



## Work force and success factors in implementing ISO9001: 2000 using ANP method

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Article Information	Abstract
<p><b>Article History</b>            Received: 18/08/2021            Accepted: 28/12/2021            Available online: 30/01/2022</p>	<p><b>Introduction:</b> The purpose of this study is to evaluate the success factors in the implementation of quality management systems in Sun Star Company</p> <p><b>Methods:</b> The research method in this research is descriptive. The statistical population included senior managers, middle managers and operational managers of the company. In general, data collection methods can be divided into two categories: library methods and field methods. In this research, field method has been used to collect information. Data collection tools in this study were three different questionnaires. Methods of data analysis this research has been done at the level of group decision making in conditions of uncertainty.</p> <p><b>Results:</b> The most important factor is "employee commitment" and in the second, third and fourth ranks are "resource availability", "senior management commitment" and "education level", respectively.</p> <p><b>Results:</b> According to the above ranking, the most important factor is "employee commitment" and in the second, third and fourth ranks are "resource availability", "senior management commitment" and "education level", respectively.</p> <p><b>Discussion:</b> The amount of great importance are the factors that affect human resources. The results of network analysis confirm that the importance of employee commitment index shows more than other indicators, which means that due to small changes in the status of other factors, a significant effect can be observed in the successful implementation of ISO.</p>
<p><b>Keywords</b>            Work force,            success factors,            ISO9001,            ANP method.</p>	

### 1. Introduction

Achieving success for a continuous non-intermittent presence in domestic markets as well as regional and international markets under the influence of intense competition and increased supply over demand has always depended on two basic factors, one "quality" and the other "price". Although important factors Other factors such as environmental protection, occupational safety and health, timeliness and respect for customers cannot be ignored.

Responding to constant changes in attitudes, interests and desires, etc. will require system flexibility in providing different products and services, and this is possible by designing, deploying, implementing

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and improving quality management systems such as ISO 9001. Research findings showed that success Factors for Cloud compliance in Semiconductor companies with Hybrid ANP method. They concluded that factors under managerial and technical considerations were the effective factors that were affecting the compliance of cloud technology in this case(Zhou, Xu, & Muhammad Shaikh, 2019).

As a result, today, the use of new management methods for economic and industrial units has become a necessity and quality management as the most important and comprehensive of these methods, has been able to provide appropriate methods and models, such devices in providing products and services(Ikram, Sroufe, & Zhang, 2020). It has helped with better quality and lower cost, and as a result, the need to apply standards has become more and more evident by industries(Sharma & Sehwat, 2020).

In a situation of limited resources, increasing population growth, various manufacturing-service companies and industries have no choice but to establish an appropriate and flexible system to meet the declared needs of their stakeholders, and this is made possible by ISO standards(Ikram et al., 2020) (Ismyrlis, Moschidis, & Tsiotras, 2015) (Boiral, 2011).

The input variables of this research are the influential factors in the implementation of ISO 9001: 2000 standard and the output variable of structuring the above factors and identifying the causes and effects are among the above factors. This research has been done in Sun Star Company as a private and leading organization in the production of natural juices.

The objectives of the research are:

- Identify the key success factors in implementing the ISO9001: 2000 standard
- Determining the structure of the impact of key success factors in the implementation of ISO9001: 2000 standard on each other.

## **2. Methods**

The purpose of this study is to evaluate the success factors in the implementation of quality management systems in Sun Star Company, using the ANP method. The research method in this research is descriptive because it will use a new method to develop and evaluate the success factors in the implementation of quality management systems.

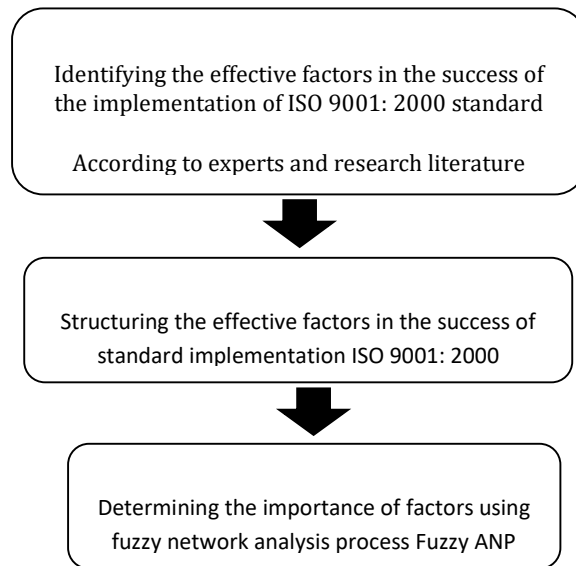
Regarding the statistical population under study, since the methods used in this study are among the group decision-making methods, the statistical population will include senior managers, middle managers and operational managers of the company. In this research, 12 seniors, middle and operational managers will answer the questionnaires.

In general, data collection methods can be divided into two categories: library methods and field methods. In this research, field method has been used to collect information. Data collection tools in this study are three different questionnaires that have been designed as a questionnaire to determine the importance of factors, a questionnaire to assess the intensity and effect of factors and a questionnaire of pairwise comparisons between factors.

Methods of data analysis This research has been done at the level of group decision making in conditions of uncertainty. The method used in this research was the technique of Fuzzy Network Analysis process. The reason for using fuzzy theory in this research is the high power of this theory. The purpose of the fuzzy network analysis approach is to solve problems with interdependence and feedback between criteria and options. Fuzzy network analysis is a general mode of the hierarchical analysis process, so that it is used in multi-criteria decisions with a non-hierarchical structure in mind. Fuzzy network analysis compares measurement criteria across the system.

The implementation steps of the research are shown in Figure 1.

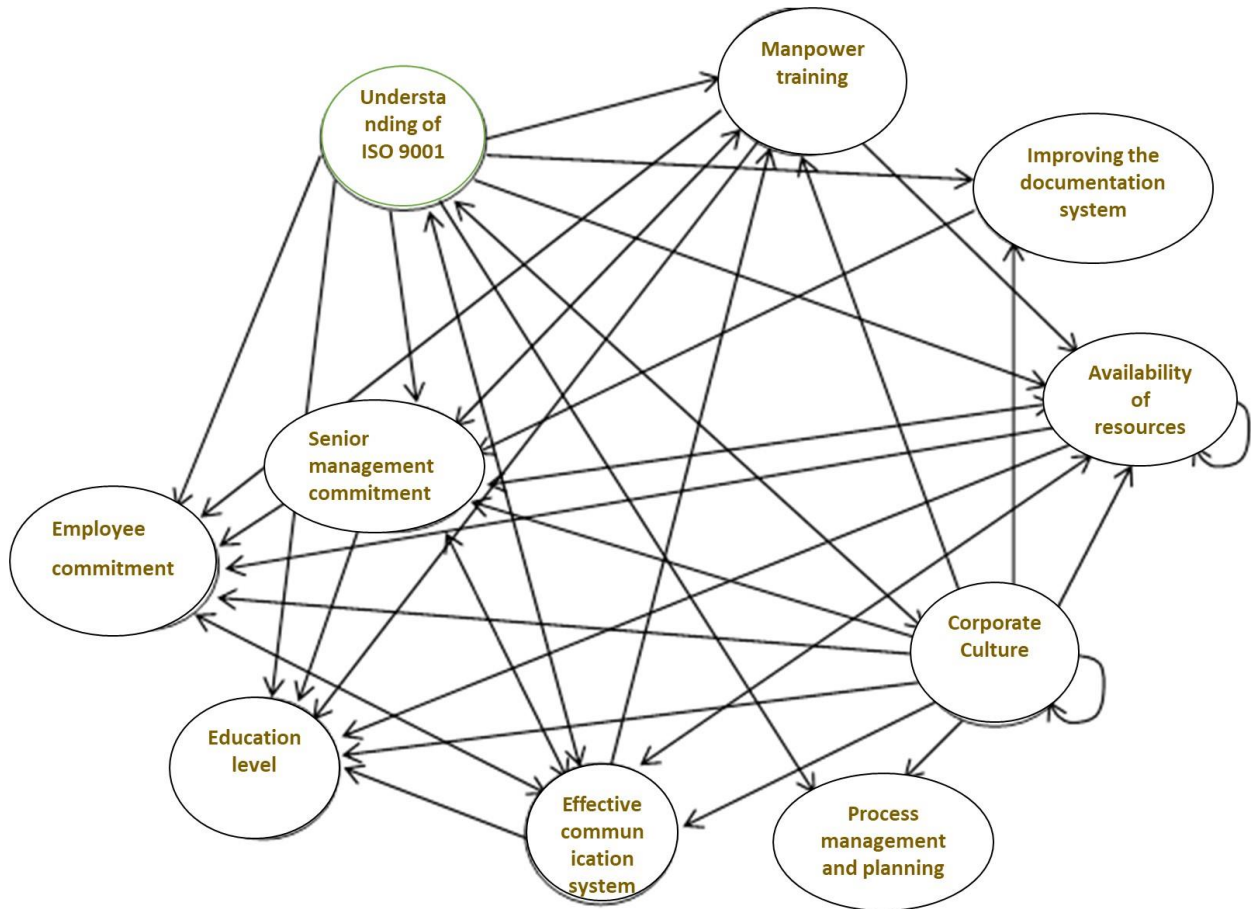
Figure 1: Research implementation process



### 3. Results

In order to discover the effective factors in the successful implementation of ISO standard, a study in the research literature introduced several factors in the successful implementation of ISO standard that have been considered by researchers in various studies.

Since it is possible that not all of these factors are effective in the successful implementation of the ISO standard, experts have been asked to determine the effectiveness of each of the factors in a questionnaire. The questionnaire was distributed among 50 employees and experts of the company and the average of opinions was calculated. Finally, the factors that had a score higher than the average were evaluated in the set of effective factors in the successful implementation of the ISO standard. The structure of the relationships between the factors affecting the successful implementation of ISO in Sunstar Group is shown in Figure 2.



**Figure 2:** Structure of relationships of factors affecting the successful implementation of ISO in Sun Star

In order to determine the importance of each of the effective criteria in the implementation of ISO, the network analysis method in fuzzy environment has been used. In order to implement the mentioned method, questionnaire number three was used, which is a pairwise comparison questionnaire and according to the indicators selected in the first stage and the communication structure and interactions of the indicators identified in the second stage, the influencing factors, in pairs Are compared. Table 2 shows the results of the network analysis process, including the ranking of key success factors in implementing the ISO9001: 2000 standard.

**Table 1: The results of the network analysis process**

key success factors	Raw	rank	key success	Raw
Understanding of ISO 9001	0.0366	7	Understanding	0.0366
Senior management commitment	0.197	3	Senior	0.197
Manpower training	0.05943	6	Manpower	0.05943
Employee commitment	0.28311	1	Employee	0.28311
Availability of resources	0.20383	2	Availability of	0.20383
Process management and planning	0.00566	8	Process	0.00566
Corporate Culture	0.004	9	Corporate	0.004
Improving the documentation system	0.0037	10	Improving the	0.0037
Effective communication system	0.10254	5	Effective	0.10254
Education level	0.1036	4	Education level	0.1036

#### 4. Conclusion

This research has been done using the network analysis process method. The purpose of implementing the ANP method is to build a model through which complex multi-criteria decision problems can be broken down into smaller components, and by rationally quantifying the simpler components and then merging these values, the final decision can be made.

According to the above ranking, the most important factor is "employee commitment" and in the second, third and fourth ranks are "resource availability", "senior management commitment" and "education level", respectively. This ranking shows the amount of great importance are the factors that affect human resources. According to the allocated weight, it can be said that the factor of employee commitment is not only the most important factor among the key factors for the success of ISO implementation, but also accounts for more than a quarter of the total weight. This is because the employee commitment factor is influenced by a large number of factors. It should be noted that since in the structure of effective factors, government support is neither effective nor unaffected, it has been removed from the network analysis model and no weight has been assigned to that index. The results of network analysis also confirm that the importance of employee commitment index shows more than other indicators, which means that due to small changes in the status of other factors, a significant effect can be observed in the successful implementation of ISO (Ikram et al., 2020). This shows the high importance of this factor. It should be noted that quality is not the duty of a particular person or group within the organization, but all employees must play their part in achieving it. Therefore, appointing a person as a management representative or in charge of the ISO 9001 deployment project or a group as a quality assurance unit alone will not guarantee the successful deployment of this system. Failure to involve the stakeholders of the processes in their formulation and implementation will cause them not to feel responsible and also to lose their accountability for matters related to the implementation of the processes. One of the factors that will be the basis for people's participation in the establishment of the system is the belief of management to do things as a group. In order to attract the participation of individuals in the establishment of the management system of the organization, it should be noted that the commitment of senior management and access to the necessary resources and commitment of employees are factors that are influenced by other factors such as the culture of the organization and attention to influential factors can be considered a solution to promote and improve the above factors.

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