Designing a Combined-fuzzy Methodology to Improve Organizational Diagnosis Process Effectiveness through Identification and Assessment of Effective Parameters

Alireza Alipour [1*], Taraneh Enayat

Islamic Azad University

Abstract

Organizational diagnosis is a systematic and scientific method to identify, categorize and single out the obstacles and their impact on organizational performance through interaction between internal and external views and preparation and setting up operational plans to solve them in the organization. Providing standard products and emphasizing on the financial measures do not guarantee the survival. Consequently, organizations are obliged to constantly analyze the market and anticipate the future needs of the customers. By examining various organizational diagnosis approaches and processes and considering the specifications and issues for all companies in Iran, this paper attempted to provide an integrated model to be established as an organizational diagnosis process in a selected company. Regarding the studies done in this field by using various models for the evaluation of the organization performance and organizational diagnosis, this research aimed to employ a comprehensive approach to identify and solve problems in organizations and to provide a fuzzy methodology to identify and rank the most important indicators of organizational diagnosis in the organization. As a case study in RojinTak Agro–industry, the study used the technique for order of preference by similarity to ideal solution (TOPSIS) as one of the multi-attribute decision-making (MADM) techniques for identifying and ranking criteria and EFQM approach in order to identify problems and provide solutions.

Keywords: Organizational Diagnosis, Index, Fuzzy TOPSIS

1. Introduction

In today's global village, organizations should be able to strengthen their processes in different areas to gain competitive advantage. Identifying the basis of these problems and their incidences in the organizations, applying effective problem-solving strategies and techniques and improving the capacity are the ways to gain competitive advantage in the given areas (Christopher, 1998). To identify and manage the problems and become an organization with excellent performance, we are required to identify the problematic areas through a systematic process (Lambert, 2000, p. 29). One of the concepts that can be used to identify and examine the issues in depth and to assist organizations to improve is organizational diagnosis; a systematic and scientific method to identify, categorize and find the reasons behind the problems and complications and their possible impact on the function of the organization in the competitive environment and develop programs to eliminate them in organizations (Cummings & Worley, 2001, pp. 56-65). However, the big question that arises here is the way we can identify the root causes of the problems and complications and the areas to be improved and design and implement effective strategies to solve them. Therefore, in this paper, the researcher is trying to concentrate on a comprehensive approach to identify and resolve problems in organizations and to introduce fuzzy methodology to identify and rank the most important indicators of organization diagnosis.

2. Theoretical Foundations

2.1. Organizational Diagnosis

As the first step in support of industries modernization process, diagnosis analysis is one

[1] * *Corresponding author, cellphone: 09360337169, email: alipoor.alireza@yahoo.com*

of the most important factors in making constructive changes in the industrial sectors. The issues of change, improvement and reform in recent years in organizations have remarkably engaged organizations and managers. Diagnosis is not a new concept or invention which has been discovered during the past two decades. In the 1950s, the concept has been applied in the chemical industry in Japan. Considering the organizations as living organisms with the possibility of being inflicted by diseases (weaknesses and problems), Japan has widely used the organizational diagnosis approach in its chemical industry.

2.2. Definitions of Organizational Diagnosis

Roy Dutta defines organizational diagnosis as "the process of understanding common system performance and providing the necessary information for the required change" (Dutta, 2005, p. 3). Friedrich Glasl maintains that "organizational diagnosis includes identifying a model for organizational understanding, data collecting and analyzing and drawing conclusions for potential changes and improvement" (Productivity Study Design in Industry, Ministry of Industry, 2011). The process of diagnosing problems as an independent product of management consultation consists of three main sections:

1. Understanding the organization and extracting the problems
2. Producing and selecting the best solutions
3. Planning to implement the selected solutions

One of the most recent methods for organizational diagnosis is the use of the EFQM excellence model approach which is established on nine (9) areas, five (5) areas of which form enablers group and express type of the activities of the organization and how they are done and the remaining 4 areas constitute the result group which determine the demands that organization should achieve by implementing enablers. This model suggests that there are several approaches to achieve sustainable excellence in all aspects of performance and, essentially, it is based on the assumption that superior results with respect to performance, customers, employees and the community are available through the realization of leadership, policy and strategy, people, partnerships and resources and processes. But above all, identifying the most appropriate indicators for diagnosing problems, which have both consistency and integrity, is the most effective factor in the process of diagnosing and improving the obtained results.

2.3. Problem Diagnosis Indicators

This study was an attempt to identify the parameters influencing the process of problem diagnosis. A database of the most commonly used problem diagnosis and performance evaluations indicators was achieved to be provided as a source of information to statistical population.

Table 1
Problem diagnosis indicators and performance evaluation in terms of resources, output and flexibility

Type of indicator Evaluation	Objective	Purpose	Example
Resources	High level of efficiency	Effective management of resources is essential for profitability.	Includes inventory levels, personnel requirement, equipment use, energy consumption and cost - total cost: including the total cost of resources used distribution cost: total cost distribution includes shipping and transportation costs - production cost: total production cost includes labor costs, maintenance and repair cost and duplication. Inventory: costs associated with inventory maintenance, including inventory buying investment, inventory destruction and corruption, inventory in the process of manufacturing, manufactured goods inventory cost.

Output	High level of customer service Flexibility	Without an acceptable output, customers will go to other companies	Includes: customer's reaction, quality and number of the final produced product performance indicators of output quality, such as: required time to produce a particular item or set of items - number of timely delivery (orders) Performance indicators of output quantity such as customer satisfaction - product quality Other examples: sales: total income - profit: total income minus costs - orders acceptance rate: proportion of orders that were accepted - timely delivery: product delivery performance measurement, order or type of material - returned order / inventory shortages: performance measurement in product availability, order or type of material - time of reaction to customer: the time between customer's order and the time of order delivery - manufacturer due: the total time required to produce one or a set of specific item - shipping errors: number of errors in orders sending - customer complaints: the number of complaints registered by customers.
Flexibility	Ability to respond to environmental changes	There should be the ability to respond to environmental changes in an uncertain environment	Number of returned orders - lost sales numbers - the number of orders with delayed transport - customer satisfaction - reaction and coordination with demand changes, such as seasonal changes - reaction and coordination in low production periods (broken machinery) - reaction and coordination in the periods of low supply – reaction and coordinating in the periods of low delivery rate - reaction and coordination while developing new products, new markets or new competitors

Figure 1: diagnosing problems indicators in the model of Iran Industry Renewal Company

In a study performed in Iranian oil industry by Abbas Zadeh (2010), diagnosing problems indicators were classified in three categories of structural factors, behavioral factors and underlying factors. These factors included (Asian, 2008):

1. Structural factors: Organizational structure, improvement methods, automated information systems, appointments and job promotion, performance evaluation.

2. Behavioral factors: Organizational culture, motivation and job satisfaction, leadership, training and staff s' development.

3. Underlying factors: Customers' focus, contractors and consultants.

According to the records of relevant studies conducted in this area and also the introduced areas from strategic planning and research center of Rojin-Tak Co. and considering the surveys in research statistical population, the most important ones were used to focus in the problem diagnosis process. Figure 2 shows the researcher's proposed model in key factors of problem diagnosis.

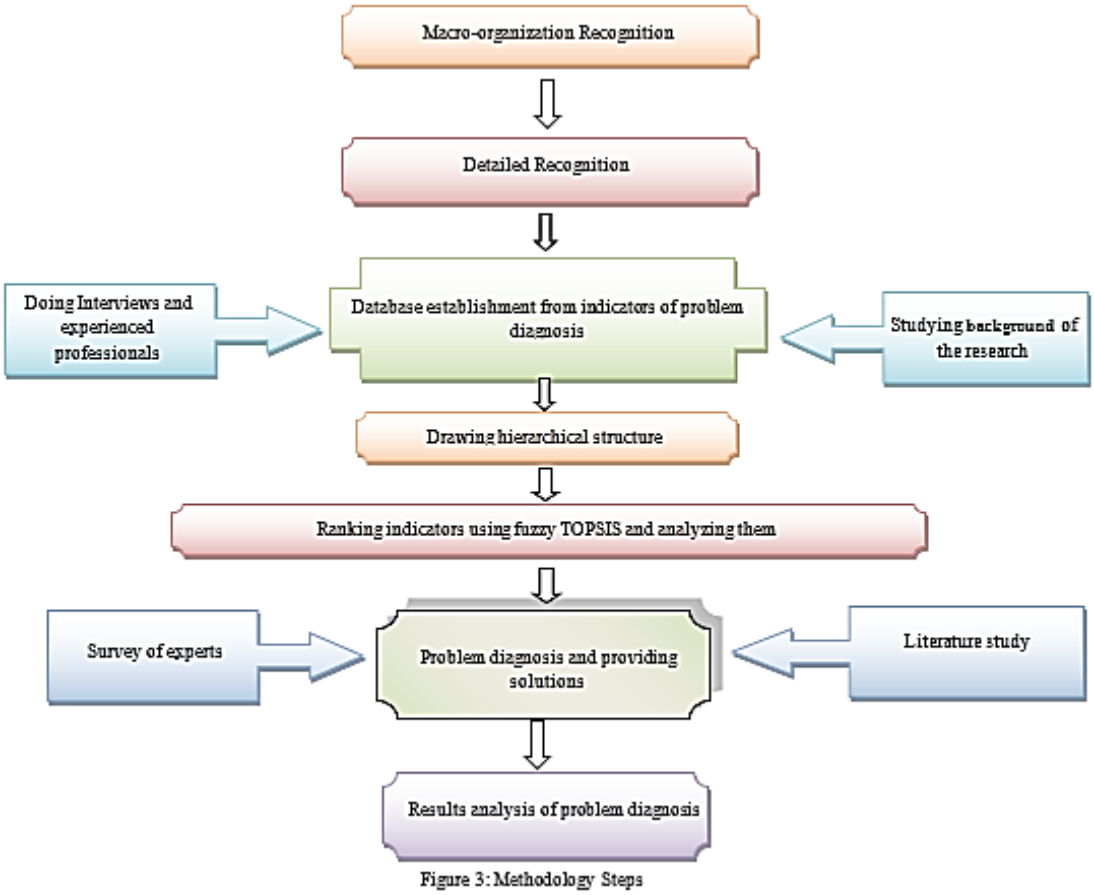

Figure 3: Methodology Steps

Figure 2: Organizational diagnosis

2.4. Fuzzy Multi-Criteria Decision-Making Methods (MCDM)

Decision making is the process of finding the best position among the available alternatives (Zeleny, 1982, p. 26). In classical multi-criteria decision making, weights of the criteria are completely known, but due to the existence of ambiguity and uncertainty in the statements of the decision-makers, the expression of data is absolutely inappropriate. Since human judgments cannot be estimated by the exact numerical values which are often imprecise, so we cannot use classic techniques for this type of decision-making problems (Sobhan Asian 2008, 69). In recent years, many attempts have been made to use fuzzy sets theory in multi-criteria evaluation methods (Chen, Hwang, 1992). Fuzzy theory was published by Professor Lotfi Zadeh in 1965. This theory is appropriate for varying conditions and incomparable circumstances. People's judgments are generally vague such as linguistic expressions: equal, moderately strong, very strong, extremely strong, and ... with one degree of importance. Fuzzy theory can help the ambiguities in the linguistic expressions of the comment givers (Semih, 2009). Desirability of alternatives in comparison to all of the criteria is usually expressed in fuzzy numbers, which is called fuzzy desirability and is evaluated by evaluation methods of fuzzy decision. Ranking alternatives is based on the comparison of the related fuzzy desirability (Yeh, Deng, 2004).

TOPSIS (Technique for Order Preference by Similarity to Ideal Situation) is known as one of the classic MCDM methods that was developed by Hwang and Yoon in 1981 for solving MCDM problems which was based on ideal determination. The first chosen alternative should have the shortest geometric distance from the positive ideal solution and the longest geometric distance from the negative ideal solution.

Decision making process using fuzzy TOPSIS method is (Δ) ws:

Step 1 - getting the weight vector w ~ j

Step 2 - normalizing the obtained matrix from the survey of experts about the strategies that the new matrix is as follows:

$$R = [r_{ij}]_{m\times n} \quad (1)$$

$$B \subseteq \{1, ..., n\}$$

is about the indicators which are related to profit (Formula 2).

$$r_{ij} = \left(\frac{a_{ij}}{d_j^*}, \frac{b_{ij}}{d_j^*}, \frac{c_{ij}}{d_j^*}, \frac{d_{ij}}{d_j^*}\right), \quad j \in B \quad (2)$$

(8) ...,n}

is about indicators which are related to the expenses (Formula 3).

$$r_{ij} = \left(\frac{a_j^-}{d_{ij}}, \frac{a_j^-}{c_{ij}}, \frac{a_j^-}{b_{ij}}, \frac{a_j^-}{a_{ij}}\right), \quad j \in C \quad (3)$$

Step 3 - so the weighted matrix is in the form of formula 4:

$$V = [v_{ij}]_{m\times n}, \quad i = 1,2,...,m, \quad j = 1,2,.$$

$$v_{ij} = r_{ij} \otimes w_j \quad (4)$$

(10)

Step 4 – Determining the Fuzzy Positive Ideal Solution (FPIS) and Fuzzy Negative Ideal Solution (FNIS) (formulas 5 and 6):

$$\tilde{v}_j^* = \begin{cases} \max\limits_{i=1,...,m} \tilde{v}_{ij}; j \in B \\ \min\limits_{i=1,...,m} \tilde{v}_{ij}; j \in C \end{cases} \qquad \tilde{v}_j^- = \begin{cases} \min\limits_{i=1,...,m} \tilde{v}_{ij}; j \in B \\ \max\limits_{i=1,...,m} \tilde{v}_{ij}; j \in C \end{cases} \quad (5)$$

$$FPIS = \{\tilde{v}_j^* \mid j = 1, ..., n\}$$

$$FNIS = \{\tilde{v}_j^- \mid j = 1, ..., n\} \quad (6)$$

Step 5 - Calculating the fuzzy distance measure using Euclidean distance:

$$D(d_{??}) = \sqrt{\frac{1}{4}\left[(a_1 - b_1)^2 + (a_2 - b_2)^2 + (a_3 - b_3)^2 + (a_4 - b_4)^2\right]} \quad (7)$$

Distance of every strategy from positive ideal is calculated by the formula8:

$$d_i^* = \sum_{j=1}^{n} d(\tilde{v}_{ij}, \tilde{v}_j^*), \text{i} = 1, ..., m$$

$$d_i^- = \sum_{j=1}^{n} d(\tilde{v}_{ij}, \tilde{v}_j^-), \text{i} = 1, ..., m \quad (9)$$

Distance of every strategy from negative ideal is calculated by the formula 9:

Step 6 - Calculate the relative closeness to the ideal ranking (formula 10):

$$CI_i = \frac{d_i^-}{d_i^- + d_i^*}, \quad$$

3. Research Method

3.1. Case Study

This study is "practical" in terms of purpose and "descriptive-exploratory" in terms of the method of data collection and can be considered as a case study; implementation scope of this research is Rojin-Tak production group. This research can also be examined in other organizations independently and separately.

3.2. Research Methodology

The proposed method is an integrated-applied method, which has been designed and developed specifically and for operational conditions in the Rojin Tak. In this method, a

group of key managers and experts of Rojin Taak cultivation and industry group (managers and experts with work experience of over 10 years) were selected as the research statistical population. After identifying the research team, the researcher selected TOPSIS method with fuzzy data by studying and analyzing different techniques of Multi Criteria Decision Making (MCDM) to be able to take into account both quantitative and qualitative indicators simultaneously in addition to adapting research subject. For this purpose, the researcher designed a questionnaire and surveyed the population to achieve required information for diagnosis process and evaluating indicators determination by analyzing these data. Then, considering their effectiveness on improving organizational performance in a survey process through a questionnaire, the researcher collected the data and analyzed them using TOPSIS techniques and Microsoft Excel, he provided target priority. Finally, the researcher identified and presented the corresponding solutions by the formation of multi-specialized teams in each area and during meetings held with the participation of experts and specialists in various fields for problems diagnosis and ended with presenting solutions processes. Stages of the research implementation are shown in Figure 3.

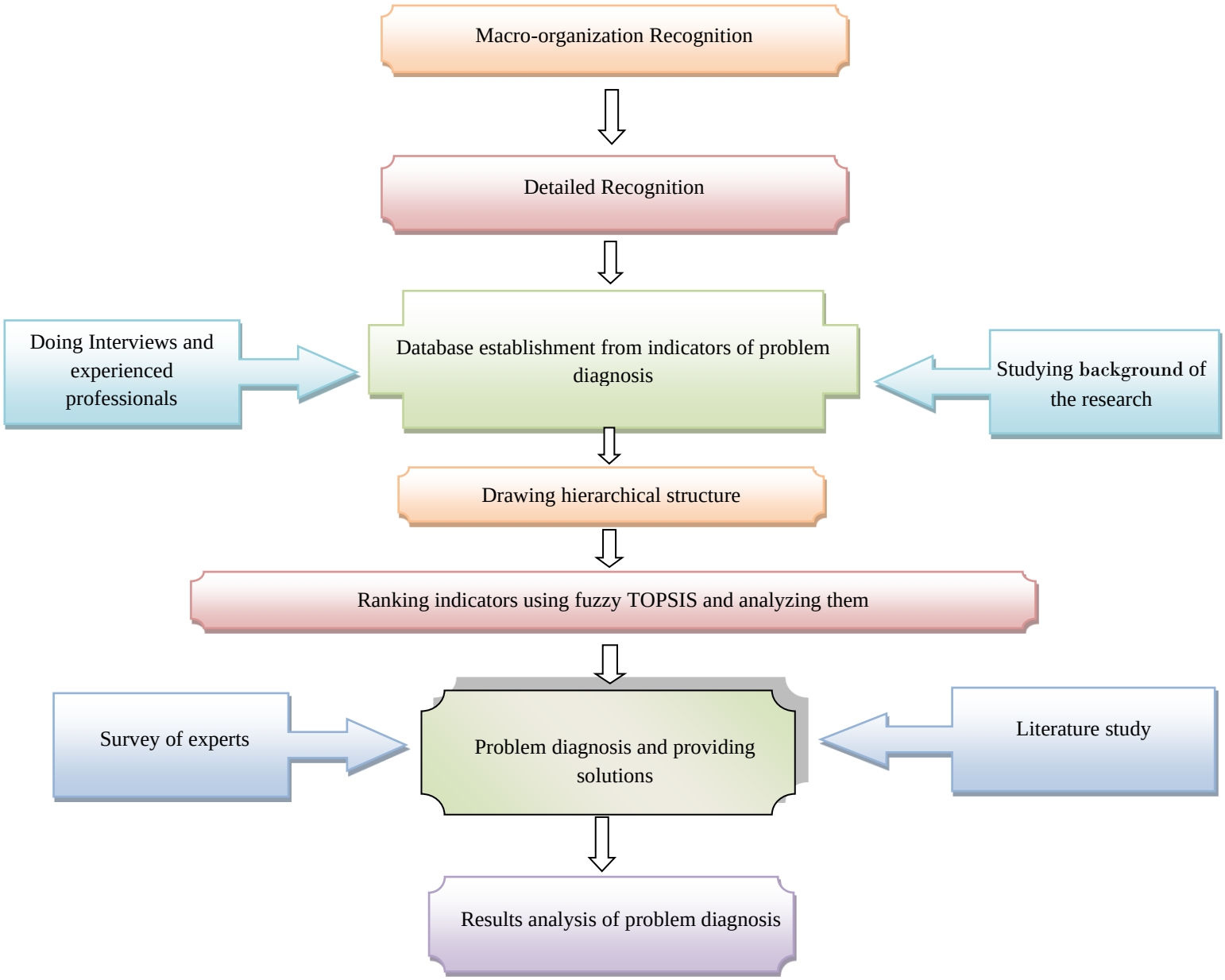

Figure 3: Methodology Steps

4. Data Analysis

As noted above, in order to achieve the expected results, the researcher designed a questionnaire identify the most important indicators of diagnosing problems in the first phase and in the second phase, necessary data and information are collected to diagnose the problems of the company. After diagnosing the problems, the specialized committees in each area investigated the causes and provided the solutions to solve the problems. The results of these measures are provided in the following paragraphs.

4.1. Ranking Indicators of diagnosing problems Using Fuzzy TOPSIS Techniques

In this step, which is considered as the most sensitive stage of the project, the author applied TOPSIS technique for more accurate prioritization and selection of indicators. In addition to considering the distance of an option (indicator) from the ideal point (maximum effectiveness in the occurrence of the problem), the distance of that option (indicator) from negative ideal point (minimal effectiveness in the occurrence of problem) is also considered. In 2000, Chen developed TOPSIS method in fuzzy environment in an article. In this method, the weight of various criteria and rating of qualitative criteria are determined regarding the linguistic variables; these linguistic variables can be expressed as positive trapezoidal fuzzy numbers that are shown in Table 2.

Table 2
The linguistic variables for determining the weight of each criterion

Very low	VL	(0, 0, 1, 2)
Low	L	(1, 2, 2, 3)
moderately low	ML	(2, 3, 4, 5)
Medium	M	(4, 5, 5, 6)
Moderately high	MH	(5, 6, 7, 8)
High	H	(7, 8, 8, 9)
Very high	VH	(8, 9, 10, 10)

The Hierarchical matrix of diagnosing problems indicators is shown in Figure 2; as previously mentioned, this matrix was provided by the study that was conducted by the researcher in this area and a survey of senior executives of Rojin Taak Company. Because of the large size of tables related to fuzzy TOPSIS technique calculation, we confine ourselves to provide the final table in this section. Table 3 shows the proximity coefficient and the final ranking of each option (diagnosing problems indicator). As can be seen, indicators such as "quality improvement" and "customer relationship management" have the greatest impact on the occurrence or non-occurrence of the problems; knowing this can be very useful in diagnosing problems and also developing future improvement plans to resolve the problems. Finally, after the implementation of the project and during the next time periods, we can be assured of improvement plans effectiveness by monitoring the obtained indicators.

Table 3
Coefficient proximity and the final ranking of options

Si	Indicators	CCi	Proximity Coefficient	Priority No.
S1	Organizational culture	CC1	0.540412871	3

S2	Job satisfaction	CC2	0.515404877	4
S3	Training and promotion	CC3	0.469756497	6
S4	leadership	CC4	0.397490905	10
S5	Efficiency and effectiveness of the methods	CC5	0.396270082	12
S6	Organizational structure	CC6	0.484572987	5
S7	Process management system	CC7	0.450710694	7
S8	Information technology	CC8	0.341127857	13
S9	Quality improvement	CC9	0.659996819	1
S_{10}	Domestic law	CC10	0.397490905	11
S_{11}	Customer Relationship Management	CC11	0.592902319	2
S_{12}	Currency fluctuations	CC12	0.431469174	8
S_{13}	Identifying competitors and market changes	CC13	0.415611917	9

list of the main causes and effects. Afterwards, the diagnosed complications were compared with each other in validation meetings (intra-organizational CFTs) and root causes of each problem were diagnosed. Table 4 presents the complications of Rojin Taak Company together with their roots and causes separately in each domain.

4.2. Diagnosing the problems and their causes

In this phase, along with the team the researcher first assessed and audited every individual functional areas of the company based on the EFQM approach and through existing questionnaires, checklists, and methods and after diagnosing the causes of the problems, each expertise of the functional areas provided a

Table 4
List of problems

No.	List of Problems	Domain	Significant Causes and Roots
1	Lack of success in recruiting and hiring qualified and competent human forces	Human Resources	Lack of human forces recruiting and hiring proportionate to the company's needs and plans

2	Lack of efficient educational system for training at the beginning of service and during service		Pale training unit in the organizational structure of the of the companies and little attention to the process of training in human resources development and organizational performance improvement
3	Lack of desirable occupational safety and health		Little attention to occupational safety and health issues and absence of organizational unit with clear responsibilities in the area of health and safety
4	Personnel’s uncertainty of job security		Lack of transparency in the company's policies regarding personnel maintenance - lack of career development programs
5	Low levels of consultation and participation of executives in company’s decision-makings, lack of strategic vision and low efficiency meetings		Failure to recognize the importance of organizational communication and participation in organizational culture and the company's management style as well as senior managers’ job dissatisfaction about their positions and power of decision-making in interaction with managing director- also existence of partial thought among the managers rather than considering the improvement of the performance of the whole organization
6	Little attention to teamwork		Little attention to the positive effects of teamwork in the company's organizational culture and management style
7	Disproportionateness between salaries and bonuses with their performances		Lack of personnel's performance appraisal programs and Chords pay commensurate with the individuals’ performance
1	unfamiliarity of the company with competitors (investment, facilities, etc.), customer needs and market conditions		Lack of market research team: lack of awareness of customer needs and market conditions and lack of adequate information on the volume of investment in facilities and competition policies in the field of 4P
2	Unsuccessfulness in potential markets (for trans-regional markets, markets in neighboring countries, parts of the domestic market, ...)	Sale	Due to market conditions
3	The lack of clear product position and pricing strategy		Unfamiliarity of sale unit with product life cycle and strategies related to the product life cycle courses
4	The lack of communications with intermediate and final customers		Lack of independent and professional after-sales service

5	Organization sale is uninformed of effectiveness and efficiency of its operations and achievements to sale targets		Lack of coordination between determined and implemented programs (lack of regular monitoring program schedule)
6	company logo is unfamiliar to ultimate goal market customers		Special budget is not allocated to promotion and advertising and encouraging the promoting programs are not available in this company
7	lack of intermediate customers' satisfaction (Chain member companies) with timely receiving of orders		Lack of careful planning for delivery of orders and interaction with customers in timely receiving of orders
1	Impossibility of correct and complete diagnosing and calculation of the final cost and benefit		Lack of cost accounting comprehensive system (Final Cost)
2	Deficiencies in debriefing and reporting systems and lack of comprehensiveness in some reports (reports of the board of directors, accounting, management, etc.)	Financial	Lack of the unit or establishment of representatives from industrial accounting department in the factory and mismatch of technical, scientific and educational capabilities of the mentioned department staff towards the manage expectations
3	lack of the fulfillment of production sales and profitability budget		Lack of appropriateness of the capacities of human sources and production lines with the set budget
No.	List of problems	Domain	Significant causes and roots
1	Excessive inventory accumulation		Lack of purchasing systems and lack of precautionary saving definition and not-coordinated product strategy
2	Lack of determining critical components of the supply chain and logistics		Lack of SWOT analysis in the total supply chain and lack of integrity
3	Lack of cost targeting in the supply and provision based on competition criteria.		Lack of monitoring system of the costs, logistics, and supply
4	The possibility of bias in the selection and evaluation of contractors	Trading	Lack of proper system of selection and evaluation of subcontractors
5	Different views in the expression of objectives		Lack of strategy - lack of staff involvement in the development of quantitative and qualitative objectives of unit, qualitative and quantitative trading units and companies
6	Lack of quick action in trading operations		Insufficient staff, lack of familiarity with new tools in the supply chain management
7	Lack of responsible for evaluation		Inappropriate organizational structure

8	Disproportionateness of workload with trading personnel		Inappropriate organizational structure
1	Lack of electronic information coding system to re-access the information on the network		Lack of feeling need
2	Lack of defined system for access levels to electronic and archival information for different people		Lack of feeling need
3	Lack of business intelligence	Information Management	Lack of instructions and techniques of collecting environmental data in different technical fields
4	Development of non-homogeneous technologies		Industrial automation weakness towards information official automation in company
5	Lack of self-assessment system in the domains		Lack of development strategies of information technology applications of information systems
1	Inadequate space for the storage of materials, components and products		Lack of harmonious development of warehouse space to the company production volume increase
2	Lack of production personnel's attention to their responsibilities towards product quality		Lack of adequate training and creating culture about the importance and role of quality - inadequate control instructions and quality assurance
3	Inadequate quality control personnel in the production line and laboratory		Inadequate attention to control and quality assurance activities.
4	Incomplete product development process	Production Process and Quality	Insufficient sensitivity to control parameters and standards and customer satisfaction
5	Lack of the effective use of new techniques of quality management		Lack of quality control and quality assurance personnel's familiarity with new techniques of quality management
6	Low response rates of units associated with quality and production		Inadequate attention to quality control and quality assurance activities by related units
7	Weaknesses in the implementation of quality assurance system		Inadequate attention to control and quality assurance activities and lack of related motivational systems

solutions that have been listed in Table 5. At this stage, first the researcher analyzed the diagnosed problems by creating a specialized team of experts from in and out of the company (consultants, contractors, etc.) and diagnosed and defined solutions that are listed in Table 5.

4.3. Providing strategic solutions to remove the problems

Finally, the last phase of the project is devoted to determine the strategic solutions to overcome the problems and complications of the company and to diagnose and define the

Table 5
List of solutions

No.	Presented solutions(S)
1	Development and deployment of performance evaluation system
2	Training quality management techniques and implementing continuous improvement projects to improve product quality level
3	Managing directors' support from mechanisms of proposals system, meetings and gatherings of managers, directors and staff...
4	Involving production personnel's performance in terms of product quality in their wages and bonuses
5	Providing strategic performance management system (based on the BSC method)
6	Formulation of supply and procurement chain strategy
7	Preparation of job classification design and its implementation in recruiting programs and in personnel's performance evaluation programs
8	Ergo-metering and personnel appropriate setting
9	Investment in technology development, equipment and specialist human forces from long-term financial resources (hardware and software investment)
10	Full reviewing the quality plans and improving the process of product development
11	Training at the beginning and during service based on qualifications to obtain job
12	Considering the level of the quality and customer satisfaction in terms of quality, delivery time, product final cost in trading plan
13	Reviewing the duties and controls volume of QC unit- setting the optimal personnel and requirements to obtain control personnel and quality ensure
14	Providing job promotion path system
15	Effective utilization of manufacturing requirements planning systems (MRP) to reduce the need for inventory of materials and parts and storage space
16	Training, implementing and employing TDP method
17	Creating market research team in the company and a team related to diagnosing competitors which deals with the environment evaluation and customer needs, competition policies, 4P, product diversity - diversity of market needs
18	Defining code system, how to store and information access levels
19	Developing integrated system of shopping needs and internal service receiving units requirements

20	Creating independent and specialized after-sale services unit
21	Developing modern logistics costs, supply and procurement systems
22	Determine measures for the assessment of the objectives and implemented plans (sale marketing)
23	Using promotional and encouraging programs (budget allocation for *promotion* to introduce company brand to the customers)
24	Preparing and implementing industrial accounting comprehensive system
25	Preparing order processing system in collaboration with supply chain members of the company for planning and timely delivery of orders
26	Reviewing the factory layout design (equipment layout, materials and parts transportation design, and storage space) and developing the production and storage space
27	Establishment of industrial accounting unit or representatives of it in the factory location and diagnosing, recording and complete reporting of the financial events
28	Investment in the automated control of production lines
29	Providing the health and safety services instructions
30	Defining the type of information and channels to collect environmental information about individual and operational areas of expertise to improve business intelligence
31	Setting long-term objectives of applying IT and providing periodical evaluation guidelines in the amount of development and application of information technology
32	Diagnosing general and specialized criteria and specifications for organizational occupations and evaluating candidates' hiring based on job qualification requirements and also managing director's participation in the experts recruiting
33	Planning and creating discipline to supply parts and providing orders
34	Designing and applying suitable selection and evaluation system of subcontractors

worth mentioning, this way the company more effectively understands that by the implementation of each solution which problem can be eliminated and also considered solutions can be implemented with more focus.

Finally, after diagnosing areas of study, extracting their roots and complications and providing solutions to every problem, the relationship between the solutions and the diagnosed complications have been shown (Table 6). In fact, Table 6 shows that every solution presented in Table 5 is considered to fix which problem that is presented in Table 4. It is

Table 6
Relationship between problem and solutions

No	Problem	Solutions covering problem
1	Lack of company's success in recruiting qualified and competent human forces	S_7-S_{32}

2	Lack of efficient educational system for training at the beginning and during service	S_{11}
3	Lack of acceptable level of occupational safety and health	S_{29}
4	Personnel's uncertainty of the existence of job security	S_{14}
5	Low levels of executives' consultation and involvement in the company's decision-making, lack of strategic vision and low efficiency meetings	S_3
6	Little attention to teamwork	S_{30}
7	Mismatch between salaries and bonuses and their performance	S_1-S_5
8	Unfamiliarity of the company with the competitors' situation (investment, facilities, etc.), customer needs and market conditions	S_{17}-S_{23}-S_{30}
9	Failure in the potential markets (trans-regional and neighboring countries markets, parts of the domestic market, ...)	S_{17}
10	Lack of effective use of new techniques of quality management	S_2-S_{16}
11	Low response rates of the units associated with the quality and production	S_{12}
12	Weaknesses in the implementation of quality assurance systems	S_4-S_{12}
13	Excessive inventory accumulation	S_{19}
14	Lack of determining critical components of supply chain and logistics	S_6
15	Lack of cost targeting in supplying and procuring based on competition criteria	S_{21}
16	Possibility of bias in the selection and evaluation of contractors	S_{34}
17	Different views in the expression of objectives	S_6
18	lack of quick action in trading operations	S_{11}
19	Lack of responsibility for evaluation	S_8
20	Disproportionateness of workload with trading personnel	S_8
21	The lack of clear product position and pricing strategy	S_{12}-S_{20}
22	The lack of communications with intermediate and final customers	S_{20}
23	Organization sales is uninformed of effectiveness and efficiency of its operations and achievements to sales targets	S_{22}
24	Company logo is unfamiliar to ultimate goal market customers	S_{23}
25	Lack of intermediate customers' satisfaction (chain member companies) with timely receiving of orders	S_{25}-S_{33}
26	Impossibility of correct and complete diagnosing and calculation of the final cost and benefit	S_{24}
27	Deficiencies in debriefing and reporting systems and lack of comprehensiveness in some reports (reports of the board of directors, accounting, management, etc.)	S_{27}
28	Lack of the fulfillment of production sales and profitability budget	$_9$S-$_8$S
29	Lack of electronic information coding system to re-access the information on the network	S_{18}
30	Lack of defined system for access levels to electronic and archival information for different people	S_{18}
31	Lack of business intelligence	S_{30}
32	Development of non-homogeneous technologies	S_{28}
33	Lack of self-assessment system in the domains	S_{31}
34	Inadequate space for the storage of materials, components and products	S_{15}-S_{26}

35	Lack of production personnel's attention to their responsibilities towards product quality	S_2-S_{10}
36	Inadequate quality control personnel in the production line and laboratory	S_{12}-S_{13}
37	Incomplete product development process	S_{10}-S_{12}

5. Conclusion

In this paper, the researcher tried to design an operational model for implementing diagnosing problems process by considering all the introduced aspects, firstly, to determine the most important indicators of problems diagnosing and then to identify, find the root cause, and classify the problems considering the selected parameters and finally presenting solutions related to each one in the form of a case study in Rojin Taak Company. Before starting the process of problem diagnosing, the researcher diagnosed the most common criteria and indicators of problems and reached to a three-branch model (human, structural and environmental factors). Then, identified indicators were given to the statistical community to be evaluated and be ranked according to their degree of effectiveness in the diagnosing problems process by fuzzy TOPSIS techniques. The results obtained indicate that the three quality improvement indicators, customer relationship management and organizational culture with weights of 0.66, 0.59, and 0.54, were respectively selected as the most important indicators of problem diagnosing. After identification and investigation of the six major areas (under EFQM approach) and planning to identify them in detail, the researcher attended in the company and studied the areas by creating problem-diagnosing team and extracted problems of each section separately along with their roots which are shown in Table 4. Furthermore, the researcher provided appropriate solutions for each problem by creating multidisciplinary team with professional members from all areas and holding several brainstorming sessions which is also visible in Tables 5 and 6. It should be mentioned, since the number of identified solutions is 34, and monitoring the implementation of this number of solutions by Rojin Taak's senior executives were not easy to find and due to financial restrictions it was not possible to implement the project for all of them simultaneously. |It was attempted to categorize solutions and define development and improvement plans for control and implementation mechanism design. The mentioned plans included: reorganization of organizational function and structure, organizational strategy planning, organization development plan (hardware and software), human resource development plan, improving plan of the quality and technical knowledge, supply chain management plan, marketing and sales plan, information management supplemental plan, and financial plan. That the three solutions of reorganization of organizational function and structure, organizational strategy planning and organization development plan are related to the entire organization and six next plans cover the six functional areas. The researcher hopes that by developing this method in the manufacturing companies and even service institutions, the process of diagnosing problems is done more accurately and more efficiently and spending or wasting additional resources to identify and analyze organizational areas is avoided.

References

[1] Chen (2000), Extension of the TOPSIS for Group Decision-making under Fuzzy Environment, Fuzzy Sets and Systems, No. 114, pp. 1-9.

[2] S.J. Chen and Hwang C.L. (1992), Fuzzy Multiple Attribute Decision Making Methods and Applications. Springer, Berlin.

[3] M. Christopher, M. (1998), Logistics and Supply Chain Management, 2nd Ed., London, Pitman Publishing.

[4] Cummings & Worley (2001), Essentials of Organization Development and Change, 7th Ed., south Western, pp. 56-65.

[5] R. Dutta, (2005), Organizational Diagnosis, New York, p. 3.

, EFQM Levels of Excellence, (2005) European Quality Award Information Brochure for 2003, v6, 2005.

[6] G. Friedrich (2011), Organization Change Management, productivity study design in industry. Ministry of Industry, Tehran

[7] C. L. Hwang and K. Yoon (1981). Multiple Attribute Decision Making: Methods and Applications, Berlin, Springer.

[8] Lambert, D.M. and M.C. Cooper (2000), Issues in Supply Chain Management, Industrial Marketing Management, 29.

[9] O. Semih, et al. (2009). Long Term Supplier Selection Using a Combined Fuzzy MCDM Approach: A Case Study for a Telecommunication Company, Journal of Expert Systems with Applications 36, pp. 3887–3895.

[10] A. Sobhan, (2008). The Use of BSC for Organization Operation Assessment, Semnan Tube and Roll Firm Group, MSc of industrial management, Islamic Azad University.

[11] C.H. Yeh and Deng H. (2004). A Practical Approach to Fuzzy Utilities Comparison in Fuzzy Multi-Criteria Analysis, International Journal of Approximate Reasoning 35 (2), pp. 179-194.

[12] M. Zeleny (1982). Multiple Criteria Decision Making, McGraw-Hill, New York, 1982.