

DESIGNING INDICATORS FOR IDENTIFYING KNOWLEDGE WORKERS: A MIXED RESEARCH

Reihaneh Hashemzahi,

Department of Public Administration, Science and Research Branch, Islamic Azad University, Tehran, Iran,

Reza Najafbeygi,

Department of Public Administration, Science and Research Branch, Islamic Azad University, Tehran, Iran (corresponding author)

Mohammadrza Zabihi,

Department of management ,Mashhad Branch ,Islamic Azad University, Mashhad, Iran

Akbar Alamtabriz,

Department of industrial management, Shahid Beheshti University, Tehran, Iran

Abstract. Knowledge based human resources are the most important source and capital of the organization. Because as a result of the better performance of superior elites of an organization, they can be separated from other organizations. Today's organizations need creative, flexible, responsive and knowledgeable forces; and on the other hand, one of the first steps in line with this issue is to identify knowledge workers. This research aimed to design an indicator for identifying the knowledge workers of two knowledge-based companies, Khorasan Regional Electricity Company and Khorasan Razavi Oil Products Distribution Company. The present study was conducted using a field-based analysis combined with Delphi method and a questionnaire and interviewing tools. Accordingly, the Delphi panel selected for this research in qualitative section was selected by non-random sampling and a combination of judgmental sampling or purposive sampling for 25 people. Finally, 47 indicators were detected for identifying the knowledge workers of two knowledge based companies of Khorasan Electricity Company and Oil Products Company. Among them, expertise, novelty and learning were ranked the first.

Keywords: Knowledge Workers, Delphi Panel, Identify ingIndicator.

Introduction. In the modern environment, knowledge worker retention has been described as the most reliable means of ensuring sustainable competitive advantage(Nursahida Useng,2017)

Definitely there is wealth and property in knowledge, especially in today's economy-based knowledge that is technologically driven by it. Since the economy was developed from mass production stage to the information age, it is human resource management that determines the goals' fulfillment for the organization, and this is where knowledge workers are the essential components for achieving competitive advantage (Halim et al.2010) Knowledge workers are not only the most valuable workers of the organization, but also the major dynamic capital of a knowledge-based economy. It can also be said that managing, attracting and retaining knowledge workers are very difficult (Rogers, 2007, p. 20). On the other hand, most studies have been conducted on knowledge workers in the western world, but with the growth of many developing countries, including Iran, which are often supported by increasing the knowledge factor in their own economies, it is necessary to explore and identify this valuable resource in developing countries such as Iran.

Problem Statement. According to Raul, key workers and knowledge workers can be 20 times more efficient than ordinary people. As a result, investing in their field can generate higher profits. But most organizations manage their human resources in the same way, that is, organizations do not make a prejudicial distinction in the treatment of these two categories of staff (Samimi et al.2015).

Identifying knowledge workers' indicators is the first step in managing these staff. It is almost agreed that one of the main issues in organizations is the lack of a coherent process in knowledge and talent management, especially in identifying their features. Many experts believe that there are no appropriate and cognitive objective indicators for identifying key and knowledge workers, and a subjective viewpoint is dominated towards the talented individuals in the organizations. Based on the above description, a research gap in this regard, especially in the knowledge base organization is very tangible. Then, conducting a comprehensive research on the management of talented and knowledge workers especially in developing their descriptive indicators for organizations and, in particular, knowledge-based organizations, is very useful and effective. The present study, focusing on the workers in the two knowledge base companies, Khorasan Regional Electricity Company, and Khorasan Razavi Oil Products Distribution Company, aimed to identify the characteristics of knowledge workers and their descriptive indicators. This research aimed to answer the question that what are the components and indicators of knowledge workers in two Khorasan Regional Electricity Company and Khorasan Razavi Oil Products Distribution Company.

The Concept of Knowledge Workers. The starting point of any type of activity relatedto the knowledge workers is to identify them. In this regard, the concept of the knowledge worker must be identified. The knowledge worker is a worker who works with knowledge, theory and ideas instead of physical force, the knowledge worker is involved in knowledge work (Drucker, 1967).

Knowledge workers have a high level of skill, training, technological literacy and the ability to understand. These include the ability to observe, combine, and interpret data, and connect them with new perspectives and insights that lead to more effective decision-making, creating processes and solutions to solve organizational problems (Aluson, 2000). The knowledge workers refer to all the workers and managers who contribute to increasing the intellectual capital of the organization (Göman, 2002).

Knowledge workers are the workers who receive the information, accept it and decide what to do and then implement the relevant decisions (Olomouli and Akbove, 2004).

Knowledge workers work with information and knowledge and try to innovate in the organization by producing, developing and using knowledge and respond appropriately to the environmental changes (Daneshfard, 2006). Knowledge workers are the workers who have distinct characteristics, such as strong desire for development, passion for success, risk-taking behavior, having patience in complex and ambiguous issues, a little obedience toward the employer, and a strong sense of unity with their profession and work (Medcov and Rampl, 2007)

Knowledge workers are divided into two classes: 1. Knowledge Executives: Those who use existing knowledge to solve common problems. 2. Knowledge Producers: Those who create new knowledge for developing new solutions or concepts (Vari et al., 2007). Knowledge workers are the people who are not only very flexible in terms of the theory, but also in practice. This means that the knowledge workers expect to change their occupations relatively and frequently in the absence of occupation profession (Yigitkanlar et al., 2007)

Knowledge workers work with knowledge and information to extend existing knowledge and information, which results in the processing un coded knowledge (unencrypted knowledge) that is difficult to replicate and redo (Obo, 2010). Knowledge workers contribute to the organization's production and generate services and added value through knowing the information and understanding how they are used (Chamani Cheraghtapeh et al., 2012).

The Types of Knowledge Workers

Although this division cannot provide clear and precise boundaries between the two classes, it is useful to initiate the work. This classification relies on the fact that the responsibility of each person in the knowledge-based organization is knowledge, and the classification is not based on the individuals' occupational title, because the word "knowledge" is stated in job title of a few workers (Information).

The first group is the main knowledge workers. This group is responsible for the special roles in knowledge management including information managers, knowledge executives, consulting managers, knowledge analysts, librarians and counselors.

The second group includes all the scholars involved in any kind of knowledge including doctors, nurses, dentists, pharmacists, managers, technicians, caretakers, etc. (Daneshfard, 2006, p. 19).

Knowledge Workers' Characteristics

Knowledge workers' characteristics from Fereidoonian and Yousefi's point of view:

1. From an organizational point of view, they are more interested in their expert is than the organizational problem solving;
2. They look at the organization with a very realistic view, while they are self-reliant in solving problems. In fact, they do not accept the classical and traditional frameworks of the organizations;
3. They are less committed to organization and criticize it more;
4. In their opinion, the money holds less value and freedom of action, project tracking, and the quality of support facilities and services hold high value.
5. They are risk takers. In fact, if these people are left by themselves, they are more willing to re-experience and have no commitment to the thoughts of their previous few weeks;
6. They accept authority based on expertise, not hierarchy;
7. They emphasize specialized values over organizational goals;
8. They share their new knowledge and science with others; in other words, collective and organizational works are their characteristics;
9. They are questioner and use communication skills, especially listening and asking to promote their knowledge;
10. They always do research and access to new knowledge through their research;
11. They are self-challenging and always question their behavior, performance and activities;
12. They are unpredictable, then managing knowledge workers is difficult. Therefore, one of the characteristics of the managers associated with knowledge workers is to manage their unpredictable behaviors;
13. They act and learn fast (Fereidoonian and Yousefi, 2001, p. 23)

Knowledge workers' characteristics from Bahrami and Mohammadi's point of view:

1. They are waiting to receive for the value they produce;
2. They are straightforward;
3. Their loyalty is not so strong;
4. They are looking for meaningful affairs;

5. They need continuous learning;
6. They prefer collective decision-making to arbitrary decision-making;
7. In the traditional sense, they are prescriptive;
8. In some cases, they are a source of power and obedient learner;
9. They need to be fully networked and connected to the network;
10. They require flexible environment that they cannot affect and shape it;
11. They have different values and aspirations;
12. They have a sense of responsibility;
13. They solve problems in a team;
14. They can measure their capabilities;
15. They can engage in problems;
16. They can value their ideas;
17. They are flexible;
18. They are looking to upgrade their knowledge and skills.
19. They need others to care about their ideas;
- 20 They require effective support, feedback and communication;
- 21) They are concerned with the availability of resources (Bahrami and Mohammadi, 2005, p. 81)

Knowledge workers' characteristics from Daneshfard's point of view:

1. They prefer to introduce themselves with their jobs rather than with their work;
2. They are quick and active to change their job;
3. They are stimulated through honor of victory;
4. They are more sensitive to respect and encouragement received from their colleagues than encouragement received from their directors;
5. They have strong personalities and beliefs, and respond to encouragement much better than to punishment;
6. Being in the knowledge network inside and outside the organization helps them to increase their individual efforts;
7. The individual effectiveness of the knowledge workers is based on the obtained results and credibility, the perceived reputation and the network of relationships, rather than the official power of job description or hierarchical position.
8. According to the working conditions, the knowledge workers expect their colleagues and managers to:
 - see and treat them as professional colleagues;
 - respect their expertise and support and help them to extent their knowledge and expertise;
 - engage in the overall decisions and strategies of the organization that determines where and how the knowledge workers can use their initiatives and creativity (Daneshfard, 2006, p. 21)

Knowledge workers' characteristics from Mahanta et al.'s point of view:

- They have theoretical and practical knowledge;
- They find and access information;
- They have ability to use information;
- They have communication skills;
- They have sufficient motivation;
- They have the necessary mental capabilities (Mahanta et al.)

Knowledge workers' characteristics from Ismaili's point of view:

1. Their morale is fragile against punishment and encouragement is a very important factor in motivating them;
2. The occupation and its nature is the main priority for knowledge workers;
3. They have a lot of interest to change their desired job;
4. They pay more attention to colleagues and their respect and attention rather than their superiors; – is to succeed in their jobs;
6. They attach great importance to their work environment;
7. They seek diversity in the results of work;
8. They have little dependence on the existed information and they try to obtain more information and update them;
9. Knowledge workers are questioners and ask many questions to get the answers they need;
10. They are not very committed to the organizational rules and regulations and have a tendency to change the existing structures;
11. They have a high commitment to their work and expertise;
12. They attach great importance to freedom of action in carrying out projects and activities of the organization (Ismaili, 2008, p. 71).

Research Methodology: The present research is applied mixed methods research. The present research has exploratory mixed methods design due to the discovery of key workers' characteristics. In this type of project, the

researcher is seeking a field in a particular context, and its approach is inductive. For this purpose, first, the researcher collects qualitative data and uses this initial identification to adjust the quantitative data collection instruments. Therefore, in this type of research, qualitative data is more important. In addition, in the data collection sequence, first qualitative data and then quantitative data are collected. This same trend has been respected in this research. First, key workers' characteristics were identified by the qualitative method, and then the rankings of the identified indicators and characteristics are addressed by the questionnaire, which is the result of the first stage of the research. So, the main research questions are as follows:

1- What are the components and indicators of knowledge workers in the two Khorasan Regional Electricity Company and Khorasan Razavi Oil Products Distribution Company?

2. What are the significance and priority of the identified indicators?

The statistical population of the research in the qualitative section (Delphi panel), includes all the experts and managers of management sciences and senior managers of organizations and companies under the Minister of Petroleum and Energy in 2017, who has at least undergraduate education.

Research Findings: In the first step, the researcher prepared a set of questions or items about problem for each component (factor) and sent it to all experts and asked them to identify significant or non-significant elements, components and items. So at this stage only agreement or opposition is made regarding the factors, components and items, and significant recommendations of the experts are applied in relation to the factors, components and items.

After collecting the data obtained from the first stage of Delphi method and summing them up, in the second stage, questionnaires are provided based on significant items or questions of the first stage, and the participating members of Delphi Panel are asked to specify the importance of each item or question. In this way, an agreement can be reached on identifying the above issues. Usually in the second stage, a five-point scale is used for ranking, and respondents are asked to add items to the list if necessary. (Sarmad, 2007: 164). Finally, based on the findings from the second stage, which are based on the expert group's views, components and items whose total score is above the average score are retained, otherwise they are omitted. In the following, the third stage of Delphi method was also implemented due to the lack of consensus and inconsistency in experts' responses. At this stage, based on the results and findings from Delphi method in the second stage, acceptable items were questioned by members of the expert group in a five-choice spectrum. It is worth mentioning that in this research, a consensus criterion or a kind of coefficient of concordance has been used to examine the achievement of a unity of opinion among Delphi Panel members to confirm the completion of the Delphi process. Of course, the stages and consensus criteria are discussed in details in the following sections, and the reasons for using them are explained.

In this regard, the researcher selected 25 qualified people who were included in the statistical society framework of qualitative part. The researcher developed this model in the form of a questionnaire after formulating the initial conceptual model and determining factors, components and important items in the model. In fact, the questions of the Delphi questionnaire were designed and prepared based on the initial conceptual model and research questions.

In the first stage of the Delphi method, a questionnaire containing the factors, components and items proposed by the researcher was provided to the expert group to identify the knowledge workers. Also, at this stage, detailed interviews were conducted with some members of the Delphi group in relation to each of the elaborated factors and components. Then interviews were coded and categorized besides completing the questionnaire, and were used in Delphi method.

In fact, at this stage, the researcher put the factors, components and items of the concepts of knowledge workers into a questionnaire and asked the expert group members to express their agreement and disagreement over each of the factors, components and items proposed in the research model. As stated in the previous sections, the factors and components of this stage based on the initial model of the research were obtained from the review of literature. Their existence has been evaluated and monitored in the form of a questionnaire in the first stage of Delphi method. Moreover, at this stage, experts' points of view and recommendations were taken through interviews with experts and applied.

Therefore, 10 components and 47 items were considered for identifying knowledge workers. Thus, a questionnaire contained 47 questions was distributed among the workers of Khorasan Razavi National Oil Distribution Companies and Khorasan Regional Electricity Company (including managers, key and experienced workers and experts) to identify knowledge workers.

But another criterion used for the expert group consensus is the use of Kendall's coefficient or the consensus scale, which is described below.

In this study, the Kendall's Coefficient of Concordance (W) was used to determine the consensus among panel members. The Kendall's coefficient of concordance shows that individuals who have arranged a few categories based on their importance basically apply similar criteria to judge the importance of each category, and they have consensus in this respect.

In this research, based on Delphi members' views and opinions, Kendall's coefficient was also used to ensure greater consensus among the components.

The results showed that the Kendall's coefficient of concordance was 0.75 for identifying components of knowledge workers. Therefore, there is an acceptable consensus among the expert group or Delphi Panel members over the studied concepts (factors affecting the job abandonment of knowledge workers).

It is worth noting that in order to identify the knowledge workers of the two companies, the questionnaire based on a three-stage Delphi method with the same theme distributed among all workers of the two companies and the obtained data was analyzed.

Raw	Title	The Number of Items	Cronbach's Alpha Coefficient Value
2	Identifying knowledge worker (includes 10 components)	47	0.83

As shown in the table above, there is a high degree of reliability in the measurement instruments and their subsets.

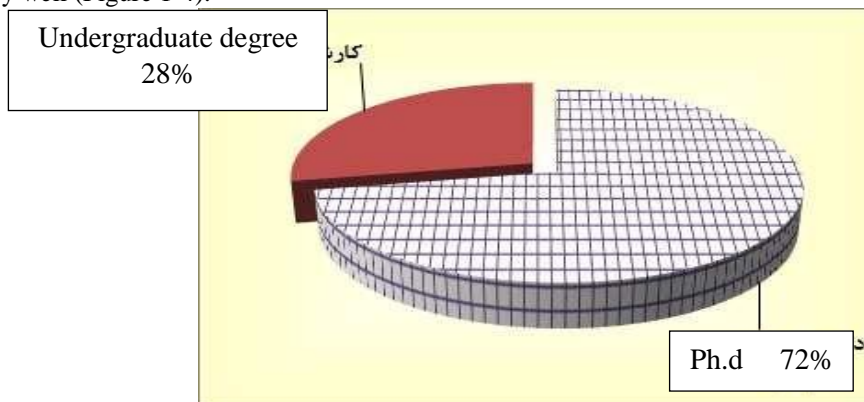
In this section, a schema of expert group is introduced to be familiar with this group and their characteristics. The first feature examined in the expert group is their gender, which is described in the following table.

Frequency distribution table for respondents' gender

Gender	Frequency	Frequency Percentage
Male	21	84%
Female	4	16%
Total	25	100%

According to the results presented in Table 1-4, it is obvious that panel of experts comprises 84% of men, and only 16% of female.

The distribution of the graduate degree of expert group was another studied demographic variable. The results of this variable show that 18 members of the experts group had doctoral degree and 7 had undergraduate degree. The chart below shows it very well (Figure 1-4).



Graduate Degree of Expert Grouping the Delphi Scheme

The results of the first stage in the Delphi scheme

As mentioned in the first stage of the Delphi scheme, the view of the expert group regarding the necessity of the presence of proposed components for identifying knowledge workers in the research model states that the Delphi panel group agrees with the presence of nine components of the proposed components and has confirmed them. (It should be noted that any component that at least 70% of the Delphi panel members agree with it will remain in the model and go to the next step of the Delphi method). In fact, Delphi panel members agreed with components (expertise, behavioral characteristics, skills, novelty, learning, personality, communication, idealistic and legality) to identify knowledge workers and disagreed with the structuralism, employability, support for change, and executive and managerial skills. Also, they have not proposed another component in addition to the proposed components of the researcher.

Table: Frequency distribution table of experts' views on the components needed to identify knowledge workers

Variable (concept)	Components	Agreed		Disagreed	
		Frequency	%	Frequency	%
دانشگاه	Expertise	25	100	0	0

	Structuralism		15	60		10	40
	Behavioral characteristics		21	84		4	16
	Skill		23	92		2	8
	Novelty		25	100		0	0
	Learning		25	100		0	0
	Personality		25	100		0	0
	Employability		17	68		8	32
	Communication		24	96		1	4
	Idealism		22	88		3	12
	Legality		21	84		4	16
	Support for change		14	56		11	44
	executive and managerial skills		17	68		8	32
	Suggestions	<ul style="list-style-type: none"> • Integrate the components of "employability" and "learning". • There are concepts of structuralism, support for change, and the executive and managerial skills in other components, and do not need to repeat them. • Add the emotional intelligence component to the above components. • The components of skill and expertise are similar, so determine what type of skill was intended by the researcher. • The component of personality is divided into two components of personality or individual characteristics and personality or work characteristics. 					

It is worth noting that the components included in the table above, along with their constituent parts, are provided to the Delphi group in the first part of the Delphi questionnaire (first stage) (identifying knowledge workers in the first part: 13 components and 59 items). Because of the two parts of the Delphi questionnaire and the high volume of items and components, they refuse to re-mention them, and only the number of items for each of the identifying components of knowledge workers and proposed items from Delphi's expert group is presented in the table below.

As can be seen, for example, the component of expertise in first stage questionnaire of Delphi for identifying knowledge workers that 100% of the experts group have voted for its presence in the research model, has stated in four-item frame, but Delphi group also proposed two other items to measure this component. The proposed items, along with confirmed components and items, are brought to the second stage questionnaire of Delphi and are evaluated by experts group.

Table: The views of experts on the items of components needed to identify knowledge workers

Variable (concept)	Components	The Number of Items in Delphi's First Stage	Proposed Items
Knowledge Workers	Expertise	4 Items	<ul style="list-style-type: none"> • English proficiency • Political Literacy
	Structuralism	3 Items	----
	Behavioral characteristics	8 Items	----
	Skill	6 Items	----
	Novelty	6 Items	----
	Learning	2 Items	<ul style="list-style-type: none"> • Perseverance
	Personality	10 Items	<ul style="list-style-type: none"> • The unity of speech and practice • Patience
	Employability	3 Items	-----
	Communication	4 Items	<ul style="list-style-type: none"> • The power of emotional control

	Idealism		4 Items		----
	Legality		3 Items		• Regular
	Support for change		3 Items		----
	Executive and managerial skills		3 Items		----

The Results of the Second and Third Stages of the Delphi Scheme (Last)

Therefore, after identifying the knowledge workers’ important required variables based on the views and opinions of the experts in the first and second stages of the Delphi scheme, the third stage of the Delphi scheme aims at reassess the importance and impact of each of the accepted components in the first and second stages to identify knowledge workers. Below, the results of respondent experts’ opinions are summarized in Table 4-6 after summing and statistical processing. In this table, each item and component that earns a score of over 4 (items and components scores can be in the range of 1 and 5) will remain in the next steps, otherwise it will be deleted.

Table: The relative frequency distribution of the views of expert group members on the identifying components of knowledge workers

Variable	Component	Item	Strongly Agree %	Agree %	Null %	Disagree %	Strongly Disagree %	Average	Standard Deviation	Result
Knowledge Workers	Communications and	High public relations	67	33	0	0	0	4.7	0.48	Positive
		Networking skill	71	29	0	0	0	4.7	0.46	Positive
		High understanding	62	38	0	0	0	4.6	0.50	Positive
		Emotional Control skill	52	48	0	0	0	4.5	0.51	Positive
	Individual Characteristics	Conscientiousness and Dutiful	86	14	0	0	0	4.9	0.36	Positive
		Boldness and Courage	71	29	0	0	0	4.7	0.46	Positive
		Risk-taking	62	38	0	0	0	4.6	0.50	Positive
		Optimism and Hope for the Future	76	24	0	0	0	4.8	0.46	Positive
		High flexibility	71	29	0	0	0	4.7	0.46	Positive
		Openness to new Experiences	90	10	0	0	0	4.9	0.30	Positive
	Behavioral Characteristics	Knowledge loving	90	10	0	0	0	4.9	0.30	Positive
		Welcoming the New Responsibilities	67	33	0	0	0	4.7	0.48	Positive
		Loving to serve	71	29	0	0	0	4.7	0.46	Positive
		Deciding and Effective in Decision Making	86	14	0	0	0	4.9	0.36	Positive
		Communicative	62	38	0	0	0	4.6	0.50	Positive
	Occupational	Automatic and spontaneous	52	48	0	0	0	4.5	0.51	Positive
		Ability to work in difficult and critical	67	33	0	0	0	4.7	0.48	Positive

		situations									
		Professional commitment	71	29	0	0	0	4.7	0.46	Positive	
		Multiple skills	62	38	0	0	0	4.6	0.50	Positive	
		Successful everywhere	52	48	0	0	0	4.5	0.51	Positive	
	Executive And Managerial Skills	Time Management	67	33	0	0	0	4.7	0.48	Positive	
		Organizational and planning skill	86	14	0	0	0	4.9	0.36	Positive	
		Leadership, and conflict resolution skill	62	38	0	0	0	4.9	0.50	Positive	
		Deadlocker and having problem-solving skills	71	29	0	0	0	4.7	0.46	Positive	
		Having updated and extensive information	62	38	0	0	0	4.6	0.50	Positive	
		The skill to do or manage several occupations at the same time	52	48	0	0	0	4.7	4.8	Positive	
		Novelty	The searcher and the curious	67	33	0	0	0	4.7	0.48	Positive
			Designer	71	29	0	0	0	4.7	0.46	Positive
	Creative and innovative		71	29	0	0	0	4.7	0.46	Positive	
	Having the ability of thinking and analyzing		62	38	0	0	0	4.6	0.50	Positive	
	Reformer and evolution lover		52	48	0	0	0	4.5	0.51	Positive	
	Learning And Employability	Intelligence	81	19	0	0	0	4.8	0.40	Positive	
		quick and continuous learning	71	29	0	0	0	4.7	0.46	Positive	
		Perseverance	90	10	0	0	0	4.9	0.30	Positive	
		Knowledge sharing	76	24	0	0	0	4.8	0.44	Positive	
		Using all the facilities and potential of the organization	62	38	0	0	0	4.6	0.50	Positive	
	Idealism	Idealistic	90	10	0	0	0	4.9	0.30	Positive	
		The opportunist	67	29	5	0	0	4.6	0.59	Positive	
		Ambitious	86	14	0	0	0	4.9	0.36	Positive	
	Legality	Knowing the rules and regulations	67	33	0	0	0	4.7	0.48	Positive	
		Familiar with administrative procedures and work processes	95	5	0	0	0	5.0	0.22	Positive	
		Regular	62	38	0	0	0	4.6	0.50	Positive	
		Committed	76	24	0	0	0	4.8	0.44	Positive	
Expertise	Experience	86	14	0	0	0	4.9	0.36	Positive		
	Knowing technical skills	81	19	0	0	0	4.8	0.40	Positive		
	Computer literacy	62	38	0	0	0	4.6	0.50	Positive		

As the findings in Table 4-6 show, all items obtained from the previous Delphi stages (first and second steps) for identifying components of knowledge workers, obtained average score of 4 and 4.5 from experts' views and opinions at this stage. Moreover, the responses of the experts group in all items tend to strongly agree and agree, and there is no item that the expert group's opinions about it are highly scattered or score less than 4.5. Therefore, it can be concluded that the consensus among the expert group was obtained for the items to identify the components of knowledge workers. These items (47 items

for measuring 10 components), can be used in the final questionnaire and to identify knowledge workers at the Khorasan Regional Electricity Company and the Khorasan Razavi Oil Products Distribution Company. Therefore, with the consensus among the experts group members and also considering the amount of Kendall's coefficient of concordance, which is equal to 0.82 to identify knowledge workers, it can be concluded that the items and components presented in the form of a conceptual model of research are finalized after implementing the Delphi method and can be used in the studied community.

The Final Model of Delphi Scheme. In sum, based on a general summary of the results obtained from the Delphi stages, a part of which was presented in the third chapter (including the Kendall's coefficient of concordance report) and the other part in this chapter (Section 4-2), and ultimately based on the results of the literature and theoretical foundations, as well as the expert group members views and opinions; 10 components and 47 items will be used to identify the knowledge workers, which in fact form the model of this research. Therefore, all analyzes, answering to the research questions and testing the conceptual model of this research among the identified knowledge workers in two Khorasan Regional Electricity Company and Khorasan Razavi Oil Products Distribution Company will be conducted on the basis of the items and components mentioned in the Delphi scheme.

Discussion and Conclusion: Definitely, the management of knowledge workers should be one of the most important issues in the human resources management now and in the future. Companies and organizations have found that if they want superiority against their competitors, they need a comprehensive system design to manage knowledge workers that its first step is to identify knowledge workers. This research aimed to identify and rank the number of knowledge workers in Khorasan Regional Electricity Company and Khorasan Razavi Oil Products Distribution Company. 47 indicators have been identified for knowledge workers. Unfortunately, no one has all these characteristics. These characteristics are indicators that have been seen more in key workers than others. The main characteristics of knowledge workers based on research findings are: communication and emotional intelligence, individual characteristics, behavioral characteristics, occupational characteristics, executive and managerial skills, novelty, learning and employability, idealism, legality and expertise.

Recommendations: As the results of the research show, education is just one of the describing characteristics of key workers. Therefore, it should be considered that key workers acquire or deepen these characteristics. The results of the research can be used in interviews and employee recruitments as well as promotion opportunities. In order to deepen these characteristics in this study, the performance evaluation system can be redefined based on the promotion of the identified indicators.

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