

## **APPLICATION OF AHP METHOD ON INSURANCE MARKET IN MONTENEGRO**

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### **ABSTRACT**

*The development of socio-economic relationships has fostered the development of specialized institutions - insurance companies. The task of an insurance company is to collect funds in the amount of expected damage. Insurance companies pay compensation from raised funds to companies and individuals, to whom or where the insured event has occurred. Thus, insurance industry is relative to all vital functions of contemporary society. It is one of key elements essential to a well functioning market economy.*

*The aim of this paper is to present the efficiency of the AHP method, as a multi-criteria analysis method, which could be used for comparing and ranking insurance companies in Montenegro. The importance of comparing insurance companies lies in the fact that prospective customers of these companies can provide themselves with best protection of life and property and ensure the protection of economic entities against different risks thus providing stability and continuity of business.*

**Key words:** *insurance market, ranking, AHP method.*

### **1. INTRODUCTION**

Insurance is one of the most developed activities in the world today, with remarkable financial capacities and funds. By issuing life insurance policies as financial instruments and through long-term placement of free funds, insurance companies occupy a significant place in developed financial markets as institutional investors. Life insurance growth, i.e. the transfer of insured risks to an insurance company by means of life insurance premiums, increases total available funds insurance companies can place on a financial market. The goal of insurance funds placement is protecting insurance policy holders from the risk insured against and generating maximum profit on placed funds.

This paper outlines the AHP method, as a multicriteria analysis method, which can be successfully used for comparison and ranking of insurance companies. The importance of comparing insurance companies lies in the fact that prospective customers of these companies may provide themselves with the best protection of life and property, i.e. ensure protection of an economic entity against various risks, and by doing so ensure stability and continuity of business operations. Insurance operations can be divided into two major categories, namely life and non-life insurance. In view of this and pursuant to current legislation in Montenegro, which requires that life and non-life insurance be separated, an insurance company must obtain a separate licence for these operations. There are six registered life insurance companies operating in Montenegro. They will be ranked based on several criteria, divided into financial criteria, market share and diversity of supply. Some of these criteria are quantitative and some are qualitative, which makes the analysis more comprehensive, from consumers' or prospective insurance holders' standpoint.

## **2. THE ROLE AND SIGNIFICANCE OF INSURANCE COMPANIES**

Insurance industry is inextricably linked to all vital functions of contemporary society, and it represents one of key elements essential to successful functioning of a market economy. All individuals and legal entities are exposed to dangers that may lead to suffering damage, therefore insurance is an economic necessity for every person striving to ensure their own security in business operations and everyday life.

Insurance contributes to satisfying three basic needs: need for safety, need for savings and need for meeting legal obligations stipulated by a state. Although primary function of insurance is protecting insurance policy holders, i.e. risk transfer, its secondary function, which involves collecting high-quality and long-term funds which build up to large financial funds (insurance funds) through small but numerous premium payments, is significant as well. Substantial funds generated in this way, primarily through life insurance, constitute a part of national savings and are used for solving macro-economic needs of a society and structural adjustment of an economy. An insurance company's funds may be invested in various development projects, and when it comes to funds earmarked for development projects, long-term life insurance surplus funds are investment funds of exceptional quality.

## **3. LIFE INSURANCE**

Life insurance is a form of long-term savings with concurrent insurance against risk of death of a certain person, inability to work or illness. It has a profound significance for an individual and society as a whole. Life insurance is voluntary. Therefore, quality of service provision regarding timeliness and efficiency of the process, from entering into a contract to settling damages, has a significant influence on building trust, security and good business traditions.

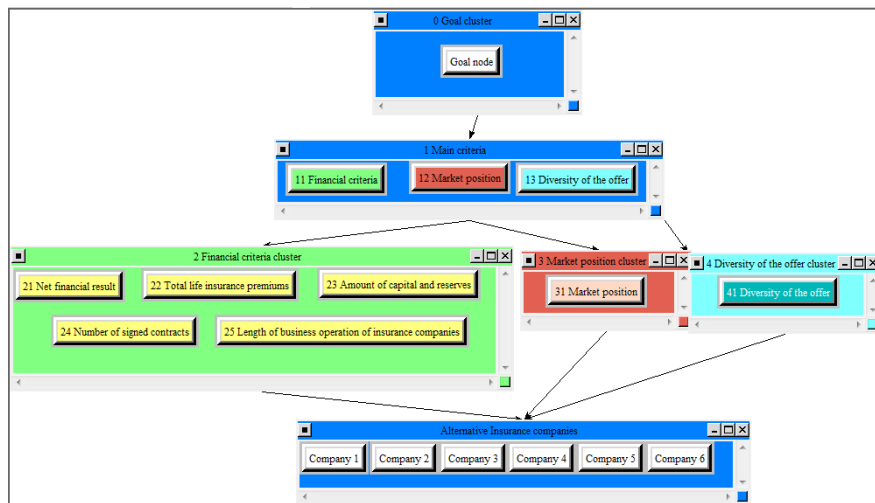
Life insurance has a long tradition in developed countries and is an essential part of financial and social security of an individual. Life insurance amounts to almost 70% of total insurance premium. Still, there is no conscious awareness of importance and essence of life insurance in our market, as it is the case in developed markets. The data gathered in 2013 indicating that merely every tenth resident of Montenegro has a life insurance policy, and that life insurance amounts to only 20% of total insurance premiums, support the aforementioned claim. Although the percentage share of life insurance is unsatisfactory compared to its average share throughout Europe, recent years have witnessed an upward trend in this market. The fact that life insurance will become more and more significant and that individuals will find themselves in a position to take on life insurance policies more often, calls for thoughtful consideration and search for the best approach in choosing the best insurance company.

The problem of choosing an insurance company poses quite a challenge to every prospective customer, and it is an even greater challenge if we know that all insurance companies operating in Montenegrin market offer a similar range of products. Since there is no rating agency, which would provide an objective assessment of insurance companies' business operations thus making the choice easier, prospective life insurance buyers usually act on a recommendation made by intermediaries selling life insurance products, friends or relatives, relying on vague information. Instead of relying on incomplete and vague information, which may not indicate objective quality of insurers, a multicriteria analysis method can be used in choosing the best insurance company. An argument in favor of using multicriteria analysis models is based on the need for prospective customer to take into account a great number of factors when making a decision. This paper will present how the AHP model (Analytical Hierarchy Process) can be successfully used for this purpose.

## **4. APPLICATION OF AHP MODEL IN RANKING INSURANCE COMPANIES**

Analytical Hierarchy Process, developed by Saaty [4], is one of the most prominent and widely used decision making method when the decision is based on a range of attributes used as selection criteria. Results obtained by applying the AHP method provide assistance in solving complex decision making problems which involve group decision making, a greater number of criteria or a span of time. This method is particularly useful when there is a small number of alternatives which are compared to a greater number of criteria. Solving complex decision problems by using this method is based on their decomposition, in one hierarchical structure, whose elements are a goal, subgoals and alternatives.

The aim of this paper is to rank insurance companies in Montenegro engaged in life insurance.<sup>1</sup> Criteria are at the next hierarchy level. Several criteria have been selected and then classified into three groups, namely: financial criteria, market position and diversity of supply. A number of financial indicators that can be used to assess the performance of insurance companies can be found in relevant scientific literature. It is due to the fact that it is necessary to determine the financial power of an insurance company, which indicates the ability of insurers to timely and fully meet their obligations under the insurance contract. Within the financial criteria five sub-criteria have been selected, namely: net financial result, total life insurance premium, amount of capital and reserves, number of signed contracts, and length of business operation of insurance companies. On the top level of the hierarchy, there are alternatives, and these are six insurance companies. The structure of the AHP model for ranking insurance companies is shown in Figure 1. The model has been developed on the basis of specialist decision support software – *Super Decisions*.



Graph1. The Structure of the AHP model for ranking insurance companies







The analysis has been performed on the basis of the 2013 financial statements of the insurance companies as well as market research in terms of diversity of supply. Insurance companies are required to submit their financial statements to the Insurance Supervision Agency [1]. In addition to these data, it was necessary to make a pairwise comparison of all criteria and sub-criteria, to be able to determine the weight of each criterion. Based on the pairwise comparison of all criteria in relation to the proposed alternatives, the model provides a final ranking list. The ranking list is shown in Table 2. According to the presented results it is best to purchase a life insurance policy from Company 4, which had the highest score on all the criteria. The company which ranks second is Company 5, followed by Company 6 and Company 3. Company 2 is ranked penultimate, and the worst ranked company is Company 1. The weights of the analyzed criteria are presented in Table 1.

Table 1. The weights of individual criteria

11 Financial criteria is 3 times more important than 12 Market position			14 Number of signed contracts is 3 times more important than 25 Length of business operation							
Inconsistency	12 Market -	13 Divers-	11 Financ-	0.63099	22 Total-	23 Amount -	24 Number -	25 Length -	21 Net fi-	0.26150
			12 Market-	0.25828	23 Total-	24 Number -	25 Length -	22 Total-	0.51281	
			13 Divers-	0.10473	24 Number -	25 Length -	21 Net fi-	0.12898		
11 Financ-	← 3	← 5			22 Total-	23 Amount -	24 Number -	0.06338		
12 Market -		← 3			23 Amount -	24 Number -	25 Length -	0.03334		
					24 Number -	25 Length -				

<sup>1</sup> Companies licensed to provide life insurance in Montenegro are: Grawe Insurance, Mercury Insurance, Atlas Life, Lovćen life insurance, UNIQA Life Insurance and Wiener Städtische life insurance.

Table 2. The final ranking list of insurance companies in Montenegro

Graphic	Ratings Alternatives	Total	Ideal	Normal	Ranking
	Company 1	0.0738	0.0752	0.0326	6
	Company 2	0.2645	0.2695	0.1168	5
	Company 3	0.2859	0.2913	0.1263	4
	Company 4	0.9814	1.0000	0.4336	1
	Company 5	0.3584	0.3652	0.1583	2
	Company 6	0.2997	0.3054	0.1324	3

It should be noted that the AHP model provides a numerous possibilities, such as company ranking by individual criteria and the possibility of performing a sensitivity analysis. These features can be used in different ways depending on aims of decision-makers. If the goal is to make decisions using only some of the listed criteria, then we can observe how the ranking of insurance companies will change and how this will affect the decision on purchasing life insurance policies. Also, when companies are ranked according to individual criteria, we do not have to get the same results as in the final ranking. Most often these results are different, and ranking will depend on how strong a company is according to the presented criteria. Through sensitivity analysis we can change both the criteria relevant for our analysis and the priorities that we have assigned to them. In this way we can predict what might happen in the insurance market if changes occur. If a new life insurance company emerges in the market, we can use the AHP model for comparison of the existing companies with the new competitor.

## 5. CONCLUSION

Weakening of the social functions of the state is to be expected in the future and, therefore, individuals and families will have to make decisions regarding the improvement of their economic security. A life insurance policy is an important instrument that can ensure the safety of the family and in the forthcoming period its role will be even greater. It represents one of the least risky forms of saving. Therefore, it is necessary to collect adequate information on insurance companies and the products they offer to make a selection of the best life insurance policy.

The AHP method has proven to be useful in solving the problem of selection of the best insurance company from which to purchase a policy. Applying the AHP method, based on multiple criteria, we developed a ranking list of companies engaged in life insurance. Quantitative and qualitative data have been used in the model. The most important quantitative data are financial criteria that reflect the financial power of an insurance company. The advantages of the AHP method are the following: qualitative criteria can be included, and apart from the overall ranking, alternatives can be ranked across individual criteria, as well as across sub-criteria, which is a convenience that is often crucial when decision makers decide for the AHP method.

## 6. REFERENCES

- [1] Agencija za nadzor osiguranja Crne Gore, [http:// www.ano.me](http://www.ano.me)
- [2] Kočović, J., Šulejić, P., Rakonjac Antić, T.: Osiguranje, Centar za izdavačku djelatnost Ekonomskog fakulteta u Beogradu, Beograd, 2010.
- [3] Rakočević, S., Dragašević, Z.: AHP Method For Optimal Decision Making Problem in Multicriteria Programming, 11<sup>th</sup> International Research/Expert Conference "Trends in the Development of Machinery and Associated Technology" TMT 2007, Tunisia, Proceedings ISBN 9958-617-30-7, 2007.
- [4] Saaty, T.: The Analytic Hierarchy Process, McGraw-Hill, New York, 1980.
- [5] Saaty, T.: Fundamentals of Decision Making and Priority Theory, RWS Publications, Pittsburgh, USA, 2000.
- [6] Suknović M., Čupić M.: Višekriterijumsko odlučivanje: formalni pristup, FON, Beograd, 2003.