ANALYSIS OF THE ROMANIAN INSURANCE MARKET BASED ON ENSURING AND EXERCISING CONSUMERS' RIGHT TO CLAIM

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Abstract

In the financial market of insurance, consumer protection represents an important component contributing to the stability, discipline and efficiency of the market. In this respect, the activity of educating and informing insurance consumers on ensuring and exercising their right to claim plays a leading role in the mechanism of consumer protection. This study aims to improve the decision-making capacity of the financial services consumers from the Romanian insurance market through better information on ensuring and exercising their right to claim under the legislation. Thus, by applying three data analysis techniques – principal components analysis, cluster analysis and discriminant analysis – to the data regarding the petitions that were registered by the 41 insurance companies which operated in the Romanian market in 2012, a classification that assesses the insurance market transparency is achieved, resulting in a better information for consumers and, hence, the improvement of their protection through reducing the level of transactions that are harmful to consumers.

Keywords: the right to be informed, claims, financial services, insurance market, data analysis techniques.

JEL Classification: C49, G22, D18.

Introduction

Consumer protection is an essential component of any financial system. It is not only important to protect existing consumers, but also the confidence of potential consumers. On financial markets, consumer protection acts positively on consumers' confidence in the financial system, on the problem of the power, information and resources imbalance between consumers and companies, and lastly, on financial markets' efficiency and transparency. An efficient legal framework for the protection of financial services consumers should provide information transparency, power of choice, resolution of claims and confidentiality.

There are circumstances when, following the pattern of other markets, consumers consider that companies in the financial market are required to provide safe services and thus, they make certain commitments without carefully analyzing available information. During their

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lifetime, people rarely purchase financial services, and the lack of experience generates major financial consequences, because, as consumers, they do not precisely identify the evaluation criteria of services. Therefore, the protection of financial services consumers should be incorporated in the educational system (high school and university), where everybody should have real access to basic financial knowledge.

The protection of financial services consumers' area was also affected by the global financial and economic crisis; consumer protection failures highlighted the need for rethinking the regulating and supervision mechanisms. There is a real gap of information between companies offering financial services and their clients, net to the disadvantage of the latter.

Frequently, consumers in the financial market compensate the lack of information by selecting the most attractive offers in terms of high interest rates or investment returns. In some cases, these deals generate losses, and consumers lose their confidence in financial market, affecting its stability.

Within the context of the existent gap of information, the high degree of complexity of financial products has triggered asymmetric information. Information asymmetry represents the quantitative and qualitative differences in the information held by the two contractual parties. In financial markets, asymmetric information may result in adverse selection and moral hazard. For example, in the health insurance market, Akerlof (1970) shows that the insured has the advantage of complete information as opposed to the insurance company. Usually, the less informed party is aware of the fact that the counterparty has more information (Katz and Rosen, 1998). In order to reduce information asymmetry in the financial market, the regulation authority should act in three directions: information, education and enforcement of rules.

Making citizens to be aware of their rights and informing them about the rights granted to them by various European regulations on consumer protection represents a very important step in order to reduce the cases of consumer rights' violations (Baciu and Deac, 2010). Since the insurance market represents an essential component of the Romanian financial system, insurance consumer protection should become a primary concern of the insurance supervisory authority. In this respect, the activity of educating and informing insurance consumers on their right to claim plays a leading role in the mechanism of consumer protection, in enforcement of the legislation and ensuring lodging of appeals, with an impact in reducing the level of transactions that are harmful to consumers. In the area of insurance, there is a lack of research papers regarding consumers' right to claim and other ways of lodging an appeal and, generally, the topic of insurance consumer protection is vaguely approached, as most studies assess the protection of financial services consumers in a general way.

A real protection is translated into the enforcement of the legislation and ensuring the ways of lodging an appeal in real terms, with an impact in reducing the level of transactions that are harmful to consumers.

1. Consumer protection in the Romanian insurance market

In financial market, the companies can create services with apparently any combination of contractual terms, as long as they provide consumers complete information on all those terms. In this regard, Blanaru (2012) argues that, as far as concerns available information,

the ratio between the company in the financial market and consumer is disproportionate, favouring the first entity. In the case of an insurance company, before concluding a contract, the entity has all the client related information. The client, in turn, does not have detailed information on how depositors' funds are used, ability and willingness of company to meet its commitments. This imbalance of information between parties does not allow the client to enjoy equality of opportunity, enhancing the uncertainty and risks of financial services consumers.

Hayek (1945) claims that, for a proper functioning of the market, consumers should have real access to enough information in order to assess and compare products. In some situations, in the financial market there is no adequate transparency, as companies fail to disclose certain information. With regard to consumer protection issue against consequences arising from the lack of available information, regulation authorities in the financial market should achieve a balance between the interests of companies and the interests of clients, in order to provide proper functioning of the market. They should eliminate the possibility of a company to create a false image of its services, through which the consumer may be persuaded to enter a contract under unclear conditions. Baldwin and Cave (1999) argue that regulation authorities can protect consumers against insufficient information by imposing a larger amount of available and correct information.

Within the EU, the economic and financial crisis has showed the importance of a uniform regulation. Nevertheless, there is still no European law of contract to govern the relationship between consumers and companies. Generally, within a member state, the national civil law is applied, and some of its articles overlap with those of the laws governing consumer protection at EU level, in each sector of activity. There are also legislative aspects that are completely harmonized (for example, unfair commercial practices). The European policy of consumer protection aims at protecting consumer health, safety and interests, according to the Article 169 of the Treaty on the Functioning of the European Union. This policy fosters consumer rights to information and education and their right to organize in order to defend their interests. The legislative measures are aiming banking, insurance and stock markets. Although there are certain overlaps in their application, the regulation of consumer protection varies from area to area.

In insurance, the Directive 92/2002 on insurance mediation, regulating commercial practices to all insurance products, is applied. The existing EU regulation does not regulate in detail the sale of insurance products; the rules are different from one member state to another and are applied only to intermediaries. The goal is to improve consumer protection in the insurance sector by setting up common standards and by proper counselling. This goal will be achieved through enhanced transparency and by setting up equal competition conditions to intermediaries and insurance companies.

In the Romanian insurance market, one of the goals of the Financial Supervisory Authority (FSA) is to protect the rights of policyholders. In this regard, the Financial Supervisory Authority supervises permanently authorized insurance companies, performs information exchanges with similar supervision authorities of member states and continuously cooperates with the European Commission and other public authorities or foreign institutions. Consumers' right to information is the status of ISC Order 23/2009 for the implementation of the Norms regarding the information that insurers and insurance intermediaries must disclose to clients, and other elements that must be included in the insurance contract, completed by ISC Order 11/2010. According to this right, before

concluding an insurance contract, individuals holding the quality of insured, potential insured, contractor or potential contractor of insurance, are entitled to receive a basic set of information on the contractual terms (defining each insured event and the insurance indemnity, terms of insurance exclusions, procedures of contract enforcement, suspension or cancellation, terms and payment forms of premiums, terms and payment forms of claims, redemption amounts and sums insured, any penalties imposed by the contract in the event of early or unilaterally termination and so on)   and other useful general information (general information regarding the insurer/broker, the settlement procedures of disputes arising from the contract execution, the law applicable to the insurance contract and the existence of the Guarantee Fund).

The analysis and resolution of petitions formulated by insured or other person/entity on the services provided by insurers or insurance brokers are an important part of the work performed by the Financial Supervisory Authority. It can ascertain if an insurance company assumes responsibilities seriously or if additional measures of supervision and control are necessary. The activity of petitions solving represents an additional lever through which the Financial Supervisory Authority protects the legitimate interests of policyholders. In the insurance market, any insured person or entity, contractor or beneficiary of the insurance contract or the injured party (third person or entity prejudiced by a person who holds a civil liability policy) may claim. According to the legislation, the insurance company must create and implement procedures of complaints and appeals resolution, and these procedures should be permanently accessible to the public, at the office and on the web-site of the insurance company. Also, each insurance company must nominate a team of analysis and resolution of petitions, composed of specialized personnel with experience in the insurance market, qualified on the insurance classes addressed by petitions, having the responsibility to analyze, under the law, all the aspects notified by the petitioners.

According to Order 11/2012 for the implementation of the Norms regarding the procedure for solving the petitions on the activities of insurance companies and insurance intermediaries, in order to provide the transparency of registration and settlement of petitions, insurance companies authorized by the Insurance Supervisory Commission are required to disclose on their web-sites information on total number of petitions, total number of sound petitions, total number of sound petitions for damage files, total number of sound petitions for paid damage files and total number of petitions solved unfavourable.

2. Methodology of research

This exhaustive research on insurance consumers' right to claim aims to improve the decision-making capacity of the financial services consumers from the Romanian insurance market through better information on ensuring and exercising their right to claim under the legislation. In this respect, the main data analysis techniques, namely principal components analysis, cluster analysis and discriminant analysis, were applied to a set of data consisting of petitions registered and solved in 2012 by the insurance companies from Romania, in order to achieve a classification of companies, meant to assess market transparency and to provide consumers useful information in the process of purchasing an insurance policy. The analysis comprises all of the 41 insurance companies that operated in the Romanian insurance market in 2012 and for each of them, data were collected on four variables which are relevant to consumer informing and protection, namely, total number of sound petitions, total number of sound petitions for damage files, total number of sound petitions for paid

damage files and total number of petitions solved unfavourable. The data were collected from insurance companies' web-sites and were processed with Statistica software.

The reason of using these techniques lies in the fact that they represent useful instruments that process large amounts of information in order to extract core information and to represent it in a suggestive and intelligible form. Following the application of this kind of statistical tools, the relevance and interpretability of data are maximized, and redundant information is eliminated. Data analysis techniques range from the simplest ways of graphic representation of data and computation of specific statistical indicators, to the most complex methods of multi-dimensional analysis.

Among them, the *principal components analysis* is probably the most known data analysis technique, being applied by almost all scientific disciplines. Bishop (2006) defines the principal components analysis as a linear technique of dimensionality reduction that identifies the orthogonal directions of maximum variance in the original data and projects data in a space with reduced dimension, comprising a sub-set of components with the highest variance.

The basic idea of principal components analysis is to identify a transformation that makes the connection between two vector spaces of different dimensions:

$$\Psi : \Re^n \to \Re^k, k << n \tag{1}$$

The goals of principal components analysis are aimed to extraction of core information from original data, reduction of original data dimensions by keeping only key information, simplification of original data description and analysis of variables and observations structure. In order to achieve these goals, principal components analysis computes new variables called principal components, which are linear combinations of original variables (Abdi and Williams, 2010). The best results are achieved when the original variables are highly correlated, positively or negatively. Finally, the resulting components will show different grades of correlation with the original variables, but they are completely uncorrelated to each other, meaning that they measure different dimensions of data.

Cluster analysis is a multivariate method that can be applied in order to group a population of objects based on a set of computed variables into a number of different groups, so that similar objects be assigned to the same group. This type of analysis does not provide a mechanism of differentiation between relevant and irrelevant variables. Consequently, the process of selecting the variables subject to cluster analysis must be strengthened by conceptual considerations (Cornish, 2007).

Discriminant analysis represents a technique of supervised recognition of forms that involves the application of a set of certain methods, techniques and algorithms in order to identify those characteristics of objects that have the highest relevance regarding the classification of objects belonging to a population into predetermined classes and to determine the classification of new objects into predefined classes (Ruxanda, 2001).

The main goal of discriminant analysis is to identify which of the N descriptive variables have the highest discriminatory power, or in other words, which of these variables are the most relevant for the classification of objects into certain classes. The functions applied to class separation are called discriminant functions, classification functions or score functions, are defined in relation to the descriptive variables of objects and are used for the

computation of new variables, known as discriminant variables or score variables. The relationship between the three key elements of discriminant analysis, namely descriptive variables, discriminant variables and discriminant function, can be summarized as follows:

$$d_i = D_i(x_1, x_2, ..., x_n), i = 1, 2, ..., p$$

(2)

where $x_1, x_2, ..., x_n$ are descriptive variables, d_i is the discriminant variable, and D_i is the discriminant function.

3. Results and discussions

Prior to applying the techniques of data analysis, the variables were standardized. Table 1 shows the descriptive statistics of each variable. The high values of standard deviation emphasize that there is a large amount of information in the original space. The positive values of the Skewness statistical indicator shows that, for all the variables analyzed, the distribution is skewed to the left, having several extreme values to the right. The values of the Kurtosis statistical indicator highlight that the distributions of all variables' series are leptokurtic, sharper than a normal distribution. Thus, these two indicators reveal the existence of information asymmetry, because the distributions of all the variables taken in consideration are not symmetrical and mezokurtic, as series with normal distribution.

Table no. 1: Descriptive statistics

Variable	Mean	Minim	Maxim	Std. dev.	Skewness	Kurtosis
Sound petitions	261.6098	0.00	4518.000	796.0366	4.1795	21.5645
Sound petitions for damage files	237.8293	0.00	4123.000	733.9749	4.1163	20.8802
Sound petitions for paid damage files	128.7561	0.00	1907.000	386.7579	3.5463	15.0655
Petitions solved unfavorable	116.1951	0.00	694.000	205.3799	1.6049	4.0129

Source: own computations performed with Statistica software

The correlation matrix (Table 2) shows the strong linkages between the original variables, which in turn lessens the individual significance of variables and emphasizes the existence of informational redundancy. However, as it was mentioned, the best results are achieved when the original variables are highly correlated. Moreover, as a result of the existence of informational redundancy, the transformation of the original variables into a small number of principal components becomes possible.

Table no. 2: The correlation matrix of the original variables

| Variable	Sound petitions	Sound petitions for damage files	Sound petitions for paid damage files	Petitions solved unfavorable
Sound petitions	1.00	1.00	0.95	0.64
Sound petitions for damage files	1.00	1.00	0.95	0.63
Sound petitions for paid damage files	0.95	0.95	1.00	0.62
Petitions solved unfavorable	0.64	0.63	0.62	1.00

Source: own computations performed with Statistica software

Assuming the standardization of the initial data, **the technique of principal components analysis** can be applied. According to Kaiser-Guttman rule which is used in determining the number of principal components, only the eigenvalues of the correlation matrix greater than one will be retained, as only the principal components with a higher variance than the standardized original variables are relevant. According to Table 3 and Figure 1, only the first new variable has the eigenvalue higher than one, thus only the first principal component is retained. This component accounts for approximately 86% of the variability of the original space, with a 14% loss of information.

Table no. 3: The eigenvalues of the correlation matrix

Variable	Eigenvalue	% Total variance	Cumulative eigenvalue	Cumulative %
Sound petitions	3.429762	85.74404	3.429762	85.7440
Sound petitions for damage files	0.506467	12.66167	3.936228	98.4057
Sound petitions for paid damage files	0.063013	1.57533	3.999242	99.9810
Petitions solved unfavorable	0.000758	0.01896	4.000000	100.0000

Source: own computations performed with Statistica software
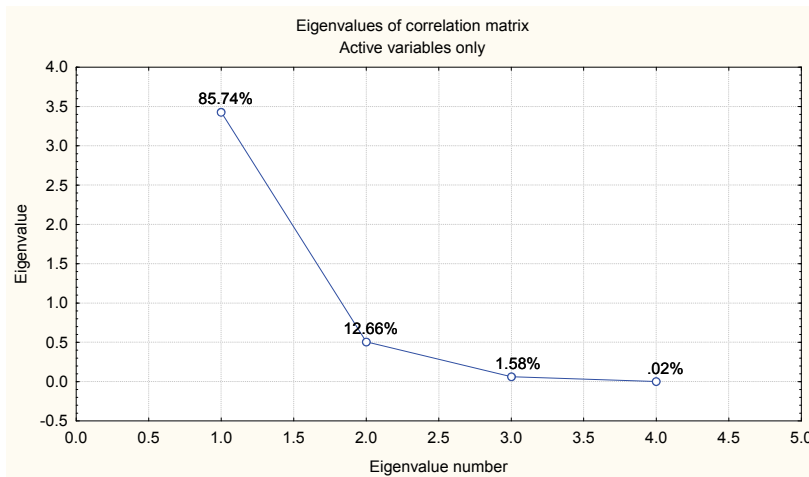
Figure no. 1: Variation of correlation matrix eigenvalues
Source: own elaboration performed with Statistica software

The next step involves determining the factor matrix of the retained principal component (Table 4). Its elements represent the correlation coefficients between the original variables and the retained principal component. The formula for computing an element of this matrix is:

$$\omega_{ij} = \frac{\sqrt{\lambda_j}}{\sqrt{VAR(x_i)}} * a_i^{(j)}, i = 1,2,...,n; \ j = 1,2,...,k$$

(3)

where k is the number of retained principal components.

It can be noticed that the new principal component has strong correlations in a negative way with all of the four original variables.

Table no. 4: The factor matrix

Variable	Factor 1
Sound petitions	-0.980928
Sound petitions for damage files	-0.979250
Sound petitions for paid damage files	-0.964068
Petitions solved unfavorable	-0.761041

Source: own computations performed with Statistica software

Table 5 shows the coefficients of the linear combinations that define the principal components, based on which the observations scores in principal components space can be determined.

Table no. 5: Eigenvectors of correlation matrix

Variable	Factor 1
Sound petitions	-0.529670
Sound petitions for damage files	-0.528764
Sound petitions for paid damage files	-0.520566
Petitions solved unfavorable	-0.410938

Source: own computations performed with Statistica software

Figure 2 illustrates the insurance companies in the new space given by the retained principal component.

It may be noticed that Astra can be easily distinguished from the other insurance companies, since it records a high number of petitions. The second group includes companies that record an average number of petitions, namely Euroins, Omniasig, Omniasig VIG (formerly BCR VIG), Asirom, Uniqa Asigurări, Generali, Carpatica, Groupama and Allianz – Țiriac. The remaining insurance companies fall under the category with a small number of petitions.

By applying the principal components analysis on the data set consisting of 41 insurance companies and 4 variables, a principal component synthesising approximately 86% of the information contained in the initial causal space is obtained, in terms of a minimum information loss. Transiting from an initial space with 4 dimensions to a one-dimensional space, the first principal component provides a classification of the insurance companies on consumers' petitions, by identifying three categories of companies.
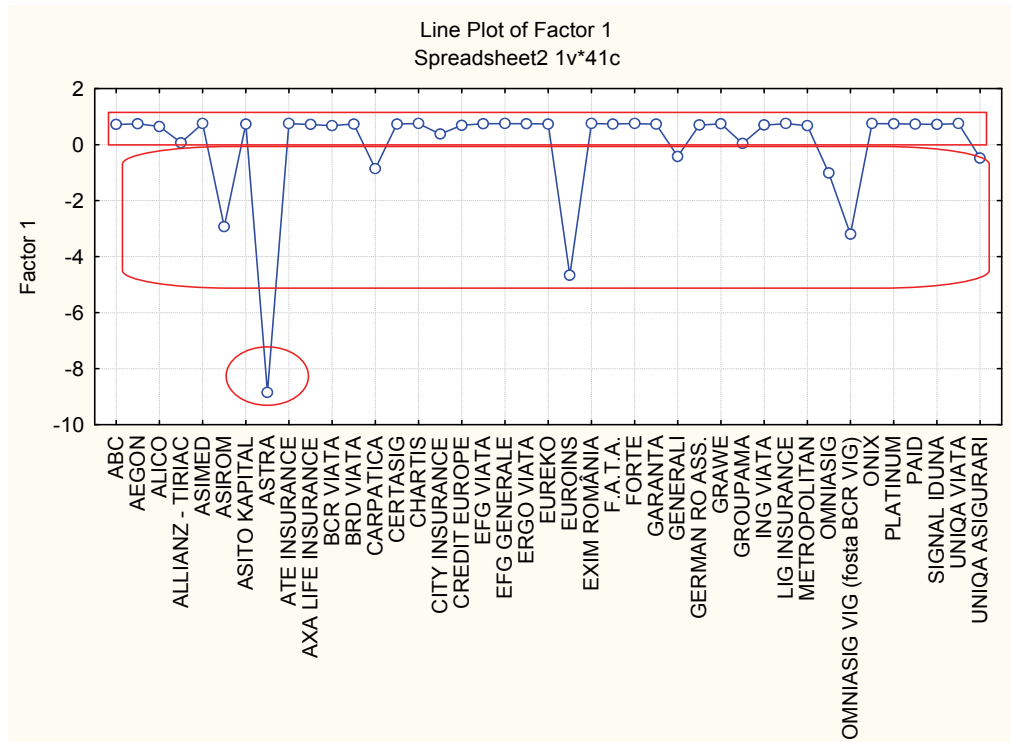
**Figure no. 2: Classification of insurance companies according
to the first principal component**
Source: own elaboration performed with Statistica software

The second technique, cluster analysis, is aimed at classifying data in relevant informational structures, called classes, groups or clusters. In order to form clusters, it is necessary to use a measure of proximity between objects. In this regard, the Manhattan distance, also known as rectangular distance, City-Block distance or L1 norm was used, computed as the sum of the absolute values of the coordinates' differences of the two analyzed objects or variables:

$$d(o_i, o_j) = \sum_{k=1}^{n} |x_{ik} - x_{jk}|; \quad d(x_p, x_q) = \sum_{t=1}^{T} |y_{pt} - y_{qt}|$$

(4)

Regarding the method of hierarchic classification, Ward's method was used, since it is considered to be the most efficient algorithm, due to its capacity of explicitly addressing the issue of classes' homogenization.

By applying cluster analysis to the 41 insurance companies that operated in the Romanian insurance market in 2012, the classification dendogram illustrates the following results in Figure 3.
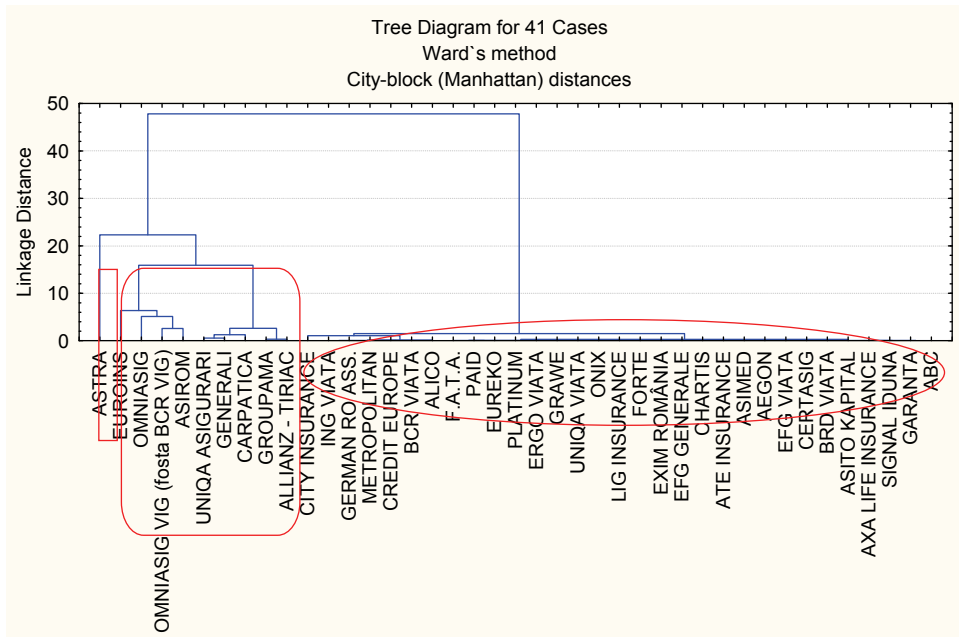
Figure no. 3: Classification dendogram
Source: own elaboration performed with Statistica software

The application of hierarchical aggregation techniques generates more cluster solutions, and the selection of one solution is performed according to the goals set in the analysis process. Therefore, considering a relatively small distance-limit of aggregation, three clusters of insurance companies were obtained, identical to those obtained through principal components analysis. The first cluster includes Astra. The second cluster includes Euroins, Omniasig, Omniasig VIG (formerly BCR VIG), Asirom, Uniqa Asigurări, Generali, Carpatica, Groupama and Allianz – Țiriac, and the third cluster the rest of them.

By applying cluster analysis, the accuracy of the results achieved using principal components analysis is assessed. Thus, it can be seen that the three clusters of insurance companies are identical to those obtained through principal components analysis, the accuracy of results being of 100%.

Finally, in order to apply discriminant analysis, Astra was eliminated from analysis, since discrimination cannot be performed with classes comprising a single element. The classes investigated are those obtained through cluster analysis.

Table 6 shows the reliability of discriminant analysis and the contribution of individual characteristics:

Table no. 6: Discriminant Function Analysis Summary

Variable	Wilks' Lambda	Partial Lambda	F-remove (1,35)	p-level	Toler.	1-Toler. (R-Sqr.)
Wilks' Lambda: .16267 approx. F (4,35)=45.041 p< .0000						
Sound petitions	0.178738	0.910084	3.45799	0.071369	0.004562	0.995439
Sound petitions for damage files	0.178674	0.910412	3.44415	0.071912	0.004943	0.995057
Sound petitions for paid damage files	0.163063	0.997572	0.08519	0.772106	0.212582	0.787418
Petitions solved unfavorable	0.411322	0.395473	53.50154	0.000000	0.455562	0.544438

Source: own computations performed with Statistica software

It can be noticed that the overall discrimination is very strong: Wilks' Lambda statistic is 0.16267 (the closer to zero is its value, the higher is the discriminatory power and the closer to one is its value, the smaller is the discriminatory power) and p-value is less than 10^{-4}. The classification functions for each of the two groups are shown in Table 7.

Table no. 7: Classification functions

Variable	G_1:1 p= .22500	G_2:2 p= .77500
Sound petitions	-66.9621	-0.32673
Sound petitions for damage files	58.6520	-1.48621
Sound petitions for paid damage files	1.7611	0.68397
Petitions solved unfavorable	13.5822	-2.62285
Constant	-10.0750	-1.10913

Source: own computations performed with Statistica software

The classification matrix illustrates the level of correctness of the discrimination into the two classes that resulted from cluster analysis.

Table no. 8: Classification matrix

Group	Percent Correct	G_1:1 p= .22500	G_2:2 p= .77500
G_1:1	88.8889	8	1
G_2:2	100.0000	0	31
Total	97.5000	8	32

Source: own computations performed with Statistica software

The classification matrix shows that all the insurance companies belonging to the second class according to cluster analysis have been allocated in the same class through discriminant analysis. Only one insurance company, Omniasig, belonging to the first class, was assigned to the second class after discrimination. As it can be noticed, the total percentage of correct classification is 97.5%.

By applying discriminant analysis, the accuracy of the results achieved using cluster analysis is assessed. Thus, according to the classification matrix, it can be seen that there is only one difference in the case of Omniasig insurance company, the accuracy of results being of 97.5%.

Conclusions

Consumer protection represents an essential component of any financial system, through the numerous advantages provided. Although the efficient functioning of financial markets requires consumers' access to an adequate amount of information, actually, the ratio of available information between the company in the financial market and consumer is disproportionate, favouring the first entity.

As an EU member state, in the Romanian insurance market, one of the goals of the Financial Supervisory Authority is to protect the rights of policyholders. In this regard, the activity of petitions solving represents an additional lever through which the Financial Supervisory Authority protects the legitimate interests of policyholders.

By applying the main techniques of data analysis, out of the 4 types of petitions that insurance companies have to report, the essential type was identified, namely sound petitions, based on which a classification of the insurance companies that operated in the Romanian market in 2012 was achieved.

By making the transition from four to only one variable in the initial phase, valuing the technique of principal components analysis, a classification of insurance companies on consumers' petitions is obtained, identifying three classes of companies. Subsequently, the application of cluster analysis and discriminant analysis revealed results confirming the correctness of the results obtained through principal components analysis, with a percentage of correct classification of 97.5%.

Analyzing this classification, in the process of decision-making to purchase an insurance policy, consumers can chose those companies included in the group with a small number of petitions. Therefore, the final results lead to better information for consumers on ensuring and exercising their right to claim and, hence, to the improvement of their protection through reducing the level of transactions that are harmful to consumers.

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