Assessment of prioritizing the effective factors on human resources effectiveness (Case study: Tehran Industrial Parks Organization)

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ABSTRACT
Identifying the effective factors on human resources effectiveness can help management and leadership to obtain success, organization goals and fulfillment of high effectiveness and efficiency. Thus, they always have to survey the effective factors on effectiveness of these valuable and transformational resources. Effective factors on employee effectiveness have different aspects and varieties. For instance, Hay Group’s model which is in order to compare organizations based on employee effectiveness. The model includes different factors located in two groups of ENGAGEMENT and ENABLEMENT. The main purpose of this study is to assess and prioritize effective factors on employee effectiveness in Tehran Industrial Parks. Furthermore, it is required to be surveyed and determined according to organizational properties and content dimensions of under study organization, and use of latent knowledge amongst organization experts (senior managers). This cross-sectional and descriptive-analytical research was performed in 2017. So, it is trying to achieve the purposes of study through interview, Delphi method, Multiple Criteria Decision-Making (MCDM) and Analytical Hierarchy Process (AHP).

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Specifications Table

| Subject area                    | Human Resources Management |
|---------------------------------|----------------------------|
| More specific subject area      | Hay Group model of Effectiveness, Iran Small Industries and Industrial Parks, Tehran Industrial Parks |
| Type of data                    | Tables, Diagram            |
| How data was acquired           | This cross-sectional and descriptive-analytical research was performed in 2017. |
| Data format                     | Raw, Analyzed              |
| Data source location            | Tehran Industrial Parks Organization as the main organization of Iran Small Industries and Industrial Parks (isipo) included 18 active industrial parks. |
| Data accessibility              | Data is included in this article |

Value of the data

- Investigating the factors of employee effectiveness in Iran Small Industries and Industrial Parks for the first time.
- Studying the global models of employee effectiveness and choose Hay Group model as the basis.
- Using of Delphi and AHP techniques as selected research method in order to make effective decisions in Human Resources.
- Impact of effectiveness improvement in growth of organization and employee productivity.

1. Data

First, some demographic information about experts, including their position, department, work experience and degree are shown below in the following (Tables 1–4).

Table 1 shows total numbers of senior managers and experts of research community according to their position.

| Amount | Experts position |
|--------|------------------|
| 1      | CEO              |
| 2      | Consultant       |
| 3      | Assistant        |
| 12     | Manager          |
| 18     | Total            |

Table 1
Total numbers of participants according to position.
Table 2 indicates available experts based on their departments and due to interview time and willingness of participating in the study.

**Table 2**
Available participants according to departments.

| Amount | Experts department                  |
|--------|-------------------------------------|
| 5      | CEO zone                            |
| 3      | Deputy of Planning and Economic Affairs |
| 4      | Deputy of Small Industries          |
| 3      | Deputy of Civil and Environmental   |
| 2      | Deputy of Support and Human Resources |
| 17     | Total                               |

Table 3 expresses experts’ work experience within management positions for years.

**Table 3**
Participants work experience.

| Amount | Experts work experience (Year)     |
|--------|------------------------------------|
| 4      | 8–12                               |
| 4      | 13–17                              |
| 6      | 18–23                              |
| 3      | Over 23                            |
| 17     | Total                              |

Also, Table 4 describes experts’ last degree; though some of these experts were studying PhD in their own expertise.

**Table 4**
Participants degree.

| Amount | Experts degree |
|--------|----------------|
| 5      | B.Sc.          |
| 12     | M.Sc.          |
| 17     | Total          |

In Delphi process and after initial interviews, experts have reached a consensus and declared three criteria (choices) accepted to be scored and compared for ranking. Table 5 shows participants responses to Delphi questionnaire.
Table 5
Participants’ responses to Delphi questionnaire.

| Experts Criteria | Influence level of effectiveness factors | Comprehensiveness of effectiveness factors | Accessibility to Effectiveness factors | Additional criteria |
|-------------------|----------------------------------------|------------------------------------------|--------------------------------------|---------------------|
|                   | Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree | Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree | Strongly Agree | Qualitativen
| Row               |                  |          |            |       |                |                  |          |            |       |                |                | undeterminat
| Participant 1     | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 2     | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 3     | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 4     | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 5     | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 6     | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 7     | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 8     | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 9     | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 10    | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 11    | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 12    | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 13    | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 14    | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 15    | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 16    | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 17    | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |
| Participant 18    | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               | 1                | 2        | 3          | 4     | 5               |

Degree, Family Status, Work Experience, Gender, Age
Employee Position, Work Place Situation, Society Situation
Training, Standards and Policies
**AHP tables:** (Tables 6–9)

In AHP process, accepted criteria were compared in pair, and their rank was extracted. Then, comparison of factors (alternatives) has done according to each criterion. So, alternatives or factors were ranked separately.

### Table 6
Raw data for paired comparisons matrix of criteria.

| Participants criteria | Likert scale | Participants criteria | Likert scale |
|-----------------------|--------------|-----------------------|--------------|
| Comprehensiveness     | 9 8 7 6 5 4 3 2 1 2 3 4 5 6 7 8 9 | Influence level | 9 8 7 6 5 4 3 2 1 2 3 4 5 6 7 8 9 |
| Accessibility         | 9 8 7 6 5 4 3 2 1 2 3 4 5 6 7 8 9 | Influence level | 9 8 7 6 5 4 3 2 1 2 3 4 5 6 7 8 9 |
| Accessibility         | 9 8 7 6 5 4 3 2 1 2 3 4 5 6 7 8 9 | Comprehensiveness | 9 8 7 6 5 4 3 2 1 2 3 4 5 6 7 8 9 |

### Table -7
Participants’ responses for paired comparisons of criteria.

| Paired comparisons of experts criteria | Participants | Geomean |
|---------------------------------------|--------------|---------|
|                                       |              |         |
| A                                    | B            |         |
| Comprehensiveness influence level     | 2.00 4.00 5.00 6.00 2.00 4.00 0.17 | 1.14 |
| Accessibility influence level         | 2.00 1.00 0.33 2.00 0.33 0.14 | 0.74 |
| Accessibility Comprehensiveness       | 0.88 1.00 1.07 0.98 32.35% |

After consensus, participants (experts) in interview have stated common criteria for identifying factors affecting on employee effectiveness. Prioritized criteria in this research collected by experts based on Delphi method are included:

- Accessibility
- Comprehensiveness
- Influence level

### Table 8
Paired comparisons matrix of criteria.

| The participants criteria for effectiveness | Influence level | Comprehensiveness | Accessibility | Mean | Percentage (%) |
|--------------------------------------------|-----------------|-------------------|---------------|------|----------------|
| Influence level                            | 1.00            | 1.14              | 0.74          | 0.96 | 31.59          |
| Comprehensiveness                          | 0.88            | 1.00              | 1.07          | 0.98 | 32.35          |
| Accessibility                              | 1.35            | 0.93              | 1.00          | 1.10 | 36.06          |
Table 9
Raw data for paired comparisons matrix of effective factors on human resources effectiveness (based on Hay Group effectiveness factors).

### 1. Paired comparisons matrix between factors of employee engagement based on criterion of "Influence level"

| Factor                        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-------------------------------|---|---|---|---|---|---|---|---|---|
| Confidence in leaders         | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Quality and customer focus    | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Respect and recognition      | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Development opportunities     | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Pay and benefits              | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Respect and recognition      | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Development opportunities     | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Pay and benefits              | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Respect and recognition      | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Development opportunities     | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Pay and benefits              | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Pay and benefits              | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

- **Clear and promising direction**
- **Confidence in leaders**
- **Quality and customer focus**
- **Respect and recognition**
- **Development opportunities**
- **Pay and benefits**

### 2. Paired comparisons matrix between factors of employee enablement based on criterion of "Influence level"

| Factor                        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|-------------------------------|---|---|---|---|---|---|---|---|---|
| Authority and empowerment     | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Resources                     | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Training                      | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Collaboration                 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Work, structure and processes | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Resources                     | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Training                      | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Collaboration                 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Work, structure and processes | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Collaboration                 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Work, structure and processes | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Work, structure and processes | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

- **Performance management**
- **Authority and empowerment**
- **Resources**
- **Collaboration**
- **Training**

### The criterion of "Comprehensiveness of employee effectiveness factors"

- Authority and empowerment
- Collaboration
1. Paired comparisons matrix between factors of employee engagement based on criterion of "Comprehensiveness"

| Criterion                        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------------------------------|---|---|---|---|---|---|---|---|---|
| Confidence in leaders            | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Quality and customer focus       | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Respect and recognition          | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Development opportunities        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Pay and benefits                 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Quality and customer focus       | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Respect and recognition          | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Development opportunities        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Pay and benefits                 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

| Criterion                        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------------------------------|---|---|---|---|---|---|---|---|---|
| Confidence in leaders            | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Quality and customer focus       | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Respect and recognition          | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Development opportunities        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Pay and benefits                 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Quality and customer focus       | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Respect and recognition          | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Development opportunities        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Pay and benefits                 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

2. Paired comparisons matrix between factors of employee enablement based on criterion of "Comprehensiveness"

| Criterion                        | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|----------------------------------|---|---|---|---|---|---|---|---|---|
| Authority and empowerment        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Resources                        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Training                         | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Collaboration                    | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Work, structure and processes    | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Resources                        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Training                         | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Collaboration                    | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Work, structure and processes    | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Resources                        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Training                         | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Collaboration                    | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Work, structure and processes    | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| Resources                        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

- The criterion of "Accessibility to employee effectiveness factors"
1. Paired comparisons matrix between factors of employee engagement based on criterion of "Accessibility"

| Factor                          | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Confidence in leaders          | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Quality and customer focus     | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Respect and recognition        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Development opportunities      | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Pay and benefits               | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Quality and customer focus     | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Respect and recognition        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Development opportunities      | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Pay and benefits               | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Respect and recognition        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Development opportunities      | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Pay and benefits               | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

2. Paired comparisons matrix between factors of employee enablement based on criterion of "Accessibility"

| Factor                          | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Authority and empowerment       | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Resources                       | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Training                        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Collaboration                   | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Work, structure and processes   | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Collaboration                   | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Work, structure and processes   | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Training                        | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Collaboration                   | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
According to Table 10, the priority of the factors affecting on employee engagement based on criterion of "Accessibility" are respectively:

1. Pay and benefits
2. Development opportunities
3. Respect and recognition
4. Quality and customer focus
5. Clear and promising direction
6. Confidence in leaders

Table 10
The result of paired comparisons matrix between factors of employee engagement based on criterion of "Accessibility".

| Factors of employee engagement | Clear and promising direction | Confidence in leaders | Quality and customer focus | Respect and recognition | Development opportunities | Pay and benefits | Geometric mean | Percentage (%) | Rank |
|--------------------------------|--------------------------------|-----------------------|---------------------------|-------------------------|-------------------------|-----------------|---------------|---------------|------|
| Clear and promising direction | 1.00                           | 0.54                  | 1.77                      | 0.40                    | 0.50                    | 0.39            | 0.99          | 12.94         | 5    |
| Quality and customer focus    | 0.57                           | 0.57                  | 1.00                      | 0.55                    | 0.58                    | 0.29            | 1.00          | 13.03         | 4    |
| Respect and recognition       | 2.50                           | 0.87                  | 1.81                      | 1.00                    | 1.35                    | 0.87            | 1.30          | 17.06         | 3    |
| Development opportunities      | 2.01                           | 1.19                  | 1.72                      | 0.74                    | 1.00                    | 0.57            | 1.55          | 20.31         | 2    |
| Pay and benefits               | 2.56                           | 1.50                  | 3.41                      | 1.15                    | 1.77                    | 1.00            | 1.90          | 24.85         | 1    |

According to Table 11, the priority of the factors affecting on employee enablement based on criterion of "Accessibility" are respectively:

Table 11
The result of paired comparisons matrix between factors of employee enablement based on criterion of "Accessibility".

| Factors of employee enablement | Performance management | Authority and empowerment | Resources | Training | Collaboration | Work, structure and processes | Geometric mean | Percentage (%) | Rank |
|--------------------------------|-------------------------|---------------------------|-----------|-----------|---------------|-----------------------------|---------------|---------------|------|
| Performance management         | 1                       | 1.23                      | 1.20      | 0.40      | 0.93          | 1.10                        | 0.98          | 15.13         | 3    |
| Authority and empowerment      | 0.81                    | 1                         | 0.97      | 0.98      | 1.01          | 1.14                        | 0.95          | 14.61         | 4    |
| Resources                      | 0.83                    | 1.03                      | 1         | 0.78      | 1.04          | 0.77                        | 1.37          | 21.21         | 2    |
| Training                       | 2.48                    | 1.02                      | 1.28      | 1         | 2.53          | 2.71                        | 1.4           | 21.56         | 1    |
| Collaboration                  | 1.08                    | 0.99                      | 0.96      | 0.40      | 1             | 1.31                        | 0.91          | 14.08         | 5    |
| Work, structure and processes  | 0.91                    | 0.88                      | 1.29      | 0.37      | 0.77          | 1                          | 0.87          | 13.41         | 6    |
1. Training
2. Resources
3. Performance management
4. Authority and empowerment
5. Collaboration
6. Work, structure and processes

According to Table 12, the priority of the factors affecting on employee engagement based on criterion of "Comprehensiveness" are respectively:

1. Pay and benefits
2. Respect and recognition
3. Development opportunities
4. Confidence in leaders
5. Clear and promising direction
6. Quality and customer focus

Table 12
The result of paired comparisons matrix between factors of employee engagement based on criterion of “Comprehensiveness”.

| Factors of employee engagement | Clear and promising direction | Confidence in leaders | Quality and customer focus | Respect and recognition | Development opportunities | Pay and benefits | Geometric mean | Percentage (%) | Rank |
|-------------------------------|-------------------------------|-----------------------|----------------------------|-------------------------|--------------------------|-----------------|----------------|----------------|------|
| Clear and promising direction | 1                             | 0.92                  | 1.46                       | 0.35                    | 0.53                     | 0.30            | 0.76           | 10.69          | 5    |
| Quality and customer focus   | 0.68                          | 1                     | 0.79                       | 0.57                    | 0.39                     | 0.65            | 0.65           | 9.13           | 6    |
| Respect and recognition      | 2.89                          | 1.21                  | 1.27                       | 1                       | 1.13                     | 0.55            | 1.34           | 18.88          | 2    |
| Development opportunities     | 1.90                          | 1.83                  | 1.74                       | 0.89                    | 1                        | 0.60            | 1.33           | 18.69          | 3    |
| Pay and benefits              | 3.28                          | 1.51                  | 2.56                       | 1.80                    | 1.66                     | 1               | 1.97           | 27.76          | 1    |

According to Table 13, the priority of the factors affecting on employee enablement based on criterion of "Comprehensiveness" are respectively:

1. Training
2. Authority and empowerment
3. Collaboration
4. Resources
5. Performance management
6. Work, structure and processes
According to Table 14, the priority of the factors affecting on employee engagement based on criterion of "Influence level" are respectively:

1. Pay and benefits
2. Development opportunities
3. Respect and recognition
4. Confidence in leaders
5. Clear and promising direction
6. Quality and customer focus

Table 14  
The result of paired comparisons matrix between factors of employee engagement based on criterion of "Influence level".

| Factors of employee engagement | Clear and promising direction | Confidence in leaders | Quality and customer focus | Respect and recognition | Development opportunities | Pay and benefits | Geometric mean | Percentage (%) | Rank |
|-------------------------------|------------------------------|-----------------------|----------------------------|-------------------------|---------------------------|----------------|----------------|----------------|------|
| Clear and promising direction | 1                            | 0.76                  | 1.93                       | 0.45                    | 0.37                      | 0.28           | 0.80           | 9.72           | 5    |
| Quality and customer focus    | 0.52                         | 0.32                  | 1                          | 0.37                    | 0.27                      | 0.22           | 0.45           | 5.47           | 6    |
| Respect and recognition       | 2.20                         | 1.62                  | 2.72                       | 1                       | 1.01                      | 0.44           | 1.50           | 18.24          | 3    |
| Development opportunities      | 2.68                         | 1.80                  | 3.75                       | 0.99                    | 1                         | 0.61           | 1.80           | 21.95          | 2    |
| Pay and benefits               | 3.54                         | 2.00                  | 4.46                       | 2.27                    | 1.64                      | 1              | 2.49           | 30.25          | 1    |

According to Table 15, the priority of the factors affecting on employee enablement based on criterion of "Influence level" are respectively: (Tables 16 and 17)

1. Training
2. Collaboration
3. Work, structure and processes
4. Authority and empowerment
5. Resources
6. Performance management

Table 15
The result of paired comparisons matrix between factors of employee enablement based on criterion of “Influence level”.

| Factors of employee enablement | Performance management | Authority and empowerment | Resources | Training | Collaboration | Work, structure and processes | Geometric mean (%) | Percentage (%) | Rank |
|--------------------------------|------------------------|---------------------------|----------|----------|--------------|-------------------------------|--------------------|---------------|------|
| Performance management        | 1                      | 0.80                      | 0.78     | 0.31     | 0.67         | 0.90                         | 0.74               | 11.11         | 6    |
| Authority and empowerment     | 1.26                   | 1                         | 1.05     | 0.56     | 0.67         | 0.68                         | 0.87               | 13.00         | 4    |
| Resources                     | 1.28                   | 0.95                      | 1        | 0.53     | 0.66         | 0.55                         | 0.83               | 12.37         | 5    |
| Training                      | 3.24                   | 1.79                      | 1.88     | 1        | 1.26         | 1.77                         | 1.82               | 27.28         | 1    |
| Collaboration                 | 1.48                   | 1.49                      | 1.52     | 0.79     | 1            | 1.72                         | 1.33               | 19.94         | 2    |
| Work, structure and processes | 1.11                   | 1.46                      | 1.83     | 0.56     | 0.58         | 1                            | 1.09               | 16.30         | 3    |

Table 16
Priority of engagement factors of employee effectiveness based on prioritized criteria.

| Factors of employee engagement | The participants criteria for effectiveness | Clear and promising direction | Confidence in leaders | Quality and customer focus | Respect and recognition | Development opportunities | Pay and benefits |
|--------------------------------|--------------------------------------------|-------------------------------|-----------------------|---------------------------|-------------------------|--------------------------|------------------|
| Accessibility                  | 1                                        | 12.94                         | 11.81                 | 13.03                     | 17.06                   | 20.31                    | 24.85            |
| Comprehensiveness              | 2                                        | 10.69                         | 14.85                 | 9.13                      | 18.88                   | 18.69                    | 27.76            |
| Influence level                | 3                                        | 9.72                          | 14.37                 | 5.47                      | 18.24                   | 21.95                    | 30.25            |

Table 17
Priority of enablement factors of employee effectiveness based on prioritized criteria.

| Factors of employee enablement | The participants criteria for effectiveness | Performance management | Authority and empowerment | Resources | Training | Collaboration | Work, structure and processes |
|--------------------------------|--------------------------------------------|------------------------|---------------------------|-----------|----------|--------------|-------------------------------|
| Accessibility                  | 1                                        | 15.13                  | 14.61                     | 21.21     | 21.56    | 14.08        | 13.41                         |
| Comprehensiveness              | 2                                        | 12.75                  | 17.88                     | 13.37     | 28.35    | 15.31        | 12.34                         |
| Influence level                | 3                                        | 11.11                  | 13.00                     | 12.37     | 27.28    | 19.94        | 16.30                         |
2. Materials and methods

This cross-sectional and descriptive-analytical research was performed at Tehran Industrial Parks Organization in 2017. This organization has 18 active scattered industrial parks in Tehran province which are heterogeneous in terms of some features. The study sampling method for determining prioritized criteria was purposive, non-random and non-probable. For this purpose, the statistical population has been selected among senior managers of the research community in the sample of 18 people whom were asked by designed questionnaire and interview through Delphi method and Hierarchy Analytical Process (AHP) to score their criteria and determine the priority and rank of each criterion (choice) and factor (alternative). Subsequently, by multivariate decision the weight of each criterion and weights has been obtained and the criteria are analyzed according to purpose of the effectiveness of human resources and the priority is determined accordingly [1–12].

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Transparency document. Supporting information

Transparency data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.dib.2018.07.017.

Appendix A. Supporting information

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