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UDK: 658.14/.15:368

Review
Pregledni rad

MODEL OF FINANCIAL AFFORDABILITY OF INSURANCE HOLDER IN THE CONTEXT OF INSURANCE COMPANY RISK MANAGEMENT

ABSTRACT

This paper analyses the manner of evaluation of insurance holder affordability conducted by an insurance company. A well done financial analysis and appropriate methodology applied enable our greater efficiency when making strategic decisions by selecting business partners, production programs, placing funds into investment programs with an aim of preserving and increasing company value, protecting interest of shareholders, insureds and other insurance creditors.

Adequate macroeconomic methods are applied against a corresponding software application, the analysis and synthesis of which lead to conclusions verifying the set hypothesis that there is at least one model satisfying the required and sufficient condition to reduce the level of risk of an insurance company by determining the financial standing of an insured. On a sample of data corresponding results are obtained and commented on in the conclusion of this paper.

Key words: *insurance, risk management, effectiveness, financial standing of insured.*
JEL classification : *D81; G22; L15.*

1. INTRODUCTION

Modeling has a significant role in business processes management and enhancing their quality. Special metrics are developed in all business segments (Mendling, 2008).

Effectiveness and efficiency are a subject of business, thus being an area of interest of insurance companies as well (George, 2002) which cannot survive without expert teams and leaders who are to ensure efficiency of operations. Complex companies understand that they are a part of a globalization process bringing new views on economics and triggering new motivational factors of labor.

Insurance companies conduct specific operations relying on risk management and use of modern actuarial theories, dynamic and complex models with components of non-deterministic turbulences. The application of a diverse and multidisciplinary approach is a condition which must be satisfied by an insurance company to stay in the domain of stability in conducting business. (Asprey and Machietto, 2003). Due to the fact that in every business organization, therefore in insurance business as well, there are structural errors, there is a need of conducting a research in technical, legal and insurance aspects in order to minimize these errors. That is aslo significant in terms of inclusion of insurance companies in the e-business enviroment and knowledge economy.

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The aim of the paper is to justify the concept of development of quality management effectiveness in an insurance company by analysing the criteria of financial standing of an insured, as well as by making a mathematical model through which it will be easier to reach the desired results. The research should show the reasonableness of introducting a new approach in operations of insurance companies in order to enhance efficienecy and make decisions based on critically selected information. The model applied in this paper offers a precise calculation of the financial standing of an insured by applying the Altman Z method which is rarely used in the practice of insurance companies, although we are of opinion it yields good results, and for that reason it is recommended.

This paper offers one possible solution in managing insurance company risks, ensuring preservation and enhancing value of a company, protection of interests of shareholders, insureds, insurance beneficiaries, injured third parties and other creditors of insurance companies. In its operations, the company is exposed to diverse uncertainty factors, arising from its inability to precisely determine the probability of occurrence and outcome of potential events. Its management is responsible for the assessment of the level of uncertainty the compay is willing to accept in order to attain basic risk managament objectives as efficiently as possible. For that purpose, an insurance company must draw up a methodology as a framework for adopting individual policies and procedures for managing various types of risks to which it is exposed in conducting its operations. The decision-making framework contains assurance that the company operates on the principles of: a) safety, b) securing and preserving company values and interests of everyone in the insurance chain and c) profitability. Its management is required to identify all significant risks, consider all relevant information from the internal and external environment and to adjust all activities of the company to the changed circumstances.

Basic principles observed by the company in order to preserve value on the long run are: investment in human resources, setting up an efficient and effective system of internal controls and defining its entrepreneurial strategy, predominantly oriented to insurance products quality, improvement of company capacities, satisfaction and trust of insureds and the public against the achievement of realistic profitable goals.

The methodology and framework of company risk management define a philosophy of insurance company governance which is to maintain an optimum balance between its growth strategy and profit targets on the one, and risks and efficient utilization of resources on the other hand. Good risk management improves: human resources, capital, brand, knowledge, experience, management skills and capabilities, as well as activities relating to identifying market demands.

2. RESEARCH PROBLEM AND HYPOTHESES

The research conducted in this paper proved that an insurance company is a good model for following up the efficiency of risk management in it. Increase in premium income is a consequence of efficiency accompanied by a growth in the number of insureds, having as a result a continuous growth in the number of employees of the insurance company involved in insurance and accompanying activities.

The application of the model under review on the selected insurance company (»DDOR Novi Sad«) enables us to give a hypothesis by which we define and through a software application create a model for making decisions enabling efficient and effective reduction of a risk to which a potential insured is exposed.

3. MODEL DESCRIPTION

3.1 METHODOLOGICAL NOTES ON THE MODEL

The model under review is realised under conditions of transition and change of ownership relations by capital increase or setting up mixed ownership companies. Governance, integrations, divisions, cooperatives, inward and outward investments, distribution of salaries and allocation of income, consumption, business policy, business finances and accounts have been changed by finding a company/insured through various systemic changes. This issue was approached in our company from a scientific and practical point of view, seeking methods and tools by which operating results of a company being an insured or wishing to become an insured have been analysed. The modern approach requires integration of organized knowledge based on rules, procedures and norms of doing business and on best practice. Our model is a repository of knowldedge being a basis for development and management of business processes in the future. The idea is to maintain, through development of capabilities to learn faster, the competitive advantage for which all in the company are interested.

A wrongly selected methodology and ill conducted analysis can result in a number of adverse consequences: a) wrong strategic and current operating decisions; b) ill selection of business partners; c) wrong selection of a production program/service; d) failed investment; e) misplaced funds; f) ill judgment as to significance of elements needed for evaluation of the financial standing of the company being the subject of insurance and a number of other deficiences leading to negative results.

In the evaluation of the financial standing of an insured, a concept and structure of DSS (Decision Support System) is used, based on the implementation of the model base, database and dialogue subsystem (Table 1)

Table 1
DSS Concept and Structure in the Evaluation of Insured's Financial Standing

M_1 – Data on insured	M_2 - Balance sheet	M_3 – Income statement
M_4 – Coverage calculation	M5 – Ratio analysis	M 6 – Balance analysis by net working funds
M_7 – Cash-flow analysis	M_8 – Funds-flow analysis	M_9 – Altman Z Method

Source: own research

By introducing an automated office operating, electronic mail and electronic conference tools were created (conference via computer), replacing group meetings in one place. The true sense of using these tools is achieved by integrating them into a DSS concept, i. e. its inclusion in the concept of automated business activities (Balaban and Ristić, 1998). The result of such integration is a GDSS (*Group Decision Support System*). In the GDSS analysis, a new component in the form of communication procedures is met. While a DSS interactive system is based on computer assisted resolving of poorly structured problems, by this analogy, a GDSS is a computer-based interactive system, assisting in resolivng *unstructrued* problems of a group of people who make decisions while working together (as a group). GDSS software components contain a) a database, b) a model base, c) specialized applicative programs for group use (graphic and statistical part for operational research), realized as a GDSS component enabling efficient use of technology by group members and d) flexible user-friendly interfaces. Group members, together with a so called group intermediary or a mediator, represent a group component of the GDSS, with the mediator's role pretty much depending on the specific features of a particular software, problem or user.

The idea of using a GDSS in this paper is applied in identifying the financial standing of an insured, and primarily in a modern comprehension of the financial standing of a business entity, and therefore our model should confirm the necessity of a multidimensional approach in this context. A modern comprehension of the financial standing of an insured is based on a partial examination of its financial capacity presented for a given period in balance sheet, income statement, cash-flow plan and asset-flow statements (derivative

financial statements). Financial standing is a dynamic category representing a group of dynamic events which, at one point, reflect a current reaction of a continuous business and financial standing of a business entity. Instead of a statistical, it is necessary to give preference to a dynamic approach in its evaluation, A dynamic approach, beside the examination of the financial capacity of an insured, also implies analysis of cost-effectiveness flows for a given accounting period.

Operating models presented in this paper (M1, M2 ... M9) give support to management in making decisions. Each of the requirements or tasks should be assigned a corresponding model which will use internal data, and this type of management defines the content of models as well. A possibility of inclusion, derivation, altering, combining and controlling the model is an essential feature of a DSS which makes it significantly different from traditional management information systems. Models included in the base could be classified by categories: for managerial purposes, according to a criterion of selected technologies (e.g. models of building blocks), according to a criterion of functional applicatbility (financial models, marketing models, accounting models etc.).

The user of models under review is a person (insurance agents, financial analysts and risk assessors) facing problems or decisions supported by the designed DSS. The manner of making a final decision depends on the functional hierarchy of a user of the offered solutions and its capabilities. A final decision on the financial standing of an insured is made by risk management managers. Managing company risks is not one-time performing an isolated activity, but a continuous carrying out of a number of activities, integrated in business activities of a company and activities of governing and managing the company. Company committment to this framework of risk assessment (use of the model under review), incorporating presentation of a financial analysis and structure of an insured, gives a reasonable assurance that company objectives will be attained.

3.2 MODEL STRUCTURE

Adequately pursued policy of an insurance company implies a control over premium collection and funds investment in terms of the amount, period of investment, riskiness, maturity and the amount of expected yield. In accordance with the conducted research, we give specific examples of assessment of the financial standing of an insured, processed in the insurance company information system. By analysing the financial standing, we control a) those interested in obtaining an insurance policy (insureds) and b) insurance policy grantors (insurance companies) whose interest and objective is to perceive all risks and circumstances prior to making a decision on insurance policy issuance. Analyses made so far were based on tracking indicators, balance sheet and income statement analysis and they depended to a large extent on intuition, experience and resourcefulness of a specific manager. In this paper, by using the Altman Z method, we came to a mathematical model presenting the financial standing of a client (insured) in the form of matrices. By integrating this model in a general decision-making model, we aslo included in it the decision-making mathematical model with its previously mentioned components.

It is known that E. Altman published in 1968 a process of deriving a formula of the so called Z score (Ćirović, 1970 and 1976). The method relates to predicting bankruptcy as a multivariant formula for measuring financial health of any company, being a powerful diagnostic tool for forecasting a probability whether a company will after certain time span (predetermined, e.g. 2 years) enter a period of bankruptcy. Our model is proposed in such a way that the period of bankruptcy risk determining is not measured for the „year“ time horizon, but for the period „immediately“. All these subsystems are realized by some of the software tools verified on the market.

By probing the needs of a decision-making model in the case of determining a financial standing , four entities were found to exist and presented in detail in

Table 2

Entity 1: ***Register of insurance holders***	**Entity 2:** ***Insured's balance sheet records***	**Entity 3:** ***Insured's income statement records***	**Entity 4:** ***Processing parameters records***
▫ code ▫ name ▫ head office ▫ address ▫ telephone ▫ fax ▫ E-mail address ▫ contact person ▫ giro account	▫ code ▫ date of drawing up ▫ unpaid subscribed capital ▫ non-current assets ▫ current assets ▫ short-term receivables ▫ short-term financial investments ▫ prepaid expenses ▫ loss ▫ non-operating assets ▫ equity ▫ long-term provisions ▫ long-term liabilities ▫ short-term liabilities	▫ code ▫ from (date) ▫ to (date) ▫ operating income ▫ tax on income and income benefits ▫ contributions for income and benefits ▫ costs and taxes ▫ contribution expenses ▫ financial income ▫ interest expenses ▫ non-operating and extraordinary income ▫ revaluated income ▫ net result of insured	▫ code of evaluator ▫ name, family name of financial standing evaluator ▫ date of determining financial standing ▫ ordering party of the financial standing report (determined according to detailed needs of a decision-making model user)

Source: own reserach

By software realization of the model dialogues, data base structure and applicative software for determining financial standing of an insured are generated. Dialogue enables a solution user to navigate through the software solution in order to perform a quality exploitation of GDSS idea. There are data-comprising menues (input, alteration, deletion, review and/or printing) from the insureds register, for balance-sheet data comprising, for income-statement data comprising and a special dialogue system for insured's financial standing evaluation (Pejić, Radmanović, Stanišić, 1991).

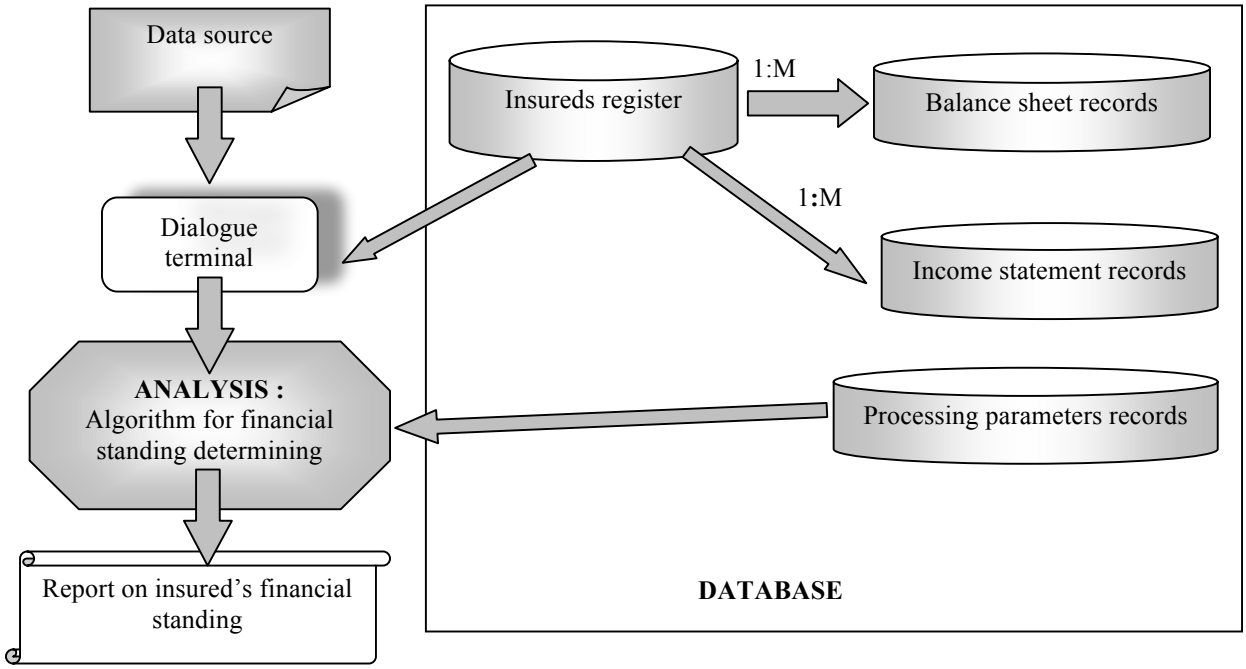
Note: *firstly*, each entity in the E-R (Entity-Relationship) model has at least one attribute

being a key to data access. With entity 1, *insurance holder code* is a unique key, whereas with entities 2 and 3 data multiplications are also possible with the same key and *secondly*, sources of data could be given in various media (disquette, CD, magnetic tape, paper, by communication line through modem, in paper form). Sources of data are organized within documents management, archive material organization and register material, being a base for a more sophisticated system: KDD - Knowledge Data Discovery).

Image 1. gives a global structure of relations among entities, the link of the procedure for determining financial standing to generate reports. It presents relations among entities and some functions crucial for determining the financial standing of an insured.

Figure 1

Illustration of the"E-R" (Entity-Relationship) base model for evaluation of insured's financial standing



Source: own research

The analysis of the financial standing of an insured is defined as an *algorithm*, i. e. a set of functions enabling, on the basis of inputs and financial-standing data, to make a decision on the size of risk for which a corresponding protection would be given. That is significant at evaluation of various alternatives and strategies, defining aims to be in line with the selected strategy and finally at designing risk management mechanisms. Acceptance of a certain level of a risk by insurance company is a part of its value creating and preserving process, implying gain expectance, commensurate to the accepted risk level. With risk management, a company improves its knowldedge and skills relating to risk indentification and assessment, defining the acceptable level of risk in relation to the planned growth and income of the company.

3.3 SOFTWARE SOLUTION OF THE MODEL

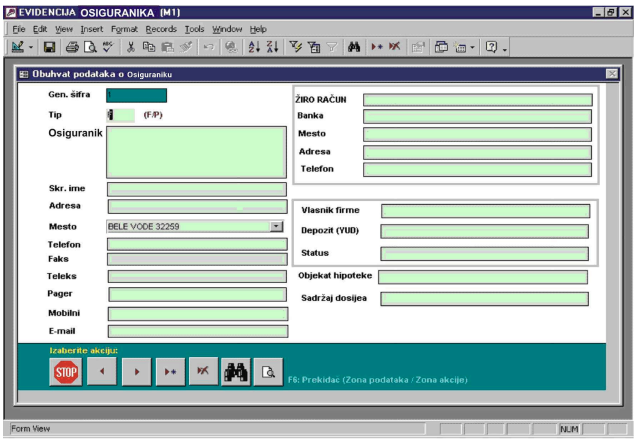
By data analysis on the basis of bookkeeping (operating and statistical) records and financial statements (balance sheet and income statement), we come to indicators for evaluation of the financial standing of an insured. Data on assets and sources of assets are taken from a standardized Balance Sheet Form (according to the methodology prescribed by the law on bookkeeeping of the respective conutry), according to interim financial reporting. Data given by the analytical service to internal and external users must be true and objective for all users, equally fair and not contradicting. Data on operating success, both in annual account and interim financial reporting are taken form the standardized Income Statement Form (according to the methodology prescribed by the law on bookkeeping of the respective country). In order to perceive as realistically as possible the financial standing of a company

being the subject of insurance, data on uncovered loss according to the annual account are given as the current balance. By reviewing relevant criteria, the following instruments and procedures in balance analysis will be identified: balance analysis on the basis of coverage account, ratio analysis, balance analysis on the basis net working funds, cash-flow analysis, funds-flow analysis. Due to the previously mentioned model complexity, these analyses will not be dealt with individually, as these are constituent parts of the model.

GDSS structure is in our solution expanded by a model base management system (MBMS) as a software system with the following functions: model creation, utilization of subroutines and other building bolocks, dynamic creation of new routines and reports, updating, model changing (Lazarević 1993; Mario, 1991). That way, it enables users to manipulate models by making experiments until a desired goal is reached. The base is created by an adequate databse management system (DBMS). A dialogue subsystem is controlled by a software called the dialogue generating and management system (DGMS). The dialogue subsystem offers its user an interface system containing input-output devices and provides a communication with the DSS through a function controlling the information flow and a function transforming user's input into languages which could be input by the DBMS. A knowledge management subsystem is seen as an laternative subsystem and could be used as a support to any other subsystem or as an independent component. The software part of the DSS is made of four components (E1, E2, E3 and E4) and could be supplemented by additional hardware and software parts. Beside these basic components, users are also deemed a part of the DSS, and DSS contribution could be measured by the success of interaction between computers and decision makers. A DSS structure for the assessment of the financial standing of an insured (given in Image 2) is comprised of nine modules (synthetic presentation of modules according to functions is given in Table 3). A corresponding menu is given for each model of the structure. Computer ECDL (European Computer Drawing Licence) certified employees carry out the operating methodology and come to desired results. A form for compiling data for insured's records is given in Image 2.

Figure 2

Module M1- the Insured



Source of data: own research

The offered model encompasses the following components within the risk management framework: *internal environment, defined company objecives, event identification, risk assessment, response to risks, control of activities, information and ocmmunications, as well as monitoring and supervision.* Such approach is made possible by modern information systems, which, in a qualitatively new, way bridge the gap created between the traditional approach in anticipating financial standing (*rough methods*) and the new quantitative approach. Methods of ratio analysis, cash flow and their modalities are built-in into daily decision-making in operations of an insurance company and relate to financial analysis issues. All listed methods are, first of all, pragmatic, and, one must admit, frequently the only mainstay in the decision-making process of an insurance analyst. Statistical approaches are conducted in order to spot certain causes of bankruptcy of an insured (company).

Table 2

List of Modules by Functions

M_1 – Data on Insured - name, family name, - address, - telephone numbers. - e-mail addres, - T.Rn. - deposit - object of mortgage - contenf of file, etc.	**M_2 - Balance Sheet** - unpaid subscribed capital - non-current assets - working assets - short-term receivables - loss - equity - long-term provisions - long-term liabilities etc.	**M3 – Income Statement** - operating income - interest expense - tax expense - contributions - net reserves - revaluating income - non-operating and extraordinary income - contributions paid by employees etc.
M_4 – Coverage Account - structure of commercial property - financial structure - property coverage by equity	**M5 – Ratio Analysis** - liquidity ratio - solvency ratio or security ratio - management ratio - cost effectiveness ratio	**M 6 – Analysis of Balance by Net Working Assets** - fixed capital - inventories - receivables - cash - own sources - long-term loans - short-term borrowings
M_7 - Cash Flow Analysis - Gross CF - Net CF	**M_8 - Funds Flow Analysis** - balance-sheet item selection - time span defining - review of variables and statistical calculations - variable nature of allocation	**M_9 – Altman Z Method** (see Image 3 relating to the evaluation of insured's creditworthiness)

Source: own reserach

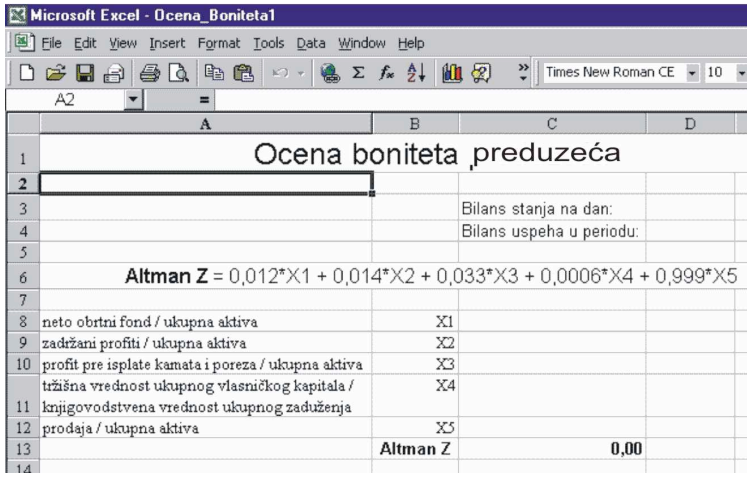
As the analysis of indicators is not perfect, and errors sometimes could be made in spite of best efforts, when interpreting results one must have in mind limitations in its application which are overcome by including other unemployed methods, such as:

Decomposition analysis, comprised of calculations of the relevant participation of certain items in assets, liabilities or income statement. A decomposition analysis performed in such a way could be termed classical, whereas in the case of a modern decomposition analysis, a measure of relevant changes is a total of logarithm differentials of the data calculated.

Net working funds analysis. The main postulate of financial equilibrium is term matching of sources of financing with assets. That means that non-current assets must be financed exclusively by non-current, and current operations by current assets. As the congruence of collection of goods sold and recovery of current assets is excluded, it must be assumed as a safety margin that a portion of current assets is also financed by non-current assets, which is called net working funds – NWF. That is why it is said that NWF are an excess of permanent capital over net immobilizations. Permanent working assets – PWA, circulating assets and liabilities differential, refer to that part of capital being permanently employed in the ocurse of a year. By the PWA to NWF ratio, we get an answer to a question in what percentage permanently employed assets in current operations are covered by permanent capital.

Control analysis gives an idea of a firm which cannot be seen from statements, but one can find initial elements in them. In the course of this analysis, a risk assessment manager particularly pays attention to: a) *existence of hidden and secret reserves,*b) *current assets quality* (*inventories, buyers, ...*), c) *liqudation value of a firm,* on the basis of which a bank loan coverage is determined (quantity of money which could be *obtained* from the compulsory sale of land and buildings, equipment, current assets), d) o*ccurrence of preinvestment* in operations of a firm, its causes (inflation, increase in inventories, real increase in taxes and dues), as well as the manner of remedying preinvestment (additional capital raising, divestment etc.), e) a*dequate volume of credit* which could be granted to a firm, depending on the purpose for which the credit will be used, condition of an economic cycle in which an industry or economy as a whole is, source of credit repayment, repayment term, quality of management etc.) and f) i*nstruments of securing credit repayment* which could be provided by a firm (collateral bill, check, mortgage, lien,...)

Figure 3
Module M9: Assessment of the Financial Standing of a Company by Applying Altman-Z Score



Source: own reserach

4. RESULTS

4.1 THEORETICAL AND RETROSPECTIVE BASIS

In our work so far, we have pointed out main prnciples of the Z-score model. It should also be added that some authors describe the perspective of Altman-Z method from the aspect

of an *ex-ante/ex-ponto* theory (Agarwal, Raffler, 2006). On other side, Altman-Z is useful in the area of real estate (Lee, 2004). Real estate is the area of business with risk aspects similar to those of insurance companies. "DDOR Novi Sad" is the insurance company whose database is used for this research. The assessment of the financial standing of insureds by Z-score has been generated in a software ambience - Windows 95 operating system and Excel 2000 (spreadsheets) as a part of 2000 Microsoft Office package).

4.2 ANALYTICAL-EXPERIMANTAL RESULTS

Results of the analysis are given on the examples of 6 insureds (clients). Altman-Z method is used for indicators of the financial standing of insureds, with the following formula used in this method:

Altman Z = 0,012 * X1 + 0,014 * X2 + 0,033 * X3 + 0,006 * X4 + 0,999 * X5

In this analytical model, the following financial indicators are used: X1 = net working funds / total assets; X2 = retained profits / total assets; X3 = profit before interest and tax / total assets; X4 = market value of total equity / book value of total debt and X5 = sales / total assets.

Benchmarks are determined according to statistical data on the presented „Balance Sheets“ and „Income Statements“ of the subject firm – the insured. In accordance with the company business policy, the obtained result is compared to the valid financial standing criterion: zone reviewing structure and financial standing quantification are obtained on the basis of the following matrix:

If Altman Z is below 1.81 …….. bankruptcy zone
If Altman Z is above 1.81 but below 2.99 …….. grey zone
If Altman Z is above 2.99 ……... safe zone

The resuslts presented in this paper are obtained on the sample of 100 insureds, selected on the basis of a long-standing cooperation with them. Due to its extensiveness, a sample of six insureds is taken as the result of the research presented:

*Financial standing assessment (**Insured** **D2**). Balance sheet as of 31 December 2008*
Income statement for the period 1 January to 31 December 2008

Altman Z = 0.012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.42, X2 = 0.00, X3 = 0.26, X4 = 1.20 and X5 = 3.19. Calculated: Altman Z = 3.20

*Financial standing assessment (**Insured** **D4**). Balance sheet as of 31 December 2008 and Income statement for the period 1 January to 31 December 2008*

Altman Z = 0.012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.42, X2 = 0.00, X3 = 0.26, X4 = 1.20 and X5 = 3.19. Calculated: Altman Z = 3.00.

*Financial standing assessment (**Insured** **S1**). Balance sheet as of 31 December 2008 and Income statement in the period 1 January to 31 December 2008*

Altman Z = 0.012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.74, X2 = 0.12, X3 = 0.29, X4 = 1.20 and X5 = 2.71. Calculated: Altman Z = 2.73.

*Financial standing assessment (**Insured** **S6**). Balance sheet as of 31 December 2008 and Income statement in the period 1 January to 31 December 2008*

Altman Z = 0.012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.31, X2 = 0.09, X3 = 0.23, X4 = 1.20 and X5 = 2.42. Calculated: Altman Z = 2.43.

Financial standing assessment **(*Insured* L3).** *Balance sheet as of 31 December 2008 and Income statement in the period 1 January to 31 December 2008*

Altman Z = 012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.08, X2 = 0.00, X3 = 0.04, X4 = 1.20 and X5 = 0.52. Calculated: Altman Z = 0.53.

Financial standing assessment **(*Insured* L5).** *Balance sheet as of 31 December 2008 and Income statement in the period 1 January to 31 December 2008*

Altman Z = 012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.006 * X4 + 0.999 * X5

The following financial indicators were used in this analytical model: X1 = 0.05, X2 = 0.01, X3 = 0.04, X4 = 1.20 and X5 = 0.35. Calculated: Altman Z = 0.36.

Two insureds (client codes D2 and D4) have results classified as the "safe zone" with the ratio above 2.99. Two insureds (client codes S1 and S6) are from the "grey zone" with the ratio above 1.81 and below 2.99. There are two insurance holders (client codes L3 i L5) from the "bankruptcy zone" with the ratio below 1.81.

From Altman-Z applied this way we could conclude that insureds (clients) D2 and D4 are from highly developed economic industries, insureds (clients) S1 and S6 are from medium-developed economic industries, whereas insureds (clients) L3 and L5 are from poorly-developed industries. Therfore, this analyisi shows their premium payment capacity, i.e. the magnitude of insurance company risk if they were issued insurance policies.

4.3 POSSIBILITES OF APPLICATION AND CAPABILITIES OF THE MODEL

The model described in this paper offers broad possibilities for application in insurance companies and banks. Besides, it can be upgraded and extended, depending on the requirements of a specific analysis. The research model can be a significant contribution in the evaluation of the financial standing of insureds in the function of risk management in a modern insurance company.

5. CONCLUSION

This paper was written within a process of developing a more general model intended to be a support to effective and efficient quality management within an insurance comapny, as an intersection of examples in practice in other insurance companies and scientific modelling. A more general model contains a group of factors through whicih this need of an insurance company is tracked. One of the criteria for the assessment of the model is the financial standing criterion – financial assessment of an insured, its financial capacity.

The model used is focused on financial indicators aimed at a more rational procedures and costs ensuring the most efficient risk management system. This model also proved efficient in practice as one of possible solutions. The paper indicates that: a) there are no *new* models for anticipating the financial standing of an insured which could bypass a financial analysis of insureds, b) the majority of reasons of a bad standing of an insured or a potential insured does not rest among exogenous factors (aggregated economic conditions) and c) the majority of fundamental business failure problems of insureds are within their company itself. In other words, variables X_i present in any quantitative model are in the domain of the financial
analysis of insureds.

A conclusion is reached that the applied software model classifies in the best way insureds as financially sound *(safe zone)*, financially satisfactory *(grey zone)*, and insolvent *(bankruptcy zone)*, i. e. those facing business failure in the near future.

The application of the model under review to the selected »DDOR Novi Sad« from Novi Sad, Serbia, enabled a verification of the hypothesis that a decision-making model defined this way and realized as a software enables effective and efficient reduction of insurance risks of a potential client.

Indicators of company operations do not show anything in themselves. Their significance is seen only when compared to other insureds in the same industry. The results of the paper would be even more reliable had the sample contained more data. This shortcoming was overcome by a choice of data generating extremes (by applying strata).

The future and necessary research relates to its further implementation into the »DDOR Novi Sad« IT support as a part of a new philosophy – philosophy of smart information systems.

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MODEL FINANCIJSKE MOGUĆNOSTI NOSITELJA OSIGURANJA U KONTEKSTU UPRAVLJANJA RIZIKOM OSIGURAVAJUĆE KUĆE

Sažetak: *U radu se analizira način ocjene financijske sposobnosti osiguranika od strane osiguravajuće kompanije. Kvalitetno urađena financijska analiza i pravilno odabrana metodologija omogućavaju nam veću učinkovitost pri donošenju strateških odluka, odabiranjem poslovnih partnera, proizvodnih programa, plasiranjem finansijskih sredstava u investicione programe u cilju očuvanja i uvećanja vrijednosti kompanije, zaštiti interesa akcionara, osiguranika i drudih poverilaca osiguranja.*

Primijenjene se adekvatne makroekonomske metode uz odgovarajuću softversku aplikaciju, čijom se analizom i sintezom došlo do zaključaka kojima je verifikovana postavljena hipoteza da postoji makar jedan model koji zadovoljava potreban i dovoljan

uslov da se snizi razina rizika osigravajuće kompanije utvrđivanjem finansijske sposobnosti osiguranika. Na jednom uzorku podataka dobijeni su odgovarajući rezultati koji se komentarišu u zaključku ovog rada

Ključne riječi: *osiguranje,upravljanje rizicima, učinkovitost, bonitet osiguranika.*

JEL klasifikacija : *D81; G22; L15.*