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Full Length Research Paper

Organizational design of a post office using analytic network process

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Due to frequent changes on the dynamic communication market, the post office has to be flexible and open to current trends on this market. Post offices need to be organizationally transformed to adapt to the task environment. Considering this problem, the organization design has great importance, since with adequate structure the post office could take a better position on the market. In this paper, analytic network process (ANP), was used, as a multi-criteria decision making method for making a decision, which alternative is optimum, considering the variety of data, interactions and feedback. Usage of ANP is presented at numerical example based on the data obtain from the Post of Serbia.

Key words: Organization design; post office, analytic network process.

INTRODUCTION

Extremely rapid changes for the postal market are caused by the characteristics of modern world market, such as globalization, liberalization, deregulation, the opening-up of competition and technological innovations. In the study, Universal Postal Union (2007), there are defined three ideal economic types: developed economies, economies in transitions and developing economies. Serbia is a country in transition, which is characterized by rising per capital GDP, opening-up of competition, liberalization, growing middle class, etc. Mostly, the transition economies are slowly moving towards EU regulatory regimes.

This fact makes many necessary changes impossible or at least ineffective. This study emphasized that "the posts with limited investment capability need to commercialize operations and enhance quality" of its services. Also, it can be concluded that, there will not be workable postal organizations in all environmental conditions without adequate reforms in the institutional environment and in operating practices.

During the last decade, major organizational changes at the structural, managerial and industrial relations level, future period and regulatory changes will create a greater stimulus to implement inevitable transformations. The individual post's ability to implement these transformations will significantly determine how the post competes in the markets over the coming years. Developing market-oriented structures and competitive company is imperative for the Post of Serbia considering its current environmental conditions.

In the report of Wyman (2008), the changes of post environment are briefly given, comparing the government-owned postal companies with privatized postal companies, which become market-oriented with profitable operations. For instance, the German postal company, Deutsche Post World Net, has implemented strategies that have allowed its various divisions to grow globally, with enormous success. Almost two decade ago, it successively adopted its business strategy and design according the changes of competitive conditions, including restructuring the company, splitting services into business units, and focusing on internationalization. Today, the positive effects of these changes can be seen through the company revenue and its market share.

Criteria for examining organization design and management strategy include that; the strategy should enable realization of company's strategies and goals. Also, the have been done. These processes will continue over the design should take advantage of best practices,

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especially those that make easier good management. “Specific organization design principles addressing areas such as role clarity, decision-making and accountability, staff performance, knowledge sharing, and career progression paths are also relevant concerns” United States Postal Service Management Structure Study (2003). Suggested management strategy design criteria for United States Postal Service include United States Postal Service Management Structure Study (2003), strategic and tactical flexibility; improved operations staff; maximizing operating efficiency; active knowledge sharing; defined career paths; and clear managerial accountability.

Adequate organizational structure enables a company to react fast to changes on the market, and coordinate its activities successfully, in order to be effective and efficient. There are internal and external factors which influence on the selection of organizational structure, such as: a company strategy, technology, art of product, location, measurement, tradition, market, institutional conditions, technological development, scientific progress, etc.

In this paper a multi-criteria decision making model using Analytic Network Process, ANP, for selection of organizational structure is developed on the example of a Post Office. Analytic Network Process is a suitable model when it is not possible to make a simple hierarchy structure of alternatives and criteria, but it is necessary to define the interaction and dependence of some elements on the other in a system created for making a decision. This paper is organized as follows. In the first section relevance of an organizational structure of post offices is explained. Next section explains the principle of choosing the optimum alternative for organization design, using ANP, and develops numerical example using data from the Post of Serbia. Concluding remarks are given in the last section.

Definition and relevance of organization design

Galbraith (1977) emphasized the influence of the complexity of the business world on complexity of the company’s organization design. Galbraith’s opinion is that the environment impact on organization structure could be described in terms of the need to process information in the organization.

With more complex environment the organization has to become decentralized in order to disaggregate the data flow into manageable units. Today, the environment is very dynamic, and the organization has to adapt to this new condition. The organization should relax its authority system and allow organization units to interact with the environment directly.

Behaviour within the organization is seen to affect and be affected by the organization’s position in the external environment. Carley (1995) emphasized that models used for developing and testing organization theory are both computational, such as simulation, expert systems etc., and mathematical, such as formal logic, network analysis, etc. Giving the detailed review of the literature in this paper, Carley distinguished four research areas: organizational design, organizational learning, organization and information technology, and organizational evolution and change. The majority of research of computational and organization theory is done in these areas.

Organization structure should be formed according to the current conditions on the market and it presents a system of connections and relations among the components in a company organization. Determining an organization structure model depends on the company’s goals and strategy. This connection is reciprocal, realization of company’s goals and strategic plan depends on the organization structure, in fact an inadequate organizational structure will prevent realization of company’s objectives.

Organization design is a multiphase process, which presents a logical and social-economic problem. There are a number of mutual conflictive attitudes in this process, since the changes in organizational structure include replacement in the structure of individual power, status of individuals and groups, etc. Because of appearance of such problems, the organization design is a delicate and complex undertaking. Developing an expert system for making a decision of which, the organization model is the optimum for the particular company, and both are very useful and very difficult process for the company.

Organization model design includes macro-organization and micro-organization. Macro-organization defines responsibility and obligations, and relations among organizational parts of the company so that it could function as a unit. Micro-organization design means a workplace design, the concept of information system design, and the documentation subsystem design. Organization structure design is a part of a company’s macro-organization design.

The users of the post services have been dissatisfied in the past period with the quality level. New conditions on the post market, such as considerable number of packages, and mails, and new participants, demand a reorganization of the post company structure, so that the company could respond to all existing requirements. There is no unique organizational model for all posts, but it is necessary to consider specific conditions in the particular surroundings, and define the company’s objectives and goals.

Selection of organizational structure of the post office

The methods and models suitable for organization design are: complex analytic method, simulations, expert systems, multi-criteria decision making methods, Petri nets, etc. There are numerous multi criteria decision methods, some of which are: Promethee, Delphi method, Analytic Hierarchy Process and Analytic Network Process. Framework of contingency theory, which are according to Burton

and Obel (2004), suggests relations among deterministic organizational factors for organization design, clearly indicate to applicability of ANP method, developed by Saaty (1996).

This paper has a purpose to develop a model for making a decision for an organization design of the Post of Serbia using this previously named method and model. For creating multi-criteria decision making models, the aim of a system has to be defined, as well as the alternatives, criteria, and their importance for all the specific system.

Organization design through literature

Organization design and choosing the organizational structure for a company is the problem which has been solved by different methods, considering numerous of criteria but still it cannot be defined in the most suitable method of the selection the adequate organizational structure for all companies. Soulsby and Clark (2007) presented the post-socialist organizational research and the post-socialist transformation of the organization theory. Kujacic and Bojovic (2007) presented the process and relevant issues of the postal traffic organization design. Carroll et al. (2006) proposed the organization design by simulation. Dunbar and Starbuck (2006) emphasized the importance of the learning to design organizations and presented the changes and trends of the organization theory during the history.

Barrett et al. (2006) presented the changes in the literature of the organizations studies, information and communication technology and information systems. Khosraviani and Levitt (2004) used genetic programming for the optimization of the organization design. Kujacic and Bojovic (2003) presented using the fuzzy multi-criteria decision making method for the choosing the organizational structure of a post corporation. Pete et al. (1998) assumed that selection of the optimal organizational structure should be considered as a functional optimization problem. Vesovic and Bojovic (1996) developed the analytic hierarchy approach for selection of the optimal organization variant. Carley and Lin (1995) emphasized that there is no one best organizational design, but the role of organizational design is huge in affecting organizational performance. They considered the process of organizational design for high performance under stress conditions.

The type of organizational structure depends on goals and objectives of the company. Regarding the company's strategy, criteria of a model are chosen. After this stage, alternatives should be defined; hence, by applying one of multi-criteria methods, an optimal alternative is suggested. In this paper knowledge and experience of experts from The Post of Serbia are used. They recommend criteria, alternatives, network structure and relationships among the components and feedback, so that the model could be useful on the real market.

Analytic network process for selection among alternatives

Analytic Hierarchy Process, AHP, developed by Thomas Saaty, is suitable for models with a defined hierarchy structure of all elements in the system. But using ANP is necessary, when criterion importance not only determines the relevance of the alternatives as in a hierarchy, but also the importance of the alternatives influences on the importance of the criteria, Saaty (1996). Some main strengths of ANP method are: relatively simplicity; intuitive approach; network structure of the problem with considering the interactions and dependences among alternatives or criteria; the possibility to use both qualitative and quantitative factors in the decision making process; it uses the pair-wise comparisons to measure the weights of the model elements; free user-friendly software "Super Decisions"; etc. There are also some disadvantages and limitations of this method. Sometimes it is necessary to compute complex calculation and/or to generate the numerous of pair wise comparison matrices.

The numerous of papers with applying the ANP method in the last few years confirm the successfulness and effectiveness of this method as a solution for the multi-criteria decision making problems. Lin et al. (2008) propose using the ANP method for the construction of a dispatching model based on the characteristics of all the production facilities on-site.

Using the fuzzy Delphi, ANP and zero-one goal programming methods, Chang et al. (2008) deve-loped the model for the strategic project selection for the Alishan Forest Railway in Taiwan Chang et al. (2008). Dagdeviren and Yueksel (2007) took into consideration the interdependencies of the factors relevant for the personal selection, applying the ANP method. Gencer and Guerpinar (2007) proposed using the ANP in supplier selection. Jharkharia and Shankar (2007) presented the use of the ANP in the process of selection of the logistics service provider. Cheng and Li (2005) applied the ANP method for the selection of the projects. Meade and Presley (2002) proposed the ANP for the project selection in a research and development envi-ronment. ANP is improved by AHP model, because it can consider relations and feedback among elements at the higher level and at the lower level in the hierarchy structure of a system.

Figure 1 pre-sents the main difference among these methods, actually elements' dependencies valid for AHP (left figure) and ANP (right figure). For making the comparison among alternatives, criteria and their elements, experts use the fundamental Saaty scale (Table 1) Saaty (1996).

Consider expert's recommendation of the relevance of some elements in comparison with the others shown in matrix "A", where element a_{ij} shows that element i is more, equal or less important than element j. The sum of each column should be calculated, b_j, for j=1,…, l. Afterwards, matrix "W_{ij}" should be made of elements w_{ij}, presenting the priorities among system elements.

$$A=\begin{bmatrix} 1 & a_{12} & \dots & a_{1j} & \dots & a_{1l} \\ a_{21} & 1 & & & & a_{2l} \\ \mathrm{M} & & & & & \mathrm{M} \\ a_{i1} & a_{i2} & & 1 & & a_{il} \\ \mathrm{M} & & & & & \mathrm{M} \\ a_{l1} & a_{l2} & \dots & a_{lj} & \dots & 1 \end{bmatrix}$$

$$Sum \quad b_1 \qquad \mathrm{K} \qquad b_l$$

$$w_{ij} = a_{ij} / b_j$$

$$W_{ij}=\begin{bmatrix} w_{i1}^{(j1)} & w_{i1}^{(j2)} & \dots & w_{i1}^{(jn)} \\ w_{i2}^{(j1)} & w_{i2}^{(j2)} & \dots & w_{i2}^{(jn)} \\ \dots & \dots & \dots & \dots \\ w_{im}^{(j1)} & w_{im}^{(j2)} & .. & w_{im}^{(jn)} \end{bmatrix}$$

Assume that a model, which should be developed using ANP, has N clusters, criteria, with elements, which influence on some or all the elements from the other clusters in a system. Cluster C_i (i=1,…, N) has m_k elements (k=1,…, n). Super matrix "W", matrix of impacts, shows priority vectors of all elements.

Matrix, "W_{ij}", should represent the impact of all the elements in

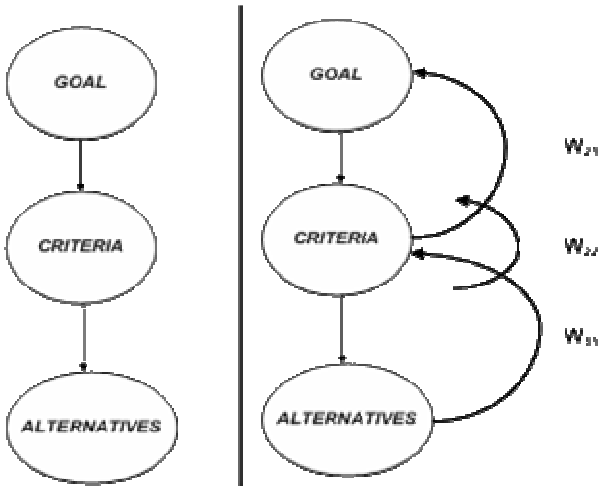

Figure1. Hierarchical and network structure.

Table 1. Fundamental Saaty Scale.

Intensity of importance	Definition
1	Equal Importance
2	Weak
3	Moderate Importance
4	Moderate plus
5	Strong Importance
6	Strong Plus
7	Very strong Importance
8	Very, very strong
9	Extreme Importance

$$W = \begin{array}{c} \\ C_1 \\ C_2 \\ \mathrm{M} \\ C_i \\ \mathrm{M} \\ C_N \end{array} \begin{array}{c} \begin{array}{cccccc} C_1 & C_2 & \cdots & C_i & \cdots & C_N \end{array} \\ \begin{bmatrix} W_{11} & W_{12} & \cdots & W_{1i} & \cdots & W_{1N} \\ W_{21} & W_{22} & & & & W_{2N} \\ \mathrm{M} & \mathrm{M} & & & & \mathrm{M} \\ W_{i1} & W_{i2} & & W_{ii} & & W_{iN} \\ \mathrm{M} & \mathrm{M} & & & & \mathrm{M} \\ W_{N1} & W_{N2} & \cdots & W_{Ni} & \cdots & W_{NN} \end{bmatrix} \end{array}$$

the i-th cluster on each element in the j-th cluster. Matrix "W_{ij}" is zero, when element i does not influence on element j. Otherwise, elements of this matrix are calculated as it is shown.

In the following matrix, the column represents the impact of the goal on the goal, criteria and alternatives, respectively. For instance, the sub-matrix "W21" shows the impact of the criteria on the goal, the sub-matrix "W32" presents the influences of the alternatives to criteria and the sub-matrix "I" is the identity matrix. The next step in this process is making the limit matrix, by

$$W_n = \begin{array}{c} \\ G \\ C \\ A \end{array} \begin{array}{c} \begin{array}{ccc} G & C & A \end{array} \\ \begin{bmatrix} \mathbf{0} & \mathbf{0} & \mathbf{0} \\ W_{21} & \mathbf{0} & \mathbf{0} \\ \mathbf{0} & W_{32} & I \end{bmatrix} \end{array}$$

multiplying the super matrix until all columns become the same. The simplest example is three-level model, considering the goal, criteria and alternatives. The limit matrix, for this case, is calculated as it is shown below.

$$W_n = \begin{array}{c} \\ G \\ C \\ A \end{array} \begin{array}{c} \begin{array}{ccc} G & C & A \end{array} \\ \begin{bmatrix} 0 & 0 & 0 \\ W_{21} & 0 & 0 \\ 0 & W_{32} & I \end{bmatrix} \end{array}$$

Selection among alternatives for the post of Serbia

There are a lot of types of organizational structures for a company, but just some of them are potentially suitable for the Post of Serbia, regarding specific goals, objectives, and other characteristics of this company. Experts defined a list of criterion priorities for a review of multi-variant solutions. In the first place there is capability of adaptation to frequent changes on the market. Then there come service quality, possibility of development, revenue, costs, volume of services, possibility to motivate employees, efficiency of capacities, a number of a hierarchy levels, and an optimum of facilities storage.

According to defined goals and objectives of the Post of Serbia and expected trends, four alternatives of organizational structure are defined as real options. Alternative A is a current company structure, which suggests an organization of a post office with a high degree of centralization of all functions. Alternative B means an organization to a territorial principle; actually, six regions with six profit centers, where all functions are decentralized to the regions. Selling services, provision, infrastructure maintenance, etc., are the functions of regions.

Strategic development and investment are centrally organized in a company. By choosing the alternative C the post office is organized to a territorial principle, with 28 business unit-profit centers. In this case all functions are decentralized to the individual business units, except for strategic development and strategic investment. It is similar to the second alternative, B, but instead of regions there are business units. A key benefit of a business unit structure is allowing each business unit more transparency and independence in managing of its own profit. One business area-one profit center is the fourth alternative, D, where, with the same exception, all functions are decentralized to the business areas. Business areas are segmented by art of service; mail services, package transport and packing, mail delivery, etc. Instead of previous profit centers or business units, there are business areas, with the same function.

The contingency theory is applied in this paper, because of the organizational structure dependence on several factors, such as: environment, size, technology, strategy and management. Lawrence and Lorsch (1967) developed the contingency theory with the main proposition that, the choice of the most suitable organizational structure depends on environmental conditions. Mintzberg (1979) defined following factors as relevant for contingency theory: size and age of the organization; technical system; environment; and power. Levitt et al. (1999) considered the contingency theory

relevant for organizational design using the computational approach with the aim to manage project work processes and organizations. Kujacic and Bojovic (2003) considered the multi-criteria nature of organizational design. They developed the model for choosing the best organization structure of a post corporation, by treating the environment and the organization criteria and using the historical data, subjective judgments and expert knowledge. Burton and Obel (2004) developed the decision model for the organizational design, using the contingency theory as a theoretical basis. In addition to a company's goals and objectives, an organization design is a function of these elements, which represents criteria for the considered model. Figure 2 presents the network structure and relationships among all the values of the considered system, based on recommendation by Burton and Obel (2004).

A new organizational structure and a new business strategy are determined by changes in the regulatory environment. The liberalization and deregulation on the communication market cause necessary adaptation of the company's goals and strategy, that is, its structure. The relevant sectors of environment, for the considered model, are: Market and Industry, Raw Material, Human Resources, Financial System, Technology, Economic System, Political System, and Social System. Various sizes of a company imply different number of employees and differences of profession. The adjusted-size measure and the category of size are defined, Burton and Obel (2004).

It is suggested to the company to have 10% of employees with a high level of education, who hold advanced degrees, 11 - 20% with the second level of professionalization, 21 - 50% with third level, 51 - 75% with fourth level, and 76 - 100% of employees should have the fifth level of education. Technology means data, facility, procedure and process for a transformation of input into output of a system. There are: Retail, Mass, Routine technology, and High divisibility, as the dimensions of technology considered. Mass production is characteristic of a service company, where the volume of services is very high and the work procedure is default. The degree of divisibility shows the level of dividing work tasks into independent groups.

The importance of the company's strategy is already explained in previous sections. There are five company's structures that defined: Defenders, Prospectors, Analyzers, Hybrids, and Reactors. Defender type of organization asks for stable organization. Prospector strategy means an open and flexible organization, with fast and easy adapting to the new conditions on the market. This type should have a lot of data and a new technology to be efficient and effective.

Analyzer type is slower in the process of adapting in comparison with the previous type, however, more careful. Reactor type is usually a kind of organization in which top managers notice changes and uncertainty in the environment, but are not in a position to react effectively. Management is the last criterion for considering model.

Management or leadership style has a significant influence on the organization design, and its considered dimensions are: Preference for delegation, Level of detail in decision making, Reactive or proactive decision making, Decision making time horizon, Risk preference, and Motivation and Control. There are different types of preference for delegation, of level of detail in decision making, and of decision making time horizon. Considering the last element, Motivation and Control, there are situations with a low degree of motivation but high control motivation with a few controls, high motivation and a great deal of control.

RESULTS AND DISCUSSION

The authors have used the Computer Software "Super Decision" for implementation of the considered model. After using this software the results, presented in the Table 2, were attained. According to the results of the considered model, the optimum alternative is B, the decentralization by regions as the profit centers. Applying this organizational structure, the Post of Serbia should have six profit centers with decentralized determining. Applying decentralized model, all costs and profit would be the responsibility of each region, and it would enable planning, comparison and monitoring of all business results. There are the costs centers: printing office, main post center, information center, social standard, and car service. Complex environment on the post market asks for methodical, organized, and modern project of the organization design and its permanent modification and adaptability to the dynamic conditions on the market.

Carroll and Burton (2000) proposed subdivision of organization into more specialized units, considering the complex, rapidly changing environments tasks and uncertainty. Discussing about traditional organizational theory, complexity theory, and the "edge of chaos", one of their conclusions is that although, coordination is useful, there are cases when the benefits of increased coordination are outweighed by the costs. These authors confirmed that the groups performed complex tasks best when they had a decentralized structure with relatively interdependencies. This attitude was confirmed by using the virtual experiments Caroll and Burton (2000).

In some future researches the sensitive analysis of the proposed model should be done, especially in conditions of environmental uncertainty and imprecision of inputs. During this research, experts had difficulty to define the relations among considered system's elements only using the numerical values. In order to solve this issue, more options for criteria evaluation should be included. For assessing the criteria, it is possible to use: numerical values, interval of numerical values, linguistic phrases or fuzzy numbers. This could be a limitation of our model, but certainly something which should be improved in future research. The main contribution of this paper is the first application of ANP for solving this kind of problem ever. Burton and Obel (2004) verified their approach, which is the bases of our model, applying the Computer Program "Organizational Consultant". However, our contribution is showing the model as a network of its elements and suggested ANP as suitable method.

Conclusions

This paper develops a multi-criteria decision making model using Analytic Network Process for selection among alternatives of organizational structure. Organizational structure enables a company to achieve its defined strategic goals and to function effectively and efficiently. Analytic Network Process is a method, which includes a number of variables physically different by their nature, mutually incompatible, cost-type or benefit- type, and all input, criteria, and goals, as well as output, and

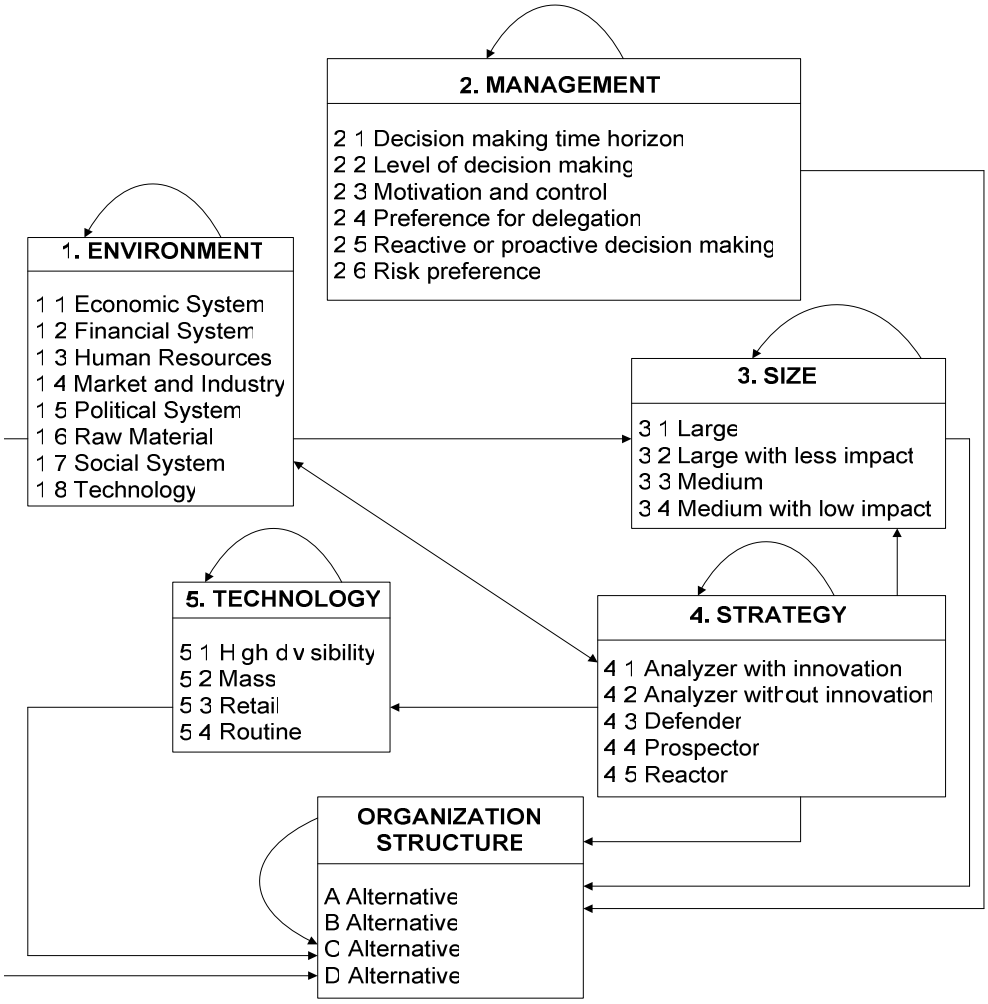

Figure 2. ANP network for the organizational structure selection.

Table 2. Obtained results for considered problem.

Alternative	Priorities
A	0.1287
B	0.3309
C	0.2281
D	0.3123

alternatives, which make a hierarchical structure with mutual relationships and feedback. The principle of this method is presented at numerical example, based on actual data from the Post of Serbia.

The result of the model considered in this paper is a suggestion for selection of an adequate organizational structure. The relevance of the developed model is not only a definition of a suitable organizational structure for the Post of Serbia, but also its availability in other Post Offices or other organizations around the world.

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REFERENCES

Barrett M, Grant D, Wailes N (2006). ICT and Organizational Change: Introduction to the Special Issue. J. Appl. Behav. Sci., 42(1): 6-22.

Burton RM, Obel B (2004). Strategic Organizational Diagnosis and Design - The Dynamics of Fit, 3nd ed. Spinger Science+Business Media, New York.

Carley KM (1995). Computational and Mathematical Organization Theory: Perspective and Directions. Comput. Mathematical Organ. Theory, 1(1): 39-56.

Carley KM, Lin ZH (1995). Organizational Designs Suited to High Performance Under Stress. IEEE Transactions on Systems, Man Cybernetics, 25(2): 221-230.

Carroll T, Burton RM (2000). Organizations and Complexity: Searching for the Edge of Chaos. Comput. Math. Organ. Theory, 6: 319-337.

Carroll T, Gormley TH, Bilardo V, Burton R, Woodman K (2006). Designing a New Organization at NASA: An Organization Design Process Using Simulation. Organization Sci., INFORMS. 17(2): 202-214.
Chang YH, Wey WM, Tseng HY (2008). Using ANP Priorities with Goal Programming for Revitalization Strategies in Historic Transport: A Case Study of the Alishan Forest Railway. Expert Systems with Applications, article in press.
Cheng E, Li H (2005). Analytic Network Process Applied to Project Selection. J. Construction Engine. Manage. pp. 459-466.
Dagdeviren M, Yueksel I (2007). Personnel Selection Using Analytic Network Process. Bahar, Istanbul Commerce Univ. J. Sci., 99-118.
Dunbar R, Starbuck W (2006). Learning to Design Organizations and Learning from Designing Them. Organization Sci., INFORMS. 17(2): 171-178.
Galbraith JR (1977). Organization design. Addison-Wesley Publishing Company.
Gencer C, Guerpinar D (2007). Analytic Network Process in Supplier Selection: A Case Study in an Electronic Firm. Appl. Math. Model. 31: 2475-2486.
Jharkharia S, Shankar R (2007). Selection of logistics service provider: An Analytic Network Process (ANP) Approach. Omega Int. Manage. Sci., 35: 274-289.
Khosraviani B, Levitt R (2004). Organization Design Optimization Using Genetic Programming, CIFE Center for Integrated Facility Engineering, Working Paper WP085, Stanford University.
Kujacic M, Bojović N (2003). Organizational Design of Post Corporation Structure Using Fuzzy Multicriteria Decision Making. Comput. Math. Organ. Theory, 9: 5-18.
Kujacic M, Bojović N (2007). Postal Traffic Organizational Design. Postal Technol. Int., 4: 92-94.
Lawrence PR, Lorsch J (1967). Organization and Environment: Managing Differentiation and Integration MA: Harvard University, Boston.
Levitt RE, Thomsen J, Christiansen TR, Kunz JC, Jin Y, Nass C (1999). Simulating Project Work Processes and Organizations: Toward a Micro-Contingency Theory of Organizational Design. Manage. Sci., 45(11): 1479-1495.
Lin YH, Chiu CC, Tsai CH (2008). The Study of Applying model to Assess Dispatching Rules for Wafer Fabrication. Expert Syst. Appl., 34: 2148-2163.
Meade L, Presley A (2002). R&D Project Selection Using the Analytic Network Process. IEEE Trans. Eng. Manage., 49(1): 59-66.
Mintzberg H (1979). The structuring of organization: a synthesis of the research. Prentice Hall, New Jersey.
Pete A, Pattipati KR, Kleinman DL, Levchuk YN (1998). An Overview of Decisions Networks and Organizations. IEEE Transactions on Systems, Man Cybernetics, 28(2): 173-192.
Saaty TL (1996). Decision Making with Dependance and Feedback: The Analytic Network Process. RWS Publications, Pittsburgh.
Soulsby A, Clark E (2007). Organization theory and the post-socialist transformation: Contributions to organizational knowledge. Human Relations, 60(10): 1419-1442.
United States Postal Service Management Structure Study (2003). Available at: www.ustreas.gov/offices/domestic-finance/usps/pdf/project9.pdf. Wyman Oliver. Uncovering value in the Middle Eastern. Available at: www.oliverwyman.com/.../OW_En_Transport_2008_ MidEast Postalmarket.pdf.
Universal Postal Union (2007). The Evolution of Postal Sector - Implications for Stakeholders (2006-2012), Berne, Switzerland.
Vesovic V, Bojović N (1996). Analytic Hierarchy Model of the Selection of an Optimal Organization Variant. Yugoslav J. Operational Res., 6: 101-112.

Appendix A. the super matrix of organization structure selection using ANP

Columns 1 through 12

	1.1	**1.2**	**1.3**	**1.4**	**1.5**	**1.6**	**1.7**	**1.8**	**2.1**	**2.2**	**2.3**	**2.4**
1.1	0	0.5620	0.5000	0.4730	0.4500	0.4500	0	0	0	0	0	0
1.2	0.4180	0	0.2780	0.2640	0.2510	0.2510	0	0	0	0	0	0
1.3	0.2490	0.1870	0	0.1570	0.1490	0.1490	0	0	0	0	0	0
1.4	0.1670	0.1250	0.1110	0	0.1000	0.1000	0	0	0	0	0	0
1.5	0.0830	0.0620	0.0560	0.0530	0	0.5000	0	0	0	0	0	0
1.6	0.0830	0.0620	0.0560	0.0530	0.0500	0	0	0	0	0	0	0
1.7	0	0	0	0	0	0	0	0.4410	0.3330	0.3050	0.1740	0.1740
1.8	0	0	0	0	0	0	0.5450	0	0.5000	0.4620	0.2660	0.2660
2.1	0	0	0	0	0	0	0.2730	0.3360	0	0.2330	0.4230	0.4230
2.2	0	0	0	0	0	0	0.1820	0.2220	0.1670	0	0.1370	0.1370
2.3	0	0	0	0	0	0	0	0	0	0	0	0.2300
2.4	0	0	0	0	0	0	0	0	0	0	0.1430	0
2.5	0	0	0	0	0	0	0	0	0	0	0.2270	0.2050
2.6	0	0	0	0	0	0	0	0	0	0	0.2010	0.1800
3.1	0	0	0	0	0	0	0	0	0	0	0.1710	0.1540
3.2	0	0	0	0	0	0	0	0	0	0	0.1150	0.1030
3.3	0	0	0	0	0	0	0	0	0	0	0.0860	0.0770
3.4	0	0	0	0	0	0	0	0	0	0	0.0570	0.0510
4.1	0	0	0	0	0	0	0	0	0	0	0	0
4.2	0	0	0	0	0	0	0	0	0	0	0	0
4.3	0	0	0	0	0	0	0	0	0	0	0	0
4.4	0	0	0	0	0	0	0	0	0	0	0	0
4.5	0	0	0	0	0	0	0	0	0	0	0.4120	0.0820
5.1	0	0	0	0	0	0	0	0	0	0	0.1580	0.2600
5.2	0	0	0	0	0	0	0	0	0	0	0.2260	0.1380
5.3	0	0	0	0	0	0	0	0	0	0	0.0970	0.2600

Columns 1 through 12 continue.

5.4	0	0	0	0	0	0	0	0	0	0	0.0970	0.2600
A-A	0.3330	0.3900	0.0970	0.3560	0.1480	0.1270	0.1110	0.1090	0.0910	0.3770	0.0910	0.4000
A-B	0.1670	0.1440	0.2860	0.1940	0.3260	0.2800	0.2220	0.3510	0.3640	0.1880	0.3420	0.2000
A-C	0.1670	0.1440	0.4350	0.1240	0.3630	0.3120	0.4440	0.1890	0.1820	0.1140	0.3420	0.2000
A-D	0.3330	0.3200	0.1820	0.3260	0.1630	0.2800	0.2220	0.3510	0.3640	0.3210	0.2260	0.2000

Columns 13 through 24

	2.5	**2.6**	**A-A**	**A-B**	**A-C**	**A-D**	**3.1**	**3.2**	**3.3**	**3.4**	**4.1**	**4.2**
1.1	0	0	0	0	0	0	0	0	0	0	0	0
1.2	0	0	0	0	0	0	0	0	0	0	0	0
1.3	0	0	0	0	0	0	0	0	0	0	0	0
1.4	0	0	0	0	0	0	0	0	0	0	0	0
1.5	0	0	0	0	0	0	0	0	0	0	0	0
1.6	0	0	0	0	0	0	0	0	0	0	0	0
1.7	0.0740	0.0770	0.4720	0.0760	0.0500	0.0520	0	0	0	0	0.0760	0.0880
1.8	0.1920	0.1740	0.2560	0.1520	0.1680	0.1550	0	0	0	0	0.4900	0.1570
2.1	0.2940	0.2910	0.1640	0.2830	0.2910	0.2900	0	0	0	0	0.2830	0.2720
2.2	0.4390	0.4580	0.1080	0.4900	0.4910	0.5030	0	0	0	0	0.1520	0.4830
2.3	0.2500	0.2420	0.2360	0.2250	0.2050	0.2130	0	0	0	0	0.2040	0.1890
2.4	0.1390	0.1350	0.1310	0.1280	0.1230	0.1190	0	0	0	0	0.0800	0.0790
2.5	0	0.2170	0.2110	0.1990	0.1960	0.1900	0	0	0	0	0.2040	0.1880
2.6	0.1940	0	0.1840	0.1730	0.1730	0.1670	0	0	0	0	0.2040	0.1760
3.1	0.1660	0.1630	0	0.1500	0.1480	0.1430	0	0	0	0	0.0990	0.0890
3.2	0.1120	0.1090	0.1060	0	0.1000	0.0960	0	0	0	0	0.0990	0.1010
3.3	0.0840	0.0810	0.0790	0.0750	0	0.0720	0	0	0	0	0.0550	0.0890
3.4	0.0560	0.0540	0.0530	0.0500	0.0550	0	0	0	0	0	0.0550	0.0890
4.1	0	0	0	0	0	0	0	0.3330	0.3330	0.3330	0.1410	0.2010

Columns 13 through 24 continue

4.2	0	0	0	0	0	0	0.3330	0	0.3330	0.3330	0.1410	0.1890
4.3	0	0	0	0	0	0	0.3330	0.3330	0	0.3330	0.2630	0.2650
4.4	0	0	0	0	0	0	0.3330	0.3330	0.3330	0	0.4550	0.3450
4.5	0.4150	0.4240	0.4250	0.0650	0.0530	0.0640	0	0	0	0	0	0.3700
5.1	0.1530	0.1840	0.1670	0.1190	0.3340	0.3790	0	0	0	0	0.3700	0
5.2	0.2570	0.2220	0.2370	0.1850	0.2210	0.2450	0	0	0	0	0.2620	0.2620
5.3	0.0880	0.0830	0.0770	0.2970	0.2650	0.1960	0	0	0	0	0.2100	0.2100
5.4	0.0880	0.0870	0.0940	0.3340	0.1270	0.1160	0	0	0	0	0.1590	0.1590
A-A	0.1090	0.1600	0.0970	0.4240	0.4240	0.4440	0.1110	0.3330	0.3750	0.1110	0.0970	0.4000
A-B	0.3510	0.1850	0.2860	0.2270	0.2770	0.2220	0.2220	0.1670	0.1250	0.2220	0.4350	0.2000
A-C	0.3510	0.3450	0.4350	0.1220	0.2270	0.2220	0.2220	0.1670	0.1250	0.2220	0.1820	0.2000
A-D	0.1890	0.3700	0.1820	0.2270	0.1220	0.1110	0.4440	0.3330	0.3750	0.4440	0.2860	0.2000

Columns 25 through 31

	4.3	**4.4**	**4.5**	**5.1**	**5.2**	**5.3**	**5.4**
1.1	0	0	0	0	0	0	0
1.2	0	0	0	0	0	0	0
1.3	0	0	0	0	0	0	0
1.4	0	0	0	0	0	0	0
1.5	0	0	0	0	0	0	0
1.6	0	0	0	0	0	0	0
1.7	0.0880	0.0760	0.0670	0	0	0	0
1.8	0.1570	0.1520	0.1330	0	0	0	0
2.1	0.2720	0.2830	0.2670	0	0	0	0
2.2	0.4830	0.4900	0.5330	0	0	0	0
2.3	0.2080	0.1110	0.2010	0	0	0	0

Columns 25 through 31 continue.

2.4	0.0600	0.0560	0.0420	0	0	0	0
2.5	0.1830	0.1040	0.2010	0	0	0	0
2.6	0.1830	0.1040	0.2010	0	0	0	0
3.1	0.1130	0.0690	0.0710	0	0	0	0
3.2	0.1130	0.1850	0.0830	0	0	0	0
3.3	0.0700	0.1850	0.0990	0	0	0	0
3.4	0.0700	0.1850	0.0990	0	0	0	0
4.1	0.2010	0.1310	0.1670	0	0	0	0
4.2	0.1890	0.3540	0.3330	0	0	0	0
4.3	0.2650	0.3540	0.3330	0	0	0	0
4.4	0.3450	0.1610	0.1670	0	0	0	0
4.5	0.3540	0.3340	0.3220	0	0	0	0
5.1	0.2980	0.2840	0.2710	0	0	0	0
5.2	0	0.2390	0.2250	0	0	0	0
5.3	0.1970	0	0.1820	0	0	0	0
5.4	0.1510	0.1430	0	0	0	0	0
A-A	0.1090	0.4670	0.4670	0	0.1670	0.1260	0.1430
A-B	0.3510	0.1540	0.1540	0.4410	0	0.4200	0.5710
A-C	0.1890	0.1540	0.1540	0.2220	0.3330	0	0.2860
A-D	0.3510	0.2250	0.2250	0.3360	0.5000	0.4540	0

Appendix B. The weighted matrix of organization structure selection using ANP

Columns 1 through 12

	1.1	**1.2**	**1.3**	**1.4**	**1.5**	**1.6**	**1.7**	**1.8**	**2.1**	**2.2**	**2.3**	**2.4**
1.1	0	0.2816	0.2499	0.2365	0.2250	0.1837	0	0	0	0	0	0
1.2	0.2090	0	0.1389	0.1320	0.1255	0.1025	0	0	0	0	0	0
1.3	0.1245	0.0937	0	0.0785	0.0745	0.0608	0	0	0	0	0	0
1.4	0.0835	0.0626	0.0555	0	0.0500	0.0408	0	0	0	0	0	0
1.5	0.0415	0.0311	0.0280	0.0265	0	0.2042	0	0	0	0	0	0
1.6	0.0415	0.0311	0.0280	0.0265	0.0250	0	0	0	0	0	0	0
1.7	0	0	0	0	0	0	0	0.2206	0.1664	0.1525	0.0436	0.0435
1.8	0	0	0	0	0	0	0.2726	0	0.2499	0.2310	0.0666	0.0665
2.1	0	0	0	0	0	0	0.1366	0.1681	0	0.1165	0.1060	0.1058
2.2	0	0	0	0	0	0	0.0910	0.1111	0.0835	0	0.0343	0.0343
2.3	0	0	0	0	0	0	0	0	0	0	0	0.0575
2.4	0	0	0	0	0	0	0	0	0	0	0.0358	0
2.5	0	0	0	0	0	0	0	0	0	0	0.0569	0.0513
2.6	0	0	0	0	0	0	0	0	0	0	0.0504	0.0450
3.1	0	0	0	0	0	0	0	0	0	0	0.0428	0.0385
3.2	0	0	0	0	0	0	0	0	0	0	0.0288	0.0258
3.3	0	0	0	0	0	0	0	0	0	0	0.0215	0.0193
3.4	0	0	0	0	0	0	0	0	0	0	0.0143	0.0128
4.1	0	0	0	0	0	0	0	0	0	0	0	0
4.2	0	0	0	0	0	0	0	0	0	0	0	0
4.3	0	0	0	0	0	0	0	0	0	0	0	0
4.4	0	0	0	0	0	0	0	0	0	0	0	0
4.5	0	0	0	0	0	0	0	0	0	0	0.1032	0.0205
5.1	0	0	0	0	0	0	0	0	0	0	0.0396	0.0650
5.2	0	0	0	0	0	0	0	0	0	0	0.0566	0.0345
5.3	0	0	0	0	0	0	0	0	0	0	0.0243	0.0650

Columns 1 through 12 continue.

5.4	0	0	0	0	0	0	0	0	0	0	0.0243	0.0650
A-A	0.1665	0.1954	0.0485	0.1780	0.0740	0.0519	0.0555	0.0545	0.0455	0.1885	0.0228	0.1000
A-B	0.0835	0.0721	0.1429	0.0970	0.1630	0.1143	0.1111	0.1756	0.1819	0.0940	0.0857	0.0500
A-C	0.0835	0.0721	0.2174	0.0620	0.1815	0.1274	0.2221	0.0945	0.0910	0.0570	0.0857	0.0500
A-D	0.1665	0.1603	0.0910	0.1630	0.0815	0.1143	0.1111	0.1756	0.1819	0.1605	0.0566	0.0500

Columns 13 through 24

	2.5	**2.6**	**A-A**	**A-B**	**A-C**	**A-D**	**3.1**	**3.2**	**3.3**	**3.4**	**4.1**	**4.2**
1.1	0	0	0	0	0	0	0	0	0	0	0	0
1.2	0	0	0	0	0	0	0	0	0	0	0	0
1.3	0	0	0	0	0	0	0	0	0	0	0	0
1.4	0	0	0	0	0	0	0	0	0	0	0	0
1.5	0	0	0	0	0	0	0	0	0	0	0	0
1.6	0	0	0	0	0	0	0	0	0	0	0	0
1.7	0.0185	0.0190	0.1180	0.0190	0.0123	0.0130	0	0	0	0	0.0152	0.0176
1.8	0.0480	0.0428	0.0640	0.0380	0.0415	0.0388	0	0	0	0	0.0980	0.0314
2.1	0.0735	0.0717	0.0410	0.0707	0.0719	0.0725	0	0	0	0	0.0566	0.0544
2.2	0.1097	0.1128	0.0270	0.1225	0.1212	0.1258	0	0	0	0	0.0304	0.0966
2.3	0.0625	0.0596	0.0590	0.0562	0.0506	0.0533	0	0	0	0	0.0408	0.0378
2.4	0.0347	0.0332	0.0328	0.0320	0.0304	0.0298	0	0	0	0	0.0160	0.0158
2.5	0	0.0534	0.0528	0.0497	0.0484	0.0475	0	0	0	0	0.0408	0.0376
2.6	0.0485	0	0.0460	0.0432	0.0427	0.0418	0	0	0	0	0.0408	0.0352
3.1	0.0415	0.0401	0	0.0375	0.0365	0.0358	0	0	0	0	0.0198	0.0178
3.2	0.0280	0.0268	0.0265	0	0.0247	0.0240	0	0	0	0	0.0198	0.0202
3.3	0.0210	0.0199	0.0198	0.0187	0	0.0180	0	0	0	0	0.0110	0.0178
3.4	0.0140	0.0133	0.0133	0.0125	0.0136	0	0	0	0	0	0.0110	0.0178
4.1	0	0	0	0	0	0	0	0.1666	0.1666	0.1667	0.0282	0.0402
4.2	0	0	0	0	0	0	0.1667	0	0.1666	0.1667	0.0282	0.0378

Columns 13 through 24 continue.

4.3	0	0	0	0	0	0	0.1667	0.1666	0	0.1667	0.0526	0.0530
4.4	0	0	0	0	0	0	0.1667	0.1666	0.1666	0	0.0910	0.0690
4.5	0.1037	0.1044	0.1063	0.0162	0.0131	0.0160	0	0	0	0	0	0.0740
5.1	0.0382	0.0453	0.0418	0.0297	0.0825	0.0948	0	0	0	0	0.0740	0
5.2	0.0642	0.0547	0.0593	0.0462	0.0546	0.0613	0	0	0	0	0.0524	0.0524
5.3	0.0220	0.0204	0.0193	0.0742	0.0654	0.0490	0	0	0	0	0.0420	0.0420
5.4	0.0220	0.0214	0.0235	0.0835	0.0314	0.0290	0	0	0	0	0.0318	0.0318
A-A	0.0272	0.0394	0.0243	0.1060	0.1047	0.1110	0.0556	0.1666	0.1876	0.0556	0.0194	0.0800
A-B	0.0877	0.0456	0.0715	0.0567	0.0684	0.0555	0.1111	0.0835	0.0625	0.1111	0.0870	0.0400
A-C	0.0877	0.0850	0.1088	0.0305	0.0560	0.0555	0.1111	0.0835	0.0625	0.1111	0.0364	0.0400
A-D	0.0472	0.0911	0.0455	0.0567	0.0301	0.0278	0.2222	0.1666	0.1876	0.2222	0.0572	0.0400

Columns 25 through 31

	4.3	**4.4**	**4.5**	**5.1**	**5.2**	**5.3**	**5.4**
1.1	0	0	0	0	0	0	0
1.2	0	0	0	0	0	0	0
1.3	0	0	0	0	0	0	0
1.4	0	0	0	0	0	0	0
1.5	0	0	0	0	0	0	0
1.6	0	0	0	0	0	0	0
1.7	0.0176	0.0152	0.0134	0	0	0	0
1.8	0.0314	0.0304	0.0266	0	0	0	0
2.1	0.0544	0.0566	0.0534	0	0	0	0
2.2	0.0966	0.0980	0.1067	0	0	0	0
2.3	0.0416	0.0222	0.0402	0	0	0	0
2.4	0.0120	0.0112	0.0084	0	0	0	0
2.5	0.0366	0.0208	0.0402	0	0	0	0
2.6	0.0366	0.0208	0.0402	0	0	0	0

Columns 25 through 31 continue.

3.1	0.0226	0.0138	0.0142	0	0	0	0
3.2	0.0226	0.0370	0.0166	0	0	0	0
3.3	0.0140	0.0370	0.0198	0	0	0	0
3.4	0.0140	0.0370	0.0198	0	0	0	0
4.1	0.0402	0.0262	0.0334	0	0	0	0
4.2	0.0378	0.0708	0.0666	0	0	0	0
4.3	0.0530	0.0708	0.0666	0	0	0	0
4.4	0.0690	0.0322	0.0334	0	0	0	0
4.5	0.0708	0.0668	0.0644	0	0	0	0
5.1	0.0596	0.0568	0.0542	0	0	0	0
5.2	0	0.0478	0.0450	0	0	0	0
5.3	0.0394	0	0.0364	0	0	0	0
5.4	0.0302	0.0286	0	0	0	0	0
A-A	0.0218	0.0934	0.0935	0	0.1670	0.1260	0.1430
A-B	0.0702	0.0308	0.0308	0.4414	0	0.4200	0.5710
A-C	0.0378	0.0308	0.0308	0.2222	0.3330	0	0.2860
A-D	0.0702	0.0450	0.0450	0.3363	0.5000	0.4540	0

Appendix C. The limit matrix of organization structure selection using ANP

Columns 1 through 12

	1.1	**1.2**	**1.3**	**1.4**	**1.5**	**1.6**	**1.7**	**1.8**	**2.1**	**2.2**	**2.3**	**2.4**
1.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0	0
1.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0	0
1.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0	0
1.4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0	0
1.5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0	0

Columns 1 through 12 continue.

1.6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0	0
1.7	0	0	0	0	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.8	0	0	0	0	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2.1	0	0	0	0	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2.2	0	0	0	0	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2.3	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
2.4	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
2.5	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
2.6	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
3.1	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
3.2	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
3.3	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
3.4	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
4.1	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
4.2	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
4.3	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
4.4	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
4.5	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
5.1	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
5.2	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
5.3	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
5.4	0	0	0	0	0	0	0	0	0	0	0.0000	0.0000
A-A	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287
A-B	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309
A-C	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281
A-D	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123

Columns 13 through 24

	2.5	2.6	A-A	A-B	A-C	A-D	3.1	3.2	3.3	3.4	4.1	4.2
1.1	0	0	0	0	0	0	0	0	0	0	0	0
1.2	0	0	0	0	0	0	0	0	0	0	0	0
1.3	0	0	0	0	0	0	0	0	0	0	0	0
1.4	0	0	0	0	0	0	0	0	0	0	0	0
1.5	0	0	0	0	0	0	0	0	0	0	0	0
1.6	0	0	0	0	0	0	0	0	0	0	0	0
1.7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
1.8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
2.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
2.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
2.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
2.4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
2.5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
2.6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
3.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
3.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
3.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
3.4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
4.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4.4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4.5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
5.1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
5.2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
5.3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
5.4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0	0	0.0000	0.0000
A-A	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287

Columns 13 through 24 continue.

A-B	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309
A-C	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281
A-D	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123

Columns 25 through 31

	4.3	**4.4**	**4.5**	**5.1**	**5.2**	**5.3**	**5.4**
1.1	0	0	0	0	0	0	0
1.2	0	0	0	0	0	0	0
1.3	0	0	0	0	0	0	0
1.4	0	0	0	0	0	0	0
1.5	0	0	0	0	0	0	0
1.6	0	0	0	0	0	0	0
1.7	0.0000	0.0000	0.0000	0	0	0	0
1.8	0.0000	0.0000	0.0000	0	0	0	0
2.1	0.0000	0.0000	0.0000	0	0	0	0
2.2	0.0000	0.0000	0.0000	0	0	0	0
2.3	0.0000	0.0000	0.0000	0	0	0	0
2.4	0.0000	0.0000	0.0000	0	0	0	0
2.5	0.0000	0.0000	0.0000	0	0	0	0
2.6	0.0000	0.0000	0.0000	0	0	0	0
3.1	0.0000	0.0000	0.0000	0	0	0	0
3.2	0.0000	0.0000	0.0000	0	0	0	0
3.3	0.0000	0.0000	0.0000	0	0	0	0
3.4	0.0000	0.0000	0.0000	0	0	0	0
4.1	0.0000	0.0000	0.0000	0	0	0	0
4.2	0.0000	0.0000	0.0000	0	0	0	0
4.3	0.0000	0.0000	0.0000	0	0	0	0

Columns 25 through 31 continue.

4.4	0.0000	0.0000	0.0000	0	0	0	0
4.5	0.0000	0.0000	0.0000	0	0	0	0
5.1	0.0000	0.0000	0.0000	0	0	0	0
5.2	0.0000	0.0000	0.0000	0	0	0	0
5.3	0.0000	0.0000	0.0000	0	0	0	0
5.4	0.0000	0.0000	0.0000	0	0	0	0
A-A	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287	0.1287
A-B	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309	0.3309
A-C	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281	0.2281
A-D	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123	0.3123