

OFFERING SUITABLE MODEL FOR ORGANIZATIONAL STRUCTURE (CASE STUDY: ALFA ORGANIZATION)

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Abstract

This study presents a model of organizational structure (Case Study: the alpha) using analytic hierarchy process and fuzzy mathematics (FAHP) Based on a comprehensive review of literature on the subject. To collect the data from the questionnaire, sensitivity analysis is used by a factor of less than 1.0. In this study, study population of all organization experts consisted of both managers and experts working in the Alfa are 408 people. The sample according to the method of Morgan's estimating sample size, 191 patients was obtained. To analyze the data using hierarchical process, Expert Choice software was used. The results of the research questions analysis showed that, the greatest impact on the organizational structure of the technology and the most appropriate model for the organizational structure of the provincial capital of East Azerbaijan Broadcasting systematic analysis of output fuzzy hierarchical structure of experts.

Keywords: organizational structure, Fuzzy AHP, Broadcasting East Azarbaijan Province.

1. Introduction

Organizational structure and proper design of it, has been the major concerns of management scholars from the beginning. "Classical School theorists were more influenced by the viewpoint of mechanics and machine. This approach in the design of the organizational structure of formal relations, division of labor and excessive centralization stressed. Issues of human relationships and psychosocial needs of man, by the neoclassical school of scholars is pulled in the field of management in general and structure design in specific. In these two viewpoints, the element of change as an important component in the management of organizations isn't considered. Existence of business environment in the early twentieth century, justified the lack of attention to make changes. Unlike the early twentieth century, today the need for flexibility to adapt the changing world is an essential issue." Englehard & Simmons, 2002, 113. (This means that the value and importance of speed (adaptation to the environment), in business has been confirmed by evidence. Wagner & Digman, 2009. (Select the appropriate organizational structure is a necessary condition for successful adaptation to the changes. It will be possible by constant designing

of organizational structure. Griffin, 1385, p. 102) .Although the literature is rich literature on the design of organizational structure, but lacks the operational models for proposing the appropriate structurescheme. The theories of organizational structure are mainly conceptual models. While the design of the organizational structure, quantitative mathematical models are needed. The complexity of issues related to the design of organizational structure on the one hand, is the result of a large number of components and relations (weavers live, 1388, 105) which are in these concepts on the other hand is the result of the nature of the variables that are used in these discussions. More variation in these debates and concepts used to describe are the linguistic variables are. Unlike linguistic variables quantitative variables, are imprecise and ambiguous. These variables are added to the complexity of the concepts makes modeling more difficult than before. Fuzzy math, are appropriate mathematics for modeling such vague concepts and complex. On the other hand, decision technology, is supporting with more features and functionality every day. Hardware and software growing development capabilities is playing importantrole in this support. Today, parallel processers enable to design parallel and very fast inference engine. Progress in the fields of mathematics, science, and computer possibilities and new findings on the human perceptual mechanisms of human decision every day provides new algorithms for risk analysis optimization and modeling. Inventing of new approaches in the use of intelligent systems, reduce the supporting of decision support systems (that is the main weak points of decision support systems) to structured patterns (Agriculture, 1391, 6).nowadays learner systems are able to design model and decision rules in association with environment and In similarity with the human mind gradually improve and develop it in action. These trends promise a better future for tomorrow's of this technology. This interpretation means the effectiveness of decision support systems are the usefulness of them in organization's success. In this study with regard to the descried issues this matter that what is the model of organizational structure of East Azarbaijan province by using intelligent systems and structured patterns will be discussed.

Framework and background research

1.1. Organization structural dimensions

Structural dimensions determine the type of organic and mechanic structure. (Alwani, 1386, 76). Various dimensions are identified and presented by researchers and experts. Structural aspects identified by experts are: Complexity, Official, focused, specialty, Hierarchy of authority, Professionalism, having Standard, The proportion of employees.

In general, among these variables three dimensional structures are more importantand somehow they include other variables. These variables are: Element of complexity, Centralization and formalization (Robbins, 1998) Which are generally considered to provide an organizational structure.

Table 1.1. Organizational Dimensions

Organizational Dimensions	Resource
Hierarchical authority	Schein (1998); Nystrom and others (2002), Wang (2001), (Ahmad (1998
Being professional	Schein (1998); Bornz (2000), Chang et al. (2011), Cao ((2005
There are standard and proportion of employees	Lincoln (1967), Tichy and others (1997); Nystrom and ;(others (2002
Complexity	Robbins (1987); Bornez (2004), Chang and others. (2011), ;(Chow and Cao (2008); Liao and Cheung (2011
Recognition	Robbins (1987); Daman pour and Goyala Krishnan (1998); Morton and Ho (2008), Wang (2001); Liao and Cheung ,(2011), Chang et al. (2011); Kluver and others (2011)
Centralization	Robbins (1987), Chen and others (2007); William and Bolynsa (2009); Liao and Cheung (2011); Morton and Ho ;((2008), Wang (2001

1.2. The structure contact dimensions

What is an effective structure for their organization is the problem often managers encounter. For designing an appropriate structure, effective factors on identified structure must be considered. Contextual dimensions are representative of the entire organization and its position. (Daft, 1999, 304). These variables determine the status of structural dimensions of organization. Contextual dimensions are:

1. The organizational culture
2. The environmental uncertainty,
3. Technology,
4. The size of the organization and
5. Strategy, (Ibid, 309).

In this study, according to the default contingency approach, three variables of environmental uncertainty, technological and the size of organization are considered as effective contextual dimensions to structural dimensions. . Organizational culture and strategy in the context of discussions is the topic that is known as the power and control. Issues of power and control are outside the contingency approach then content of organizational culture is not considered. Hereunder each of these dimensions and their relationship is explained by the structural dimensions.

1.2.1. Environmental uncertainty

"The environment includes factors which are outside the boundary of organization. Some of these factors are: Industry, government, customers, suppliers of goods, financial institutions and other organizations are the most important environmental factors which are effective to an organization".(Daft, 1385.33). Different organizations with different degrees of environment are facing environmental uncertainty. Management in organizations by restructuring efforts to reduce environmental uncertainty. Miles and Snow believe that

new organizational forms appear in response to environmental conditions »(Miles & Snow, 2011, 62). Based on empirical research the type of a company's organizational structure should depend on the characteristics of the environment that it surrounds (Lysonski & et al, 1995). Environmental uncertainty can be defined as being unpredictable. Environmental uncertainty especially arises from the lack of predictability of various groups such as suppliers, competitors and customers (. Duncan, 2008).

"The organizations that operate in an uncertain environment than organizations that are active in the certain environment must have flexible structure to respond to an uncertain environment. Burns and Stalker in study of the relationship between organizational structure and environment, introduce two types of structure that are at the two sides of a continuum. Mechanical structure is at one side and organic structure is at the other side of the continuum. The nature of the organization determines what structure should be use".(Katsikea & et al., 2011, 309)

"Richardhal introduced environmental factors into two possible categories stable or unstable, homogenous or heterogeneous."(Benson & Decker, 2010, 741)

1.2.2. Technology

"The technology is a method that organizations use to convert their data or consumable items to output or product.

Every organization for converting the resources and commodities into financial, human and physical form of the product or service must use at least one technology. "(Robbins, 1384, 88). In other words, "the technology is the nature of the production subsystem, including the operations of the production process (production items into consumable items)" (Daft, 1385, 32).

Champion defined Technology as a set of hardware, software and hardware that allows the workflow and productivity data. (Champion, 1998). Skarmvzy introduced all forms of technology, storage, exchange and use of information in various forms of business data, voice, images, animations, multimedia presentations and other forms that have not yet created (Scaramuzzi, 2002)

Many researchers have attended technology factor when analyzing organization.

Including the work of Woodward (1958 and 1965), Thompson (1967), Peru (1967), Bronze Vastakr (1961), Blanr (1964), Vtryst (1965), Vlarns Vlvrrsh (1967)

"Charles Perrault instead of turning his attention to technology he addressed knowledge-based technology. He defined technology as a method or action that one use for altering the action or object, concept and purpose of work. "(Robbins, 1385, 160). He has also classified technologies according to table 2 based on the fact that a person can use the logical reasoning or speculation henceforth to find the solution.

Table 1.2. Classification of technology from the perspective of Peru

Variability of duty		
Low diversity	High diversity	
Unique	Artistic and artisanal	Uncertain and useless analysis
Engineering	Repeated	Specific and analyzable

The analysis
of the problem

1.2.3. Size of organization

Several studies by people like Blaauw, Meyer and others in relation to the size of the structure are made. Although sometimes contradictory findings, but in general it seems that in large organizations to smaller organizations are more rules and regulations (Zheng & et al., 2010, 879).

The size of organization, large or small, that is determined by the number of personnel (Daft, 1999).

Expanding the role of organizations in the social, debate about the boundaries of organization goes as far as that cannot determined whether who are within the organization and outside the organization. a researcher named Kim brilliant in his famous paper of 1976 showed that the size or magnitude of organization has four areas which are :

1. The physical capacity,
2. Number of employees
3. The number of data and outputs
4. The amount of resources available to the organization in the form of wealth or net assets "(Hall, 1384, 141)

In this study the characteristics of Kim Berli used as indicators of the size of the organization.

1.3. Mintzberg s five organizational structure models

If core operation control the organization, non-centralized decision is adopted.. This fact creates a structural design known as a professional bureaucracy. If senior management takes control of the organization, organization is focused, simple structure appears. By sovereignty of middle managers the organization will have a lot of autonomy and structure takes part form. If analysts and technical experts prevail, control is exerted through standardization and the resulting structure, would be machine bureaucracy. (Bafande Zende 1388, 113). Finally, if the staffing and supporting forces are governing the organization control applies through a two-way exchange and balance, the Adhvkrazy structure appears.

Each of implied structures is selected based on specific requirement criteria. Since in the present research Mintzberg's theory for classification of organizations is selected.

1.4. Analysis process of hierarchical fuzzy

Analysis process of hierarchical is one of the most comprehensive designed systems for decision making with multiple criteria. This technique provides the possibility of formulating the problem as a hierarchy and determiner can consider various qualitative and quantitative criteria. This process also has involved various options in decision-making and makes possible to analysis sensibility's of criteria. This method is based on paired comparisons and facilitates judgments and calculations. Another advantage of this method is to calculate the compatibility and incompatibility of decision. (Ghodsy Poor, 1386, 15).

Analytical Hierarchy Process (AHP) the first time introduced by Thomas L. (1980) and the AHP process steps are:

- build a hierarchical tree
- Paired comparisons
- The combination of weights
- Sensitivity Analysis

A brief description of the research method will be discussed with the AHP method (Keshavarzi, 1391, 6).

1.4.1. First step is depicting and describing hierarchical tree

Hierarchical tree has three main levels: Objective, criteria and options that its criteria level is divided into several sub-criteria.

- **Purpose:** To provide a suitable model for the Broadcasting organization of East Azarbaijan Province.

- **Evaluation criteria:** deflator of decision-making. The standard size components aim to cover more and more.

- **Evaluation of Options:** Options are the final destination of the hierarchical tree. In this study evaluated options, a suitable model of organizational structure for the broadcasting organization of East Azarbaijan Province.

1.4.2. The second step is paired comparisons

After drawing the tree, it is decided to collect data for paired comparison matrix of criteria. In this study, there are two types of data, qualitative and quantitative data. After recording the data to compare the composition tables each of the respondents to each other and mining the relative weights of the criteria options and criteria and sub criteria to each other, the geometric mean method is used.

$$A_{ij} = \left[\prod_{k=1}^n a_{ji}^k \right]^{\frac{1}{n}}$$

At this order any of the following symptoms means:

A_{ij} geometric mean criterion of a;

a: the subcriteria that compare with options;

ij: the name of two measures that compare with each other;

k: the code of the person who asked him questions;

n: the number of people who have been questioned on one of the sub criteria ;

Π: Multiplication mark.

1.4.3. The third step is to combine the weights

This step at the end of the calculation of the weighted average of the sub options for each criterion will begin; in fact it characterizes the weight of each option at all available options.

At this step the target level of the hierarchical tree will be responded. To calculate the total weight of the options, the way of calculating weighted average will be used. But this time the weighted average of each option will be calculated by the weighted average of all criteria.

$$W = \sum_{i=1}^n W_{ai} W_{ci}$$

W: The final weighted average replaces the first row;

W_{ai}: Replaced weighted average "i";

W_{ci}: Sub indexed weighted average "j"

n: Set of criteria and alternatives of first row.

1.4.4. The fourth step is to analyze the sensitivity and to determine the consistency index

Sensitivity Analysis is used for measuring the sensitivity options to the changing priority of criteria. In AHP method there is a mechanism by which the validity of responses of those who has surveyed is examined with a comparison matrix. At the method of "AHP" the tolerable rate of mismatch is considered less than 1/0. Rate adjustment will be done in stages. These processes involve the calculation of 'vector of weight set ', 'adaptation vector, ' ' mean of adjustment vector ', 'consistency index 'and' inconsistency rate'. To shorten the route, we will perform the calculation of the weight set, compatibility vector and the mean of it with one operation.

The mean of compatibility vector: To shorten the route, the way of calculating the mean of compatibility vector will be as follow:

$$\lambda_{\max} = \frac{1}{N} \sum_{i=1}^n \frac{a.W(i,j)}{W(i,j)} \quad (3)$$

λ_{\max} : the mean of compatibility vector;

\bar{a} : geometric mean matrix ij (a horizontal surface);

W_{ij} : weight or priority replacement ij (a horizontal surface);

N : Numbers of alternatives that are compared.

Calculating compatibility index: We apply the following instructions to calculate it.

$$C.T = \frac{\lambda_{\max} - n}{n - 1} \quad (4)$$

λ_{\max} : the biggest value of paired comparison matrix;

n : the total value of paired comparison matrix.

Calculating of random index: Professor Haker and Saati prepare a table in which the random indicator is shown as competing alternatives. The following table has been replaced up to 10 random index.

Random Index

10	9	8	7	6	5	4	3	2	1	N
1/49	1/45	1/41	1/32	1/24	1/12	0/9	0/58	0	0	RI

Calculating mismatch rate: This step will provide the possibility to calculate the mismatch rate. Therefore, it is calculated using the following command.

$$C.R = C.I / R.I \quad (5)$$

$C.I$: mismatch index;

$R.I$: mismatch index of random matrix.

1.4.4.1. Systematic research model

Hierarchical tree has three main levels: Objective is criteria and options that its criteria level is divided into several sub-criteria.

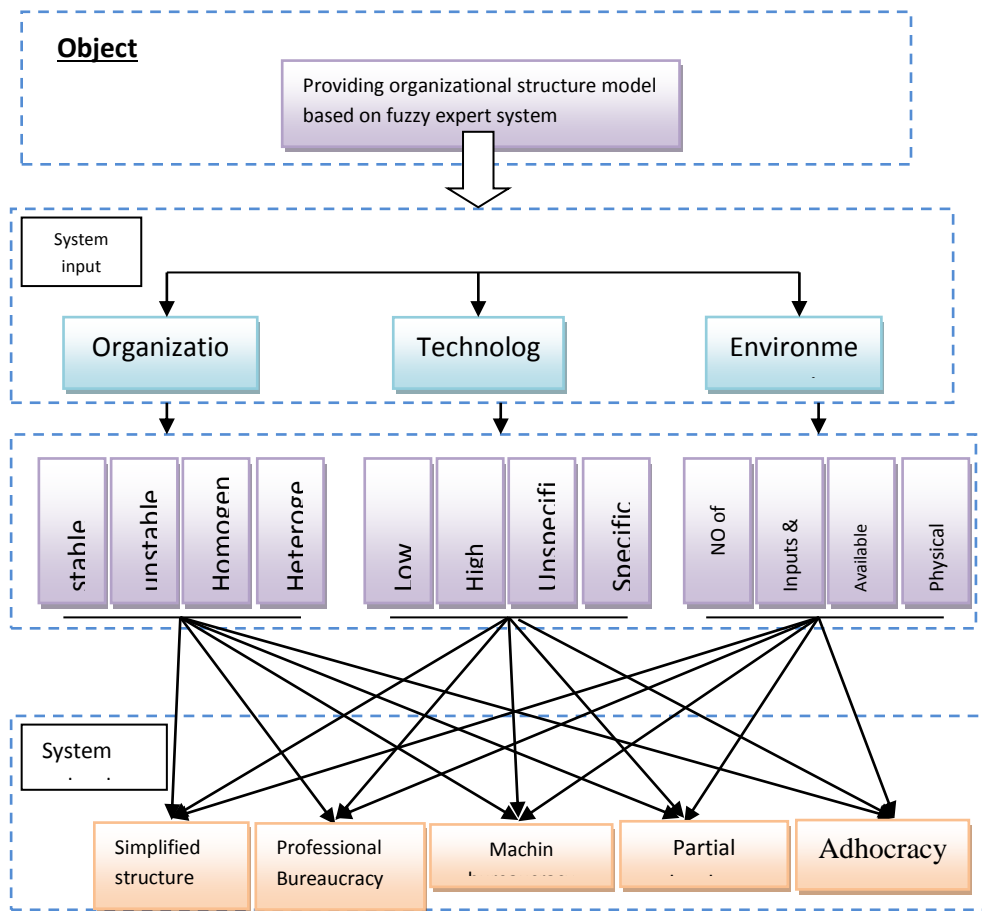


Figure 1.1. Model of intelligent and systematic pattern of hierarchical fuzzy is an appropriate organizational structure.

Now, due to the conceptual model of research, the research hypotheses are expressed as follow.

The research questions are:

Main question: What is suitable model for the Broadcasting organization of East Azarbaijan Province?

Subsidiary questions:

1: What is the most effective component of content dimensions of organization in organizational structure of broadcasting organization of East Azarbaijan Province based on fuzzy AHP?

2: What are the priority favorable patterns of organizational structure of broadcasting organization of East Azarbaijan Province based on fuzzy AHP?

1.4.4.2. Research method

In this research the purpose is application and how to obtain the required data is cross-sectional. In this research statistical population consists of all organization experts, including experts and managers of 408 people employed at the alpha. The sample according

to the method of estimating the sample size was obtained 191 patients. According to it, as while as comprehensive review of the related thematic texts to collect data and information from the questionnaire, Sensitivity analysis is used by a factor of less than 1.0. The questionnaire consisted of 22 questions. Questions are divided into two parts: a) Paired comparison of main criteria b) Paired comparison of sub- criteria. In part a 3 questions are adjusted for paired comparison of main criteria, and in part b-1, 6 questions are adjusted for paired comparison of organization's sub- criteria. In part b-2, 7 questions are adjusted for paired comparison of organizational technology. In part b-3, 6 questions in the form of 9-item scale of AHP are adjusted for paired comparison of environment. For data analysis and testing research questions with Fuzzy AHP method, Expert Choice software is used.

1.4.4.2. Research's findings

1.4.4.2.1. Prioritizing of incoming expert system's main criteria

After modeling in Expert Choice program and entering paired comparisons matrix, the weight of the main criteria was obtained in the way shown below.

Table 1.3. Prioritizing of incoming expert system's main criteria

Row	Major criteria	weight	Priority
1	Organization size	0.283	2
2	Environmental factors	0.268	3
3	Organization technology	0.452	1

As shown in Table 1.3 the main criteria of organization's technology input with relative weight of 452/0 is more important. The main criteria of organization's input size and environment by relative weight of 283/0 and 268/0 are in the second and third priorities. And inconsistency rate of paired comparisons is obtained 07/0 and as it less than 1.0, the compatibility of these comparisons is acceptable.

1.4.4.2.2. Calculate the combined weight of the option's final result (output Hierarchy Process)

This step will begin at the end of the calculation of the weighted average of the following options for each sub-criterion, which characterize the total weight of each option in available total options. The step will response the target level of hierarchical tree

Table 1.4. Prioritizing an organizational structure's model of broadcasting organization of East Azarbaijan Province.

According to the results, the model structure of professional bureaucracy with a final weight of 0/212 was the first priority and structural model with the final weight of 0/212 was in the second priority, mode of simple mechanical bureaucracy's structure with a final weight of 0/198 was in the third priority, model of simple structure with final weight of 0/193 was in the fourth priority, and Adhvkrazy's Structural model with final weight of 0/187 was in the fifth priority. Inconsistency rate of 05/0 was obtained less than 1.0. Then the consistency of all decision matrices are also acceptable.

2. Discussion and Conclusions

2.1. Comparing the obtained results in relation to the input of the appropriate organizational structure with other researchers.

According to the results of this research in connection with the preferred dimensions of organization technology, first impression is that the technology dimension has been identified as an important influencing factor of organizational structure. These results are consistent with the findings of local researchers as Bafande Zende(1388),and The results of foreign researchers as Wang (2001), Benson and Decker (2010), Liao and Cheung (2011), Chang and others (2011), Morton and Ho (2008), Chadvry (2011), Katsyka and others (2011) and Kluver and others (2011). Also according to the obtained results the dimension of organization size with little difference is located in next ratings. These results are consistent with the findings of local researchers as Bafande Zende(1388),Kordnaiij(1381),Ebrahimi(1375), Barati and others(1385),and the results of foreign researchers as Decker (2010), Liao and Cheung (2011), Morton and Ho (2008), Chadvry (2011) and Kluver and others (2011). Also according to the results, the environmental uncertainty dimension by a slight difference is in the next ratings. . These results are consistent with the findings of local researchers as Barati and others(1385),and the results of foreign researchers as Kluver and others (2011), Morton and Hu (2008).But the findings of local researchers as Bafande Zende (1388) Ahmadi Feyzi and Taherpour (1387) Ameri and Moharamzade(1387) and the findings of foreign researchers as Wang (2001), Benson and Decker (2010), Morton and Hu (2008) and Kluver and others (2011) contrary to the findings of the present study, environmental uncertainty have identified as a priority in most countries following the model of organizational structure studies and also findings of local researchers as Moharamzade and Amori(1387) has identified the technology dimension as a less effective dimension in appropriate organizational structure .the findings of these researchers in their researches are same as the findings of present research.

"The study as a whole is formed in the context of contingency theory. It is evident in other areas such as, power and other policies will not be applied. In view of policy and power other models are designed to meet the need".

2.2. Comparing the results obtained by other researchers on the output of the organizational structure

According to the results of this research to provide a model of organizational structure the initial impression that the professional bureaucracy was identified as the most important factor is approved. These results are consistent with the findings of local researchers as Ahmadifeyzi and Taherpour (1387) and foreign researchers as Chang and others (2011) Kluve and colleges (2011). In this type of structure, technical and operational core are defining part of organization. This structure allows the organization to use trained specialists for activities in core operations and also it achieves the functionality of its standardization activities.

2.3. Interpretation of Results

In interpreting the output results of the research, it can be said that the characteristics of the bureaucratic model, has seen high-top inthe structure of government

agencies. This corresponded with some of the beliefs of experts and researchers that the high volume of circulars, cumbersome administrative procedures (formalization), limit the powers of the directors, the dependence on central administration, one-way communication from the top down, lack of attention to the professional competence of experts in evaluation and promotion and poor information management professional (low specialization) are known as the characteristics of government organization's structures.

Most of these studies reflect the views of managers, biases due to the structural characteristics and dimensions. Probably because most managers believe in source of legal authority in the organization, they perceive the desire to observe the structure of the hierarchy option (on the top), regulations, circulars and regulations (high formalization), is more than Attention to technical competencies and expertise in respect for the specialization of labor division (high specialization).

Whereas in the present study, also professional model features (technical competence and expertise) from the viewpoint of broadcasting organization's experts that believe in specialized source of authority, they know that professional structural tendencies and competence are suitable model for their structure. With regard to the Organization role of professional experts in broadcasting organization is the main sector of organization. Therefore, it seems that description of resent research is more accommodating in reality.

The acquisition and use of the best technology and its features such as increasing data transfer speed and speed of decision, permanent evaluation of programs and projects, empowerment through knowledge transfer and allows extensive control areas and the increasing autonomy of employees, improve organizational communication, deliberate and effective environmental monitoring and enhance the Speed and quality of its learning in organization's education. And technology in broadcasting organization from different directions such as technology, knowledge, processes, and interfaces with the customer and interaction can give suggestions based on any of the directions.

-In technology it's suggested as a dependent system to technology: Facilitating communication through official channels, Decentralization of decision-making.

- In technology it's suggested as knowledge: Implement ting educational programs using modern educational technology and appropriate methods of teaching such as cooperative learning, active and practical, with rich content and applications, increasing job-related knowledge, ability to work with modern equipment, staff training along with changes in the system.

- In technology it's suggested as process: Differentiation of products, outpace the competitors and create a competitive atmosphere in the media, establishing a comprehensive system of information on education and create integrity in the education of the whole organization, publicizing culture based on continuous learning in order to support the learning culture.

- In technology it's suggested as object Interface with customer: Facilitation of contacts and procedures for receiving feedback, Customer Recruitment.

-- In technology it's suggested as action: Products proportion with the expected opinion of public, Message production in the direction of public opinion or political advertising service.

Since the model for the study of technology as a key factor is playing role in determining the appropriate organizational structure, It is proposed to achieve the professional qualification then it is necessary to give more attention to training and guidance of members that in this regard, so these solutions are recommended such as providing necessary facilities for them to participate in academic centers, scientific seminars and conferences within and outside the country, creating the necessary conditions for research opportunities, appropriate incentive mechanisms in order to study and research and if possible, to provide scientific articles within and outside the country, holding required courses to update and provide new findings that to some extent it can return to the formal education however most listed cases are needed to comprehensive support, especially from the financial aspects of the relevant organizations. Since a professional hates to limit in rules and regulations therefore, the revision of some unnecessary rules and regulations is essential in colleges. In this case, you can use professional staffs in selection and appointment of middle managers. To lead a career structure it is suggested to; Decentralize and delegate needed authority especially in the core operating, considering opinions of a group, providing an opportunity to offer comments of experts and their participation in decision-making is necessary. In professional structure, although the degree of autonomous systems is not much clear, therefore, in order to tend to the professional bureaucracy it is necessary to reduce the level of organization of behavior and by other means of communication in various parts of the organization to be strengthened on the other hand, means for communication in various parts of the organization to be strengthened. The results show that the low priority of environmental uncertainty is on the structure of broadcasting organization of East Azarbaijan Province. In this regard, in order to achieve professional standards, decentralization and giving authority to participate professional members of organization in decision-making is path finding.

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