

# Role of Knowledge Management in Safety of the Employees of the Electric Distribution Companies

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## Abstract

In the first wave of human life that all people had to continue living through the agriculture and husbandry jobs, the tangible assets like lands and number of family members were considered as important criteria for success. After the first wave, the second wave was commenced by working in factories and focusing on products and selling them in the market. In other words, the product-oriented and market-oriented stages were signs of industrial age; meanwhile, tangible assets were taken into account as important factors in the factories or organizations. The third wave in human life was started when the human found that by inventing computer and vast usage of computer and internet in changing traditional jobs, only knowledge and talent will be important in digital era. Thus, the human became familiar with the subjects such as knowledge-based organizations, learning organizations, knowledge management, talent management, and so on. After that, a belief gradually formed in the minds of most managers and even some employees at the different organizations that their success will be achieved by relying on knowledge and talent as intangible assets. Therefore, the human found out that tangible assets are not the only key for productivity and profitability and focusing on intangible assets will be helpful for future business. So, the paradigm shift and change in approaches was commenced more than before.

Although there are many advances in technology and science in different areas of knowledge, there are many hazards for the employees of the electric distribution companies especially those who work on the electric overhead lines and/or underground cables, this study aims to reveal the role of knowledge management in identifying the hazards, and by documenting the experiences resulting in the accidents, better recommendations on working the medium and low voltage networks have been presented in the current research.

**Keywords:** Safety; Knowledge; Management; Employees

## Introduction

The current world is called the knowledge age. It is also full of uncertainty; meanwhile, huge communications and interaction have been emerged due to the Information Technology (IT). The communications are so increasing that the traditional approaches are not trustable but inefficient and therefore, together with changes resulted in social and industrial developments, there is a need in changing the employees' attitudes.

Nowadays, the world society has entered the age that knowledge is its main capital as well as a fundamental factor for growth and development of a society so that the expression "knowledge is power" is the main slogan of this era. One of the important subjects that managers of electric distribution companies need to focus in this era is the essence of considering physical and mental safety of the personnel. Thus, the study aims to analyze the experiences relating to safety from the aspect of knowledge management and give some recommendations for epitomize the mentioned experiences.

Group contribution in the current world for operating intra-organizational and extra-organizational knowledge via educating personnel may create a fundamental change in organization and manpower and it will have a key role in physical and mental safety of the employees. The important point relating to the knowledge management is that some current employees of the electric distribution companies are going to be retired and lack of documentation of their experiences on individual and group safety and also observing safety in utilizing electric equipment will be opposed many costs on the aforesaid companies.

Knowledge management emphasizes on tacit knowledge and notifies the essence of changing the tacit knowledge to explicit

knowledge. Tacit knowledge is like an intangible treasure which is located in the minds of people and when the employees are retired, this kind of knowledge will be removed from the organization. Unfortunately, most companies do not notice on losing the invaluable experiences and this will threaten them in near or distant future. For instance, most of acquired experiences in connection with people's safety, electrification incidents, encountering the damaged people, and the acquired knowledge for observing safety (during working with equipment, working on electric hot lines, and erecting new low-voltage and medium-voltage electric distribution networks) will be removed after retiring the personnel from the electric distribution companies or in a general term, from the eclectic power industry. Thus, much time and expenditures will be consumed for preparing, educating, and training the new-comers in order to persuade them to follow the required activities in electric power industry. If no attention is paid to knowledge management after the mentioned expenditures, the cycle of consuming money will be repeated reciprocally.

Another challenge that the electric distribution companies are faced with is how to control the liquidity and utilize the cost management. So, consuming money to prepare the personnel does not have any

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economical and technical justification because it will be possible to extract the tacit knowledge in the minds of personnel and document them and deploy it to the personnel without any need to extra costs.

### Research background

According to Aliahmadi et al. [1] the evolution of planning has happened by passing through three eras of Product - Oriented, Market - Oriented, and Post - Industrial so that Knowledge Management is one of the issues which has been emphasized on it in this period. On the other hand, knowledge management is a systematic process of finding, selecting, organizing, distilling and presenting information in a way that improves an employee's comprehension in a specific area of interest [2]. Knowledge Management causes the personnel to disclose their hidden knowledge. According to Mehdivand [3], if the organizations notice utilizing knowledge in their processes, they will find out that the rate of knowledge in their organizations will be more than they diagnose.

In the research [4], the importance of Knowledge Management has been addressed and then it has been recommended that the Knowledge Management must be considered as organizational strategies and then the researchers believe that lack of registering the existing experiences in the organization will cause retraining of the personnel and this kind of training is not a kind of investment but a type of cost for the organization.

Based on the above comments, it will be reasonable to conclude that documentation of executive operations and the task of personnel will be the best educational sources for the employees of the above-mentioned companies. It will not only prevent the incidents, but also will hinder the loss of capitals in the organization. It should be notified that all the incidents are recorded in electric distribution companies and the employees are able to refer to them. Although these documents are referable for technical and administrative staff, the most important point is to prevent the incidents before they happen. The experiences of the personnel who have faced with the incidents and their solutions together with the safety points in working with electrical equipment and the essence of mental preparedness of the personnel are the invaluable sources in the companies that must be deployed; meanwhile, the mentioned experiences must be disclosed via the companies' websites.

There are many researches about Knowledge Management so that it's not possible to mention all of them, but Table 1 is a sample of researches stated in ref. [5]:

It will be possible to consider various methods for recording the experiences of the personnel in the field of knowledge management; however, each method which facilitates the recording of tacit and

explicit knowledge will be efficient. Followings are some applicable methods for recording the knowledge management:

1. Persuading the employees to record their experiences in the field of safety as PDF files and uploading them in the websites of the companies. Attention must be paid that backup files will be essential.
2. Encouraging the employees to present monthly reports on incidents or some measures which could result in hazards.
3. Observing individual and group safety in working with the electrical equipment and networks based on ISO quality system together with updating the instructions and safety standards.
4. Holding annual seminars on safety which has been performing in the Khorasan-Razavi Electric Distribution Company (KEDC) as a routine event for ages.
5. Presenting the reports of taking part in other seminars and conferences and sharing them with all staff inside and outside of the organization.

### Literature Review

#### Knowledge management

According to De Jarnett [6], knowledge management includes creating, interpreting, distributing, applying, keeping, and correcting knowledge. On the other hand, Quintas [7] believes that knowledge management is a process of meeting the existing requirements in order to identify and extract the gathered knowledge and develop the new opportunities.

There are two kinds of knowledge called Explicit Knowledge and Tacit Knowledge. Based on Keshavarzi [8], the explicit knowledge is recordable and recoverable form individuals' minds, but, the basis of tacit knowledge is theoretical and applicable experiences together with the employees' learning. In addition, King [9] argues that explicit knowledge can be observed as words, sentences, documents, organized data, computerized programs, and other forms of disclosing knowledge. Moreover, the researcher Abidi [10] addresses that tacit knowledge relates to the problem-solving skills, judges, and the individuals' intuition.

#### The essentials of knowledge management

According to Emami and Keihani [11], the hierarchy of the knowledge management includes four stages: data, information, knowledge, and wisdom. In addition, the researchers Asadzadeh and Jalalian [12] believe that there are four fundamental elements

Researchers	Field of research
Polyani (1966); Nonaka and Takeuchi (1995)	Difference between tacit and explicit knowledge
Tsoukas (1996)	Classified knowledge
Wiig(1993); Liebowitz (1999)	Fundamentals of knowledge management
Holsapple and Joshi (1997); Rubenstein et al. (2001)	Knowledge management models
Davenport et al. (1998)	Successful projects in knowledge management
Fowler (2000); Liebowitz (2001)	Knowledge management and artificial intelligence
Courtney (2001); Bolloju et al. (2002)	Knowledge management and decision support
Liao (2003); Kakabadse et al. (2003)	Researches on knowledge management
Tyndale (2002)	Knowledge management software
McAdam and Reid (2001); Wickert & Herschel (2001)	Knowledge management and small economical foundations
Rowley (2000); Metaxiotis and Psarras (2003)	Knowledge management and higher education
Weber et al. (2002)	Knowledge management standards

Table 1: A sample of researches in the field of knowledge management.

for knowledge management: knowledge, management, Information Technology (IT), and organizational culture. Moreover, Bixler [13] mentions four pillars for knowledge management that are: leadership, organization, technology, and learning. Furthermore, based on Salimi [14], knowledge management in an organization is responsible for the following items:

1. Disclosing the customer's needs inside and outside of the organization
2. Identifying the customer's laws
3. Identifying the customers
4. Diagnosing the interests and styles of the customers
5. Deploying knowledge transfer inside the organization and as an organizational culture
6. Deploying knowledge transfer to the customer inside the organization
7. Deploying the culture of disclosing customer laws inside the organization
8. Informing the customers about the product quality, service, solving the complaints, and product price
9. Identifying the media which transfer messages to the customers
10. Specifying the reasons for lack of customer willing toward the competitor
11. Following the implementation of Total Quality Management (TQM), Business Process Reengineering, and Research & Development (R&D)
12. Mitigating hazards and rebuilding the affairs as well as decreasing the costs via preventing the unnecessary measures

13. Preventing the leakage of information and empowering the business competitors via creating a knowledge participative space

### Models of knowledge management

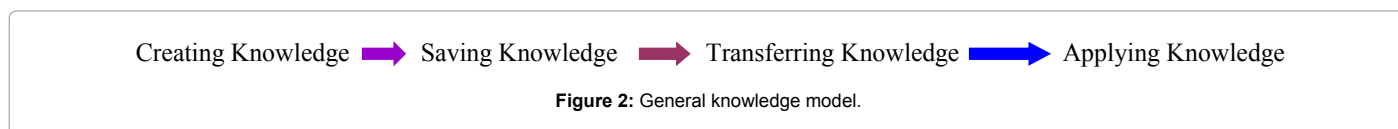
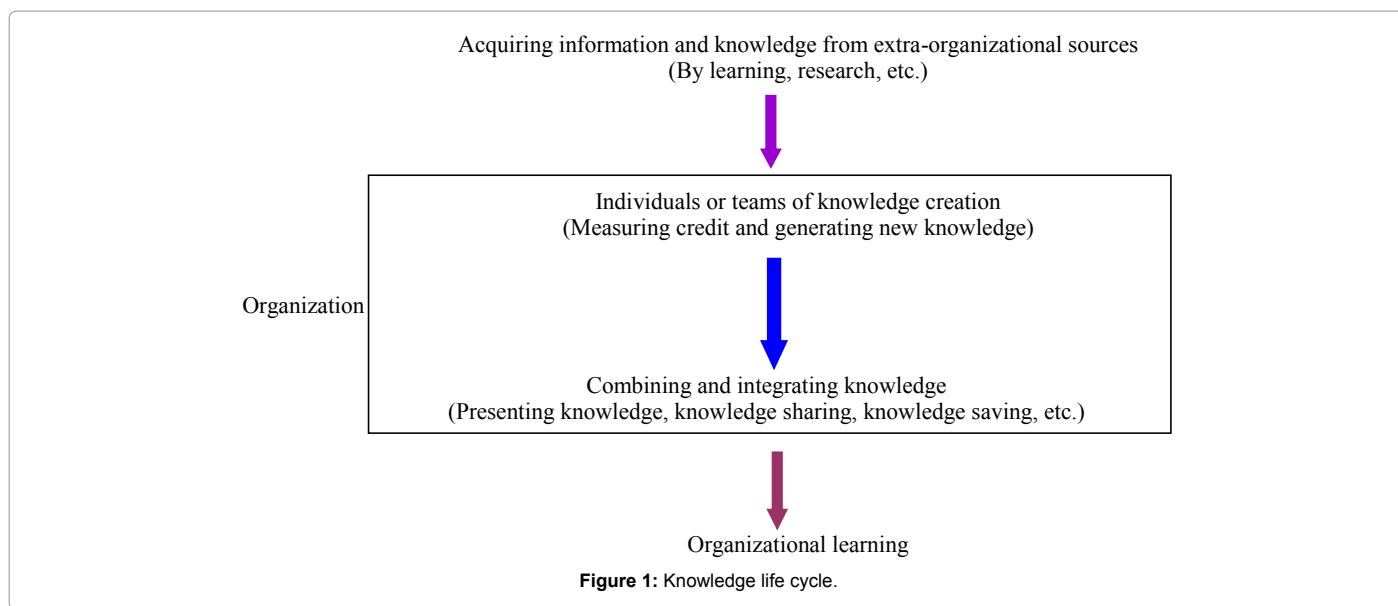
The researchers Asadzadeh and Jalalian [12] have named two famous models for stating the knowledge current. One of the models is called Knowledge Life Cycle and the other is General Knowledge Model. These model have been shown in Figures 1 and 2, respectively.

According to Abbasi [15] there is another model named Lustri Model which focuses on individual knowledge as the first item for creating organizational knowledge. So, it will be possible to notice the importance of knowledge in every person in an organization. There are many models on knowledge management so that it will not be possible to declare all of them in this study. On the other hand, based upon the research [16], the primitive frameworks for implementing knowledge management in private sector is much more than the governmental sector. Therefore, one can conclude that private companies like electric distribution companies will be able to refer to many models for development and deployment of knowledge management and find the best model which meets their requirements or present a combined model based on the existing and appropriate models.

### Safety and its essence

The factor "risk" may be found in every human activity. Identifying the risks systematically and removing them will require implementing a managerial system based on the needs of each organization and this goal will be attained in different levels of organization such as staff, contractors, stakeholders, and other people and of course by considering the top managers of the organization [17].

One of the factors which threaten the employee safety is the mental stress which acts as a potential factor in happening the incidents. In the



study of Iravani [18], the stress phenomenon has been specified as the most critical issue in personnel's work life and it's a reason for most of mental and even physical disorders; meanwhile, stress is a reason for many diseases and it's also the disease of the current century.

The researcher Haji-Hosseini [19] addresses the process of acceleration in privatization and presence of contracting companies in electric power industry including Electric Regional Companies, Generation Management Companies, and Electric Distribution Companies and concluded that the result of such measures is a non-centric management in electric power industry; meanwhile, the required interactions in the field of mitigating losses and continuation of servicing as well as decrease in incidents by increasing safety factor has been specified in this paper.

Job diseases are called a group of diseases that are created due to the works and they create some spiritual and physical losses for all people in as society as well. A reason for such a disease is the lack of notice on safety knowledge in all organizational levels and it's the origin for most of diseases [20].

### Proposed model for deploying safety in electric power industry

The proposed model for internalizing the safety knowledge in all Electric Distribution Companies is as shown in Figure 3.

Creating safety knowledge via:

- The commitment of the CEO
- Persuading the personnel to observe safety in all organizational units

Developing knowledge through:

- Intra-organizational safety experiences together with the experiences of other companies
- Investigating the new methods of safety via R&D as well as focusing on innovations

Capturing safety knowledge through:

- Documenting the experiences
- Expanding knowledge and sharing the ideas and safety knowledge

Cooperation and collaboration in the field of spreading the safety knowledge.

### Conclusion

Focus of Electric Distribution Companies on knowledge management in the field of safety means that the managers invest for their development and preparedness in order to prevent risks and hazards and also hinder the intellectual and physical assets. In the current situation that the experienced personnel are being retired, the importance of transferring knowledge and experiences are specified more than before. On the other hand, the new manpower will be able to acquire the experiences and add their knowledge via utilizing the modern technologies and share what they know with others in their organizations. So it will be a clear reason why knowledge management has a key role in safety of the personnel in Electric Distribution Companies.

### Suggestions

Some suggestions for epitomizing the safety knowledge in Electric Distribution Companies have been presented as follows:

1. Creating belief in company managers relating to the essence of implementing knowledge management in safety affairs
2. Recording the past experiences of the companies including writing the applicable reports and safety instructions for work with electric equipment
3. Recording the reports of participating in safety seminars and also having technical and scientific visits and make them available for all employees
4. Motivating the personnel to transfer their safety knowledge to their affiliated manpower aiming the succession management and prepare them to accept responsibilities and follow their tasks appropriately.

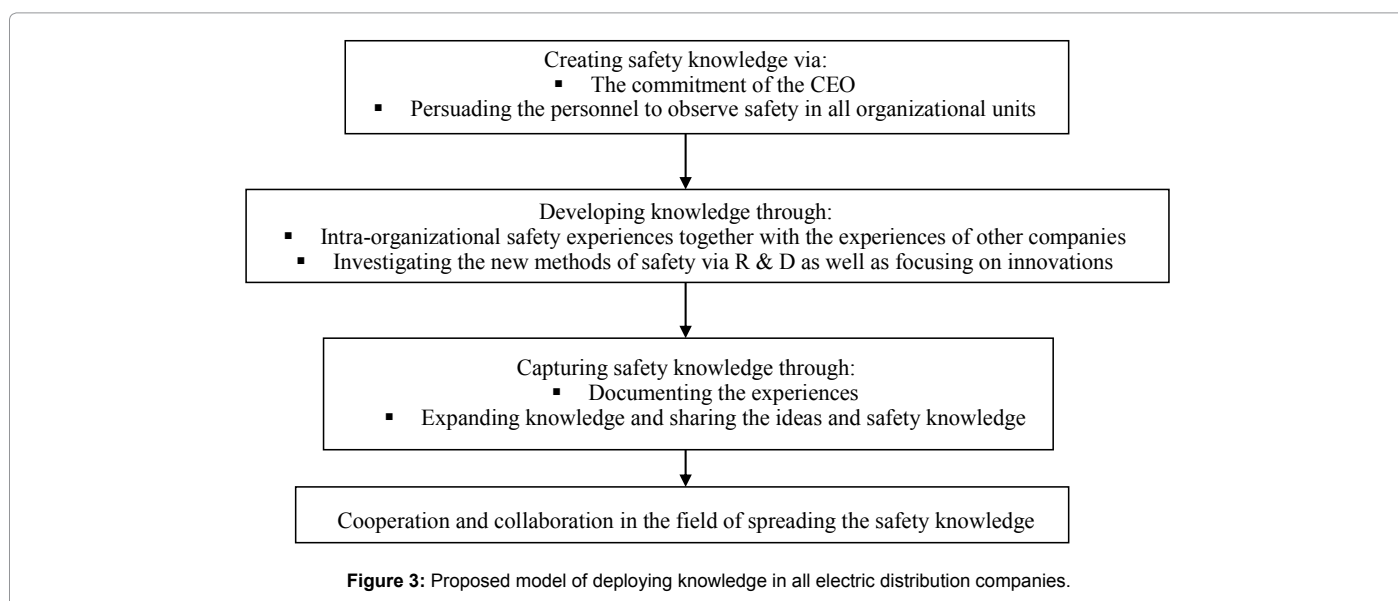


Figure 3: Proposed model of deploying knowledge in all electric distribution companies.

5. Reinforcing the loyalty and organizational interest in all employees especially the new employees in order to persuade them to learn knowledge from the experienced personnel and then attempt to share them with others.
6. Enhancing the cooperative atmosphere for scientific and innovative affairs and share the ideas relating to safety.

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