074                                    | 6       |
| Giving responsibility                         | 0.068                                    | 7       |
| Organizational attachment                     | 0.053                                    | 8       |
| Submission of authority                       | 0.053                                    | 9       |
| Partnership and team work                     | 0.048                                    | 10      |
| Organizational communication                  | 0.044                                    | 11      |
| Job enrichment                                | 0.04                                     | 12      |
| Clarity of goals and policies                 | 0.038                                    | 13      |
| Support and guide of managers                 | 0.037                                    | 14      |
| Working environment                           | 0.0285                                   | 15      |
| Leadership method                             | 0.0261                                   | 16      |
| Job significance                              | 0.023                                    | 17      |
| Job flexibility                               | 0.021                                    | 18      |
| Information availability                      | 0.02                                     | 19      |

## Identify and rank the factors in empowering employees by hierarchy (AHP)

It can be seen that considering the obtained ranking, training element with the weight of 0.11 is in the highest level, and information availability with the weight of 0.02 is in the lowest level. Moreover, other elements have been ranked according to their weights.

### The fifth stage- calculation of consistency ratio

The possibility of consistency ratio calculation in AHP, is one of the reasons which makes this method better than other multi-criteria decision methods. Consistency ratio is a mechanism which ensures that the comparisons performed by group members have been consistency and stability. In general, the acceptable level of consistency of a matrix or a system depends on the one who makes the decision, but Saati presents number 0.1 as acceptable level. He believes that if the consistency ratio is more than 0.1, it is better to revise in judgements. In other words, if consistency ratio is less than or equal to 0.1, the consistency of comparisons is acceptable.

Each consistent matrix has below specifications:

- a) The weight value of elements is equal to normalized value of each column.
- b) Inconsistency value is zero in this matrix.
- c) There is a direct relationship between consistency ratio and number of members, as the number of members increases, the possibility of increase in consistency ratio increases, as well.

### The final relation of consistency ratio is as follows:

$$C.R. = \frac{C.I}{R.I}$$

Consistency index: C.I

Random index: R.I

### The first step: Weighted sum vector (w.s.v)

$$WSV = W.A$$

In which, coefficient vector resulting from each matrix of pair comparisons is obtained through

$$W_i = \sum_{j=1}^n \frac{r_{ij}}{n}$$

### The second step: calculation of consistency vector (CV)

This vector is obtained through dividing each component of WSV on the priority of items.

$$CV = \frac{WSV}{W}$$

### The third step: calculation of consistency index (CI)

In comparisons which are made individually:  $C.I = \frac{\lambda_{max} - n}{n-1}$

In comparisons which are made in group:  $C.I = \frac{\lambda_{max} - n}{n}$

Average of consistency vector (C.V):  $\bar{C}_{max}$

Matrix size: n

**The fourth step: specifying the random index (R.I)**

Random index is the direct function of the number of items. This item is extracted from below table.

**Table 7.** Random index of direct function.

|      |      |      |      |      |      |     |      |   |   |     |
|------|------|------|------|------|------|-----|------|---|---|-----|
| 10   | 9    | 8    | 7    | 6    | 5    | 4   | 3    | 2 | 1 | N   |
| 1.49 | 1.45 | 1.41 | 1.32 | 1.24 | 1.12 | 0.9 | 0.58 | 0 | 0 | R.I |

**The fifth step: calculation of consistency ratio**

After the consistency index (C.I) in the third step was specified, and random index in the fourth step was extracted, the consistency ratio of each matrix can be easily obtained through below formula.

$$C.R = \frac{C.I}{R.I}$$

**Calculation algorithm of inconsistency ratio of a matrix**

Inconsistency ratio of matrix A can be obtained as follows:

- 1) Form the pair comparison of matrix A.
- 2) Weight vector

Below operations are performed in order to calculate the inconsistency ratio of the matrix obtained from this research:

$$C.I = \frac{20.08 - 19}{18} = 0/06$$

$$C.R = CI/RI = 0.06/1.49 = \mathbf{0.0402}$$

Random index is equal to 0.0402. in analysis of the value obtained from consistency ratio, it can be said that pair comparisons of decision-making matrix of factors affecting the empowerment of employees are consistent, because, 0.0402 is lower than empirical value of 0.1.

**DISCUSSIONS AND CONCLUSIONS**

The main purpose of present research is to rank and specify the factors affecting the empowerment of employees of beautification organization of Urmia municipality.

Finally, the results of ranking the factors affecting the empowerment of employees of beautification organization of Urmia municipality through AHP, include: trainig with the weight of 0.11, encouragement with the weight of 0.098, and employees` skills with the weight of 0.086, are placed in the first to third positions, respectively. Moreover, information availability factor with the weight 0.02 is placed in the 19<sup>th</sup> position. The results also indicate that managers should design programs for empowerment of employees according to the weight and

## Identify and rank the factors in empowering employees by hierarchy (AHP)

importance level of each factor and its effects on empowerment of employees. So that they can develop the organization and achieve its goals through empowerment of employees.

### PRACTICAL SUGGESTIONS

In present research, considering the ranking of factors affecting the empowerment of employees of beautification organization of Urmia municipality, training factor, which has the highest weight, should be considered as an important factor affecting the empowerment.

Considering the obtained ranking, top managers should do some actions to enhance the effective factors including enhancement of employees' empowerment.

When determining the organization's strategy, we should pay special attentions to ranked factors, as effective factors, according to their priorities some strategies should be designed to empower the employees.

When applying the empowerment, managers should follow the factors affecting the empowerment of employees seriously, and continuously. Moreover, managers should develop their competence and skills required for implementation of employees' empowerment process, because the managers are the beginning point of empowerment process. So, managers should pass proper training courses.

It is very essential to prepare the organization for empowerment of municipality employees, because applying some of the changes in each organization has some flaws and employees should be prepaid for the acceptance of changes.

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