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RESEARCH ARTICLE **Open Access**

Identifying Optimal Models of Financial Wealth and Mathematical Requirements of Reserves based On Risks in Iran

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Abstract
The main goal of this article is to identify the optimal patterns of financial wealth and the mathematical requirements of reserves based on risks in Iran. The research method is deductive-inductive and in terms of its purpose, it is applied and quasi-experimental. In general, it can be said that the present research, in terms of descriptive and inferential method, from the perspective of strategy, is in the category of qualitative methods.The statistical population of the research is all the experts in the country's insurance industry. In the first phase of this study, the Delphi technique was used to refine, combine and identify the main risks of choosing the project implementation method. The intended panel was determined based on a combination of experts with various specialties and a sample of 31 people was used. The Delphi technique was implemented in three stages and in each stage a number of main risks were added to the model and finally six main risks were identified and collectively agreed upon. The results of this article showed that the country's insurance industry experts, including university professors and senior managers of Iran Insurance Company, agree with these four main risks in the financial prosperity model (Π); But these four main risks are not enough for the model of financial prosperity (Π). In the final model, the optimal pattern of financial wealth and the mathematical requirements of risk-based reserves in the Iranian insurance company includes four main pillars, which include 6 basic and general contain asset/liability mismatch risk, reinvestment risk, exchange rate risk, international market risk, life insurance account separation risk from non-life insurance account, life insurance account investment risk risks in the insurance industry Each of the basic and general risks of the insurance industry also has several risks and sub-categories.

Keywords: *Optimal patterns of financial wealth, Mathematical requirements of risk-based reserves, Iranian insurance companies, Delphi technic, AHP technic*

Introduction

Today, one of the main concerns of each insurance company is fulfilling the obligations related to the policyholders and maximizing the benefits of the insurance company. For this purpose, the regulatory organizations of each country by approving special laws and regulations and managers by adopting precautionary measures and new technical and financial solutions try to maintain the financial strength of insurance companies at an acceptable level. One of these cases is the use of appropriate financial mechanisms that improve the financial evaluation ability of insurance companies. (picarjo, 2023)

Usually, for sectors such as life insurance that have technical reserves and risks associated with them, insurance companies consider a precautionary reserve per year (2.4

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times the need to face adverse financial conditions) to meet the risk capital margin of that insurance. According to Abrain (2000), most of the insurance companies determine their figures with new formulas and it is more responsive than the old formulas, but these new figures cannot help insurance companies much in terms of financial prosperity.(chime,2023)

The traditional scale of financial prosperity in sectors such as life insurance has been equal to 2.7% to 9.3% on average, but it still has defects. As we know, in 1973, the European Economic Association published the first wealth guidelines for life and non-life insurance companies for EU countries, which were the first step towards establishing a free market in the insurance industry within the economic community. (hossein abadi and etc, 2022)

So the importance of this matter is clear here that on the one hand, the financial prosperity of insurance companies and on the other hand, the accurate and appropriate calculation model and formula in the mathematical requirements of risk-based reserves in insurance policies can improve the situation of insurance companies in terms of financial prosperity and obtain high ranks in the central insurance rating, as well as show off their financial strength in the eyes of shareholders and insurers. So that in the research topic, data analysis is considered one of the main and most important parts of the article. Raw data is analyzed using statistical techniques and after processing it is provided to users in the form of data. In addition to using appropriate statistical techniques in the logical analysis of data, presenting the findings of the article is also of particular importance. Because the findings of the article should be presented with a logical order according to the questions of the article. In this regard, the findings of this article are presented as follows.The findings of this article are presented in two parts, descriptive and inferential statistics. First, the findings obtained through descriptive statistics in this article are presented. These findings are presented in the form of tables and graphs with the necessary explanations.

- Analysis of the qualitative part (Delphi method)

-Identifying criteria and dimensions of the model with the Delphi method

Theoretical Background

Financial wealth is a very old concept. The term was first used in the 1630s to mean the payment of legal debts. Before the term financial wealth was introduced, other concepts such as legal reserves were often used. Financial solvency means the ability of an organization or business unit to have sufficient assets to pay its debts. According to the research conducted by the campaign in the field of financial prosperity. He can be considered as the pioneer of financial wealth research. Campaign conducted important research in the late 1940s and developed the Financial Affordability Assessment for non-life insurance. His research in 1957 led to the creation of an approach to evaluate the minimum reserves of life and non-life insurance companies in the European Economic Development and Cooperation Organization.

In 1973, the European Economic Association published the first financial guidelines for life and non-life insurance companies for EU countries, which were the first step towards establishing a free market in the insurance industry within the economic community. (Gholipour fereydooni, 2023)

With the progress of civilization and the development of human societies and the application of new sciences and technologies, human wealth and property have increased. Despite the facilities that have been provided for greater prosperity with the introduction of industrial products, new risks have also entered the society, which constantly endanger the lives and property of people. Sometimes the harmful effects of these risks are beyond the limits of the person's tolerance and ability, therefore one of the most important thoughts of every person in his personal and social life is to create favorable conditions to secure the future and prevent

the consequences of unwanted incidents in order to achieve peace of mind. Today, insurance is considered one of the important pillars of the economic and social life of human societies and a guarantee of economic circulation. (jafari, 2023)

Insurance companies must meet requirements to evaluate their wealth. The National Association of American Insurers introduced the risk-based capital system in 1992 for life insurance companies and in 1993 for non-life insurance companies. In Iran, after the introduction of financial prosperity II in November 2012, the Central Insurance Company has taken measures for the covered companies, but it has not yet been able to cover all the criteria well.Therefore, it can be said that the best estimate of the insurer's obligations, which is the same as technical reserves, is determined through actuarial calculations of the insurance company's future obligations and based on the risks associated with changes in things such as the interest rate of stocks and the stock exchange, etc. Also According to the existing laws, insurance companies are required to calculate their technical reserves at the end of each financial period within the framework of the approved regulation No. 58 of the Supreme Insurance Council and its subsequent additions under the title "Technical reserves of insurance institutions" and report them in the financial statements. Technical reserves are actually the determining items in the balance sheet and profit and loss account, which are calculated by including the following: technical reserves of insurance premiums, technical reserves of returned insurance premiums, supplementary technical reserves, deferred losses, technical reserves of natural losses, mathematical technical reserves, technical reserve for participation in the interests of life insurers and reserve for actual but unannounced losses; Reserves are a part of liabilities and therefore only items can be identified as reserves that have met the conditions for recognizing liabilities. One of these conditions is the existence of a current obligation to transfer economic benefits. Items that are not a current liability of the insurance company should not be recognized as reserves in the financial statements. (modaresi and etc.2023)

Research Method

After studying the literature of the article and scientific texts in this field, a questionnaire containing closed questions in the 5-point Likert scale is presented to the experts in order to determine the importance of each factor. Also, the experts are asked to add, remove or move a component at their discretion and based on their opinion without prioritizing. Therefore, at this stage, the dimensions and indicators of the base model have been validated, and also if the experts think of new dimensions or indicators in the field of the dimensions of the optimal model of financial prosperity and the mathematical requirements of risk-based reserves in Iran or its indicators based on the separation of risks, they will add them to the model. After collecting the Delphi questionnaire data and evaluating the opinions Experts' opinions, at this stage, the indicators that the experts have added to the questionnaire are entered into the model, and a new questionnaire is compiled based on the experts' opinions and presented to the experts for a second survey. At each stage, the proposals were examined by the researchers and if they did not overlap with the factors of the questionnaire, they were considered as new components. Also, if there is any ambiguity, and if necessary, through phone or face-to-face interviews with experts, cases have been followed up and ambiguities have been resolved. This step is repeated several times, and each time Kendall's agreement test is based on the opinions of experts It is taken so that the results of the test determine whether the collective agreement has not been reached and the Delphi process should continue, or the result of the Delphi process is close to the collective agreement and the initial model has been formed. If the result of the Kendall agreement test indicates that the agreement has been reached, the data of the final stage

will be collected and the second or quantitative stage of the article will begin.

- Identifying the pillars of the financial wealth model (Π)

In the first phase of this study, the Delphi technique was used to refine, combine and identify the main criteria for choosing the project implementation method. The intended panel was determined based on a combination of experts with various specialties and a sample of 31 people was used. After compiling the initial model (the model extracted from theoretical sources and interviews with experts), a questionnaire containing questions about the dimensions and components was prepared and given to the selected people. The level of agreement of the opinions raised regarding the mentioned model was examined. In order to check the validity of the designed model, model number 2 was compiled and sent to experts again for the second round. In this way, they became aware of the opinions of others. The results indicated that the dimensions of the financial wealth model (Π) were correlated and all the experts agreed on them.had, but regarding the components of each dimension in some cases the correlation was below the acceptable value.

The Delphi technique was implemented in three stages, and in each stage, a number of indicators were removed based on the average value of the Kendall coefficient and the opinion of experts in the model, and the next stage was repeated by removing weak indicators. Finally, three stages of the Delphi technique were performed, and in the third stage, the results show that we reached a collective agreement and are the final indicators. The results of the steps of the Delphi technique can be seen in tables (1).

Research Findings

The descriptive information of the interviewees is as described in Table (1).

Table 1.
Statistics of Kendall's test

Sig	Kendall coefficient	N	
0.000	0.438	18	first round
0.000	0.486	20	Second round
0.000	0.825	26	Third round

At this stage, Kendall's statistic (0.825) indicates a very high consensus among the respondents. The Delphi process was stopped in consultation with the supervisor, consultant and analyst.

The results of data analysis show that most experts agree with the four main pillars for the model of financial prosperity (Π). In addition, the results of the factor analysis.

- Identifying the main risks of the financial wealth model (Π)

In the first phase of this study, the Delphi technique was used to refine, combine and identify the main risks of choosing the project implementation method. The intended panel was determined based on a combination of experts with various specialties and a sample of 31 people was used. The Delphi technique was implemented in three stages and in each stage a number of main risks were added to the model and finally six main risks were identified and collectively agreed upon. The results of the data analysis show that most of the experts with six main risks for the financial wealth model (Π)cvr

The results of the factor analysis to determine the dimensions and components of each of the main risks of the financial wealth model are shown in Table No. (2).

Table 2.
Results of Delphi analysis of the second round of main risks and subcategory risks

factor load	the standard deviation	indicators	the risk of the subset of indicators	main risks
0.63	0.415	RB1	Insurance operation risk	Insurance risk
0.81	0.707	RB2	Biological risks	
0.73	0.533	RB3	Termination and redemption risk	
0.81	0.640	RB4	Cost risk/ cost	

factor load	the standard deviation	indicators	the risk of the subset of indicators	main risks
0.95	0.707	RB5	Risk of risk escalation	
0.83	0.123	RB6	Risk of non-technical manpower	
0.94	0.428	RA1	Credit default risk	Credit risk
0.63	0.553	RA2	Concentration risk	
0.78	0.664	RA3	Reliance contract risk	
0.80	0.415	RM1	Asset/liability mismatch risk	Market risk Asset
0.65	0.487	RM2	Reinvestment risk	
0.59	0.857	RM3	Exchange rate risk	
0.70	0.455	RM4	Risk of international markets	
0.62	0.354	RM5	Risk of separation of life insurance account from non-life insurance	
0.73	0.707	RM6	Life insurance account investment risk	
0.81	0.493	RP1	Risk of inability to control and manage	operational risk
0.95	0.428	RP2	Risk of human errors	
0.71	0.553	RP3	Fraud risk	
0.94	0.664	RP4	Judicial and legal risk	
0.81	0.748	RP5	The risk of not having proper expert equipment and damage assessment	

In the second round, according to the changes suggested by the experts and the presentation of the final model, 6 main risks and 20 subcategory risks were considered, which was approved by 82% of votes.One of the constant topics with the Delphi technique is reaching an agreement and ending its rounds. A scientific method to reach agreement is to calculate Kendall's agreement coefficient. In this study, Kendall's agreement coefficient was used to calculate the coordination of experts' views.

Based on the results the value of Kendall's coefficient in the first round of the Delphi technique was 0.438, which shows that the consensus among the experts is low. Also, a significant value of 0.035 has been obtained, which shows that the obtained results can be relied on with 95% confidence. As a result, by ignoring the components that scored below the intensity threshold, other components were used for the study in the second round. The Kendall coefficient in the second round of the Delphi technique was 0.486, which shows that the consensus among the experts is moderate. Also, a significant value of 0.012 has been obtained, which shows that the obtained results can be relied on with 95% confidence. But in the third round, the value of Kendall's coefficient equal to 0.825 has been obtained, which shows that the experts' opinions have reached a suitable collective agreement, and also a significant value of 0.000 has been obtained, which shows that the obtained results can be relied on with 95% confidence. Therefore, the Delphi technique was stopped in the third round and the identified components were used for the final analysis.

-exploratory factor analysis

In the development of regression theory, Spearman used the term factor analysis for the first time in his theory of intelligence in 1927. To prepare a valid scale, factor analysis method can be used to screen the items and select the main items. After creating the set of preliminary variables in the factor analysis, the final set of variables is extracted to make the scale by rotating. Factor analysis by creating a correlation matrix shows that the variables are gathered in clusters so that the variables of each cluster are correlated and not correlated with other clusters. These clusters are the dimensions of the subject

under study. The variables of each cluster are the measurement items of that dimension. Variables that have no correlation with other variables should be removed because the variables under analysis should have a reasonable correlation with some other variables of the analysis.

In exploratory analysis, the essayist seeks to examine experimental data in order to discover and identify indicators as well as relationships between them. There is no predetermined model here. In other words, exploratory analysis, in addition to having an investigative or suggestive value, can be a structure builder, model builder, or hypothesis builder. Exploratory analysis is used when the researcher does not have enough previous and pre-experimental evidence to form a hypothesis about the number of factors underlying the data and really wants to explore the data to determine the number or nature of the factors that justify the covariance between the variables. Therefore, exploratory analysis is considered more as a theory formulation and generation method and not a theory testing method.

-Exploratory factor analysis related to insurance risk components

In the component related to insurance risk in the financial wealth model (Π), 6 subcategory or non-criteria risks were identified and extracted. For each of these indicators, a question was formulated and distributed among the statistical population in the form of a questionnaire. The results obtained from the analysis of the exploratory factor related to insurance risk in the financial wealth model (Π) are as described. in Table (3).

Table 3.
The matrix of rotated factors with principal component analysis method and Varimax rotation method (insurance risk)

variance of the coefficients	amount of explanation	significance	KMO	the factors related to insurance risks	questions
76.86	0.776	0.000	0.895	indices	Row
	0.694			Risk of insurance operations	1
	0.849			biological risks	2
	0.795			Termination and redemption risk	3
	0.846			risk of expenses/cost	4
	0.674			risk of risk escalation	5
	0.465			non-technical manpower risk	6

According to the table (3), the value of the extracted share for all the risks of the subcategory is more than 0.5, so all the risks are not excluded from the review process. Therefore, for the insurance risk in the financial wealth model (Π), 6 indicators have been recognized as having appropriate validity and reliability and will be used in future calculations.

Exploratory factor analysis related to credit risk components

In the component related to credit risk in the financial wealth model (Π), 3 subcategory risks or sub-criteria were identified and extracted. For each of these indicators, a question was formulated and distributed among the statistical population in the form of a questionnaire. The results obtained from the analysis of the exploratory factor related to the credit risk in the financial wealth model (Π) are as described in Table (4).

Table 4.
The matrix of factors rotated by principal component analysis and varimax rotation method (credibility risk)

variance of the coefficients	amount of explanation	significance	KMO	the factors related to insurance risks	questions
78.01	0.868	0.000	0.802	indices	Row
	0.771			Credit default risk	1
	0.806			concentration risk	2
	0.779			risk of reliance contract	3

According to the table (4), the value of the extracted share for all the risks of the subcategory is more than 0.5, so all the risks are not removed from the review process. Therefore, for the credit risk in the financial wealth model (Π), 3 indicators with appropriate validity and reliability were recognized and are used in future calculations.

-exploratory factor analysis of questions related to market risk components

In the component related to market risk in the financial wealth model (Π), 6 subcategory risks or subcriteria were identified and extracted. For each of these indicators, a question was formulated and distributed among the statistical population in the form of a questionnaire. The results obtained from the analysis of the exploratory factor related to market risk in the financial wealth model (Π) are as described in Table (5).

Table 5.
The matrix of rotated factors with principal component analysis method and Varimax rotation method (market risk)

variance of the coefficients	amount of explanation	significance	KMO	the factors related to insurance risks	questions
76.86	0.776	0.000	0.895	indices	Row
	0.716			Risk of asset/liability non-compliance	1
	0.629			reinvestment risk	2
	0.574			exchange rate risk	3
	0.631			international markets risk	4
	0.640			Risk of separation of life and non-life insurance accounts	5
	0.757			Life insurance account investment risk	6

According to the table (5), the value of the extracted share for all the risks of the subcategory is more than 0.5, so all the risks are not excluded from the review process. Therefore, for the market risk in the financial wealth model (Π), 6 indicators with appropriate validity and reliability were recognized and are used in future calculations.

- Exploratory factor analysis of questions related to operational risk components

In the component related to operational risk in the financial prosperity model (Π), 5 subcategory risks or sub-criteria were identified and extracted. For each of these indicators, a question was formulated and distributed among the statistical population in the form of a questionnaire. The results obtained from the analysis of the exploratory factor related to operational risk in the financial wealth model (Π) are as described in Table (6).

Table 6.
The matrix of rotated factors with principal component analysis method and Varimax rotation method (operation risk)

variance of the coefficients	amount of explanation	significance	KMO	the factors related to insurance risks	questions
76.86	0.776	0.000	0.895	indices	Row
	0.716			Risk of asset/liability non-compliance	1
	0.629			reinvestment risk	2
	0.574			exchange rate risk	3
	0.631			international markets risk	4
	0.640			Risk of separation of life and non-life insurance accounts	5
	0.757			Life insurance account investment risk	6

According to the table (6), the value of the extracted share for all the risks of the subcategory is more than 0.5, so all the risks are not removed from the review process. Therefore, for the operational risk in the financial.wealth.model (Π), 5 indicators were recognized as having appropriate validity and reliability and they will be used in future calculations.

- Exploratory factor analysis of questions related to the risk components of internal insurance regulations

In the component part related to the risk of internal insurance regulations and circulars in the financial wealth model. (Π),. 3 sub-category risks or sub-criteria were identified and extracted. For each of these indicators, a question was formulated and distributed among the statistical population in the form of a questionnaire. The results obtained from the analysis of the exploratory factor related to the risk of internal insurance regulations and circulars in the financial wealth model (Π) are as described in Table (7).

Table 7.
The matrix of rotated factors with principal component analysis method and Varimax rotation method (regulation risk)

variance of the coefficients	amount of explanation	significance	KMO	the factors related to insurance risks	questions
68.55	0.823	0.000	0.892	indices	Row
	0.868			Risk of interference of internal regulations before and after	1
	0.849			risk of ignoring instructions	2
	0.731			The risk of reducing the importance of regulations over time	3

According to the table (7), the value of the extracted share for all the risks of the subcategory is more than 0.5, so all the risks are not excluded from the review process. Therefore, for the risk of internal insurance regulations and circulars in the financial wealth model (Π), 3 indicators. with. appropriate validity and reliability were recognized and will be used in future calculations.

-exploratory factor analysis of questions related to legislative risk components

In the component section related to legislative risk in the financial prosperity model.(Π), 5 subcategory risks or sub-criteria were identified and extracted. For each of these indicators, a question was formulated

and distributed among the statistical population in the form of a questionnaire. The results obtained from the analysis of the Table 8.

The matrix of rotated factors with principal component analysis method and Varimax rotation method (legislative risk)

variance of the coefficients	amount of explanation	significance	KMO	the factors related to insurance risks	questions
73.82	0.81	0.00	0.8	indices	Row
	0.67			Risk of traditional and old laws	1
	0.72			The risk of not following the rules with the conditions of the day	2
	0.71			Risk of legal restrictions in setting tariffs	3
	0.83			risk of ignoring the rules	4

According to the table (8), the value of the extracted share for all the risks of the subcategory is more than 0.5, so all the risks are not removed from the review process. Therefore, for the legislative risk in the financial wealth model (Π), 5 indicators with appropriate validity and reliability were recognized and will be used in future calculations.

For example The result of the binary comparison of the criteria, as well as the resulting weighted vector, is presented below. To achieve the desired result, group judgment can be used for binary comparison of criteria, in which case the matrix elements of binary comparison of criteria will be obtained from the geometric mean of group opinions.

Table 9.
Initial matrix of pairwise comparison of credit risk measures

	R21	R22	R23
R21	1	1/4	3
R22	4	1	3
R23	1/3	1/3	1

Table 10.
Vector matrix and final weight of credit risk criteria

	R11	R12	R13	W
R11	1.000	0.250	3.000	0.247
R12	4.000	1.000	3.000	0.622
R13	0.333	0.333	1.000	0.131

exploratory factor related to legislative risk in the financial wealth model (Π) are as described in Table (8).

Confirmatory factor analysis

At first, factor analysis was merely an exploratory statistical method; But recently, it has become possible to test hypotheses using factor analysis. This method, invented by Urs Kog (1973), is called confirmatory analysis. In this method, based on previous studies or according to the discussed theory, factor loadings are assumed for the variables, then confirmatory factor analysis is performed to fit the loadings of the target matrix as accurately as possible (Paul Klein, 2011).

The measurement model specifies how latent variables (exogenous and endogenous) are related to or measured through observable variables. In other words, the specific characteristics of the measurement (i.e., reliability and validity coefficients) are how the observed variables are described by the underlying variables. In this article, to check validity, content validity, face validity and construct validity are evaluated. Content validity ensures that the scale contains enough items and examples to use the concept. The more the items representing the concept area being measured, the higher its content validity. In other words, content validity represents how to describe the dimensions and components of the concept (Khaki, 2014).

In order to design the questionnaire, considering the strong background of the models and also keeping in mind the

variables of the main models, it was tried to rely on the appropriate support of the theory and their practical applications in numerous articles and tests in terms of the indicators that measure the structures. Symbolic validity shows the items that are expected to measure a concept, they measure the concept and seem to measure the concepts (Khaki, 2014). Face validity actually examines whether the experts confirm that the instrument measures what its name implies. (Khaki, 1384). In order to measure the symbolic validity, the questionnaire and its content were reviewed by respected professors and advisors, and their corrective comments were taken into account. Construct validity refers to how the results obtained from the application of the scale that is intended for the hypothesis test. This work is evaluated with convergent and discriminant validity (Khaki, 2014). In order to analyze the internal structure of the questionnaire and discover the constituent factors of each construct, construct validity was performed using the confirmatory factor analysis tool. Confirmatory factor analysis of the article's structures is presented in the form of the following charts to check the dimensions of the article's variables. The results indicate the confirmation of the construct validity of variables and dimensions of the model. In other words, the validity of the questionnaire structure is confirmed and it can be used to collect data.

Confirmatory factor analysis of risk components of financial wealth model (II)

Confirmatory factor analysis examines the relationship between items (questionnaire questions) and constructs. In fact, until it is proven that the questions of the questionnaire have measured the hidden variables well, the hypotheses of the article cannot be used based on the data of the questionnaire. Therefore, confirmatory factor analysis is used to prove that the data are measured correctly. The strength of the relationship between the factor (latent variable) and the observable variable is indicated by the factor loading. Factor load is a value between zero and one. If the factor load is less than 0.2, the relationship is considered weak and is ignored. A factor loading between 0.2 and 0.6 is acceptable, and if it is greater than 0.6, it is very desirable (Klein, 1998). The minimum acceptable factor load is also mentioned in some sources and references as 0.2, but the main criterion for judging is the t statistic. If the test statistic i.e. t-statistic is greater than the critical value of t0.05 i.e. 1.96, then the observed factor loading is significant (for example, refer to Applied Management Statistics, Adel Azar and Mansour Momeni, Volume II).

The results of the factor analysis of financial wealth model are presented in figure (1) and (2). 6 hidden variables and 27 visible variables were used for measurement. The observation factor load in all cases has a value greater than 0.3, which shows that the correlation between the hidden variables (dimensions of each of the main constructs) with the observable variables is acceptable. After the correlation of the variables has been identified, a significance test should be performed.

To check the significance of the relationship between the variables, the t-value statistic is used. Because significance is checked at the error level of 0.05, so if the t-value test statistic is greater than the critical value of 1.96, the relationship is significant. Based on the results of the measurement indices of each of the scales used at the 5% confidence level, the t-value statistic is greater than 1.96, which shows that the observed correlations are significant.

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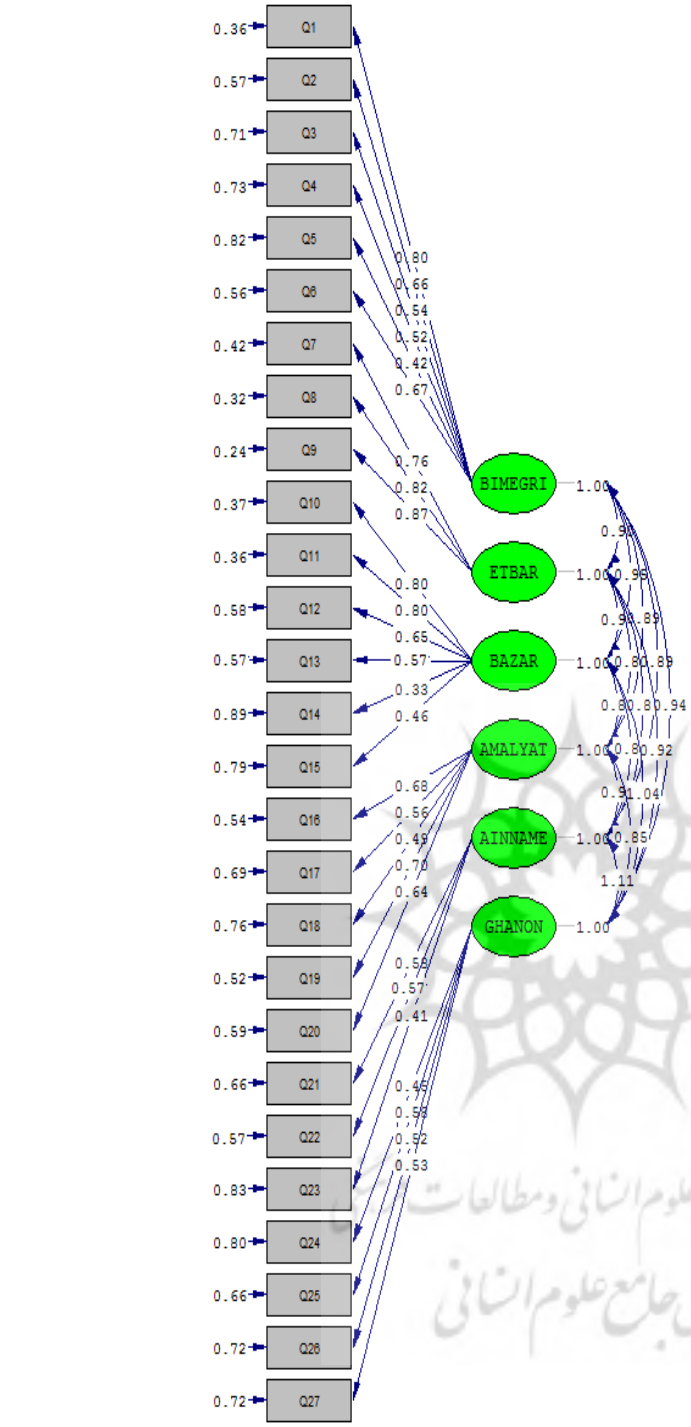

Figure 1. *The results of confirmatory factor analysis and standard factor loading of the dimensions of the financial wealth model*

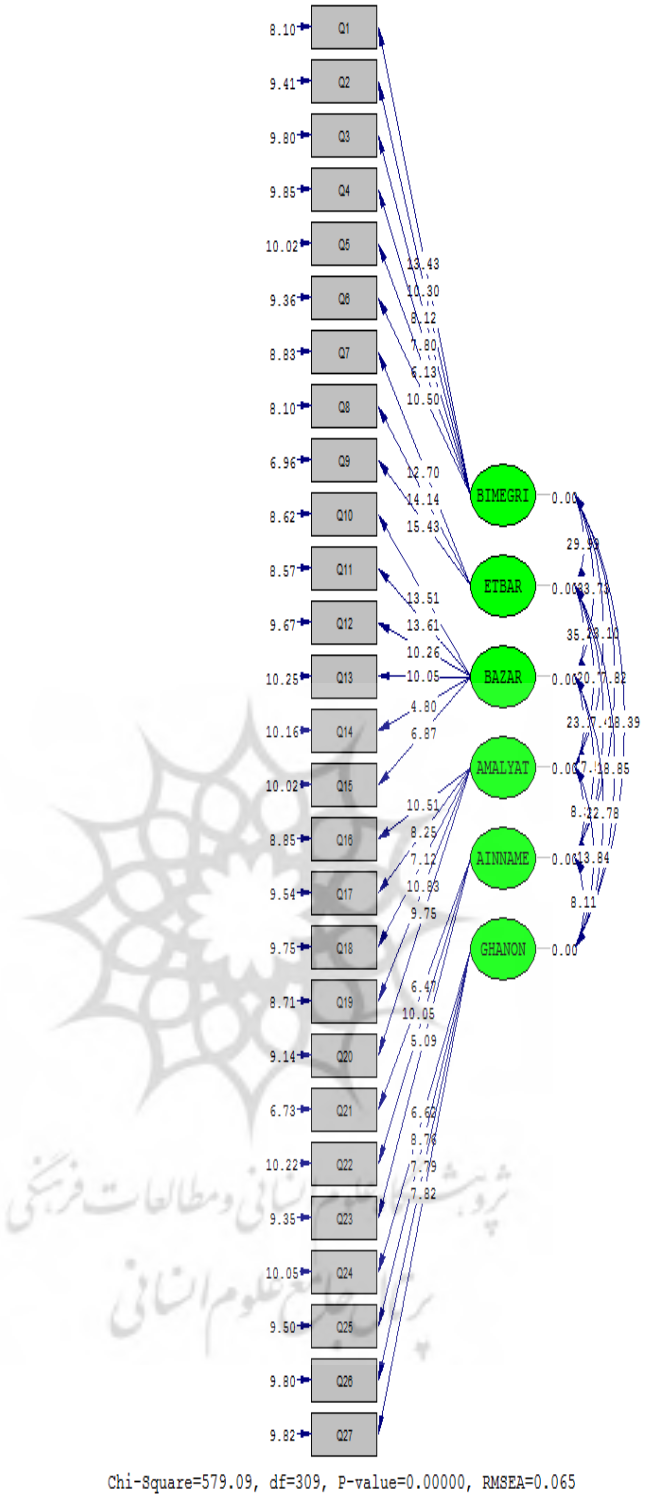

Figure 2. *T-value statistics of the dimensions of the financial wealth model*

The next step is the goodness of fit of the model. One of the general indices to take into account the free parameters in the calculation of the fit indices is the normal chi-square index, which is calculated by simply dividing the chi-square by the degree of freedom of the model. If this value is between 1 and 5, it is desirable. (Schumacher and Lomax, 1988 p. 88; Klein, 3735: p. 59; quoted by Ghasemi 1389: p. 162) In this article, the standard chi-square of 1.87 was obtained, which is less than the criterion value of 3. Also, the RMSEA index is used as a main fit index in most confirmatory factor analyzes and

structural equation models. If this index is smaller than 0.08, it is desirable. In the saturated model of this article, the RMSEA index equal to 0.065 was obtained, which shows that the fit of the model is good.

- Hierarchical AHP analysis

In line with the methodology of the article, in order to identify, select and rank the components of the optimal model of financial wealth and the mathematical requirements of risk-based reserves in Iran Insurance Company, the face-to-face interview method was used with experts through the design, completion and analysis of paired comparison questionnaires. The design of the questionnaire and the selection of criteria and sub-criteria were done using the opinions of the designer and analyst group, including the essay writer, supervisors, and relying on past experiences. In line with the methodology of the article, a pairwise comparison questionnaire prepared based on preliminary studies, contained a list of the most important risks in the insurance industry, which was given to 31 university professors and managers and experts of the Iranian insurance company. Considering that the aim of the article was to present the optimal model of financial prosperity and the mathematical requirements of risk-based reserves in Iran Insurance Company, therefore, AHP hierarchical analysis method was used to prioritize the most important factors.

- Identifying the risk components of the financial wealth odel (Π)

In the following, for simulation, we examine the presented algorithm on a problem that can be generalized to any other similar problem to identify and prioritize the risks of the optimal model of financial prosperity and the mathematical requirements of risk-based reserves in the Iranian insurance company, with any type of index and sub-index. The main and final goal, which is to identify and prioritize the influential components in the optimal model of financial prosperity and the mathematical requirements of risk-based reserves in the Iranian insurance company, is placed. In order to select the effective criteria with uncertainty in identifying and prioritizing the influencing components in the optimal model of financial prosperity and the mathematical requirements of risk-based reserves in Iran Insurance Company, 6 main risks were identified and 27 subgroup risks were examined, and these factors.

- Determining the weight of the risks of the financial.wealth model (Π)

The binary comparison of the ranking of the components influencing the optimal pattern of financial prosperity and the mathematical requirements of risk-based reserves in Iran Insurance Company, which includes 6 main risks, is performed based on the hourly quantitative scale and in the same order as used in the Analytical Hierarchy Process (AHP). The result of the binary comparison of the main influencing factors (options) as well as the resulting weighted vector is presented below. To achieve the desired result, group judgment can be used for the binary comparison of the main influential factors, in which case the elements of the binary comparison matrix of the factors will be obtained from the geometric mean of group opinions.

Table (11) is also a matrix that specifies the influence of each factor on another factor.

Table 11.

The initial matrix of pairwise comparison of the main risks of the financial wealth model

Main Risks	R1	R1	R1	R1	R1	R1
R1	1	5	1/2	5	3	4
R2	1/5	1	1/7	4	1/4	1/2
R3	2	7	1	8	1	2
R4	5/1	1/4	1/8	1	1/5	1/6
R5	1/3	4	1	5	1	2
R6	1/4	2	1/2	6	1/2	1

- Determining the final weights of financial wealth model risks

At this stage, the final weights of each factor and the evaluation criteria of each factor separately and in the total components are specified, as well as their ranking. For this purpose, the weight of each factor is multiplied by the weights obtained for the

subgroup criteria of that factor and considered for each criterion. The results are presented in Table (12).

Table 12.
The final weights of each risk and its subgroup risks in the financial wealth model

financial wealth model The main risks	weight of each risk	Rank
insurance risk	0.288	1
Biological risks	0.062	5
Termination and redemption risk	0.308	2
Cost risk/expenditure	0.030	6
The risk of risk escalation	0.193	3
Risk of non-technical manpower	0.119	4

- The final ranking of financial wealth model risks

The final weights obtained for the components affecting the optimal pattern of financial prosperity and the mathematical requirements of risk-based reserves in Iran Insurance Company are in the form. Also, the ranking of these factors can be The final weights of each risk and its subgroup risks in the financial wealth model
Insurance risk 0.288 1
Credit risk 0.0625
Market risk 0.308 2
Operational risk 0.030 6
The risk of internal insurance regulations and circulars 0.193 3
Legislative risk 0.119 4
Inconsistency = 0.0031 with 0 missing judgments.

Table 13.
The final weights and Ranking

Alternatives	Normal	Ranking
Insurance risk	0.288	1
Credit risk	0.062	5
Market risk	0.308	2
Operational risk	0.030	6
The risk of regulations	0.193	3
Legislative risk	0.119	4

Figure (13) The ranking of each risk and its subcategory risks in the financial prosperity model. The results and findings of each article are considered the lifeblood and the most important part of the article, to open a way to improvement and excellence with the benchmark findings and the solidity of its hypotheses. The suggestions from the article also call us to change and renew "the most immutable principle of material life". The current article is undoubtedly an example of the usual article that is very opposed to not very agree, so that if all the meaningful stratifications and stratifications in the sample are moved, the acceptable form of the article will be maintained. In the first chapter, the generalities of the article include the description of the topic and the context of the article, the questions that the researcher is looking for answers to, the goals and history of the research, the hypotheses of the article, the uses and benefits of the article, the research method, the data collection tool, the statistical population, and the temporal and spatial scope of the research. The second chapter is the review of the subject literature, in this chapter the factors of knowledge management strategies and the performance factors of new product development have been examined in the research of previous articles. In the third chapter, the method of conducting research and designing the model is presented, and also the indicators approved by experts and experts are specified. In the fourth chapter, data analysis using qualitative and quantitative statistical methods including Delphi method, exploratory factor analysis, confirmatory factor analysis and single sample test and structural equation model has been done by Lisrel statistical software. Also, AHP hierarchical analysis has been used in the ranking and presentation of the optimal model.

The content of this chapter is dedicated to the results and findings of the article, the final research model, research limitations and practical suggestions and suggestions for future research.

Discussion and Conclusion

In this article, Delphi technique with snowball questionnaire was used to identify

indicators. Because by using the opinions of experts and the literature of the article, the effective indicators on the model of financial prosperity have been identified and finally, based on the opinion of experts, the variable measurement tool and the model of the article have been prepared. Therefore, using the qualitative article, 6 main risks and 27 indicators were discovered. Therefore, the primary model drawn from the qualitative section is used as a basis, and in the Delphi section, experts are asked to comment on the identified dimensions and indicators, and express their opinion on the components that are suitable for each generation.

The main question of the article:

What is the best optimal model of financial wealth and mathematical requirements of risk-based reserves in Iran insurance company?

In response to the main question of the article, first, the base model for the optimal model of financial wealth and the mathematical requirements of risk-based reserves in Iran Insurance Company was compiled and designed based on the theoretical foundations and the previous article. The above model was developed using the Delphi method and interviews with experts in the country's insurance industry, including university professors and senior managers of Iranian insurance companies. The basic model is the financial wealth model (Π), which has three pillars as follows:

1. First column) Quantitative requirements
2. The second pillar) regulatory review
3. The third pillar) regulatory reporting and public disclosure

The results of the Delphi method showed that the country's insurance industry experts, including university professors and senior managers of the Iranian insurance company, agree with these three pillars; But these three pillars are not enough for the model of financial prosperity (Π). In this regard, the fourth element called quality requirements was added to the model and was collectively agreed upon. In fact, the final and optimal model of financial prosperity (Π) has four pillars as follows:

First pillar) Quantitative requirements
2. The second pillar) quality requirements
3. The third pillar) regulatory review
4. The fourth pillar) regulatory reporting and public disclosure

Also, the initial model shows that the risks of the financial wealth model (Π) had four risks as follows:

1) Insurance risk
2) Credit risk
3) Market risk
4) Operational risk

The results of the Delphi method show that the experts of the country's insurance industry, including university professors and senior managers of the Iranian insurance company, agree with these four main risks in the financial prosperity model (Π);.But these four main risks are not enough for the model of financial prosperity (Π). In this regard, two new risks named the risk of internal insurance regulations and circulars and the risk of legislation were added to the model and collectively agreed upon. In fact, the final and optimal model of financial prosperity (Π) has six risks as follows:

1) Insurance risk
2) Credit risk
3) Market risk
4) Operational risk
5) The risk of internal insurance regulations and circulars
6) Legislative risk

In the sub-set of risks of each of the main risks, the basic model has 4 risks for insurance risk, 3 risks for credit risk, 3 risks for market risk and 4 risks for operational risk.

The results of the Delphi method show that the experts of the country's insurance industry, including university professors and senior managers of the Iranian insurance company, agree with the risks of the four main risks in the financial wealth model (Π); But these subcategory risks are not enough for the main risks in the financial wealth model (Π). In this regard, for the two main risks that were added to the model, 7 subcategory risks were added and a new risk was added for each of the other risks. In fact,

the final and optimal model of financial prosperity (Π) has the following risks:
Main risks Subcategory risk
Insurance risk (R1) insurance operation risk
Biological risks
Risk of cancellation and redemption
Cost risk/cost
The risk of risk escalation
The risk of non-technical manpower
Credit risk (R2) credit default risk
Concentration risk
Reliance contract risk
Market risk (R3) Asset/liability mismatch risk
Reinvestment risk
Exchange rate risk
The risk of international markets
The risk of separating life and non-life insurance accounts
Life insurance account investment risk
operational risk (R4)
The risk of inability to control and manage
The risk of human errors
Fraud risk
Judicial and legal risk
The risk of not having proper expert equipment and damage assessment
The risk of regulations and directives
Internal insurance (R5) The risk of conflicting internal regulations before and after
The risk of ignoring instructions
The risk of reducing the importance of regulations over time
Legislative risk (R6) The risk of old and cumbersome laws
The risk of not accompanying the rules with the conditions of the day
The risk of legal restrictions in setting tariffs
The risk of ignoring the rules

In the final model, the optimal model of financial prosperity and the mathematical requirements of risk-based reserves in Iran's insurance company includes four main pillars, which include six basic and general risks in the insurance industry. Each of the basic and general risks of the insurance industry also has several risks and sub-criteria, which are depicted in the figure.

The pillars of the model, the main risks, the risks of Zim Group
First pillar) Quantitative requirements
The second pillar) quality requirements
The third pillar) regulatory review
The fourth pillar) regulatory reporting and public disclosure of insurance risk (R1) insurance operation risk
Biological risks
Risk of cancellation and redemption
Cost risk/cost
Risk of risk escalation
The risk of non-technical manpower
Credit risk (R2) credit default risk
Concentration risk
Reliance contract risk
Market risk (R3) The risk of asset/liability mismatch
Reinvestment risk
Exchange rate risk
Risk of international markets
The risk of separating life insurance from non-life insurance
Life insurance account investment risk
Operational risk (R4) The risk of inability to control and manage
Risk of human errors
Fraud risk
Judicial and legal risk
The risk of not having proper expert equipment and damage assessment
The risk of internal insurance regulations and circulars (R5) The risk of conflicting internal regulations before and after
Risk of ignoring instructions
The risk of reducing the importance of regulations over time
Legislative risk (R6) The risk of old and cumbersome laws
The risk of not following the rules with the conditions of the day
The risk of legal restrictions in setting tariffs
The risk of ignoring the rules

Considering that the results of the article showed that the optimal model of financial wealth has six main risks, therefore the following suggestions are presented to reduce the overall risk of the insurance company:

The risk of insurance operations is known as one of the risks. Therefore, more serious efforts should be made to reduce this risk. For this purpose, insurance operations and processes can be updated with the help of technology and parallel processes can be eliminated.

The terms of insurance contracts should be reviewed and the items that lead to an increase in the risk of cancellation and redemption should be removed or modified in the terms of the contract.

Use a documented and performance-based budgeting system to reduce the risk of expenses/costs.

Written and periodic training programs for personnel at different levels of the organization should be planned and implemented in order to reduce the risk of non-technical manpower by increasing the skills of employees.

Internal insurance regulations and circulars should be revised.

Appropriate expertise and damage assessment equipment should be prepared for the company's personnel.

Life insurance accounts should be separated from non-life insurance accounts and a special program should be developed for each.

In order to prevent the interference of the internal regulations before and after, it is necessary to revise the internal regulations and compile and publish them in a new format.

Prevent human errors by inspecting and evaluating the performance of employees.

To reduce the risk of fraud, periodic and regular inspections should be carried out.

Suggestions for your future article

1. Identification of factors affecting the success of financial prosperity models
2. Assessing the performance of the financial wealth model using the risks in the processes
3. Identifying the critical success factors of small and medium companies in reducing financial risk

Limitations of the article:

The limitations of the article are those factors that create obstacles in the way of collecting information, analyzing and obtaining the desired results. Limitations are inherent in every article. This article is not exempt from this principle and has the following limitations.

Problems of determining the index and converting qualitative categories into quantitative values.

Lack of familiarity of Iranian insurance managers and experts with the paired comparison questionnaire and making the required preferences.

The intervention of factors such as impatience, stress, lack of time and lack of sufficient knowledge of the respondents cause the inaccuracy of people in answering the questions.

Finally, that; One of the most important limitations, which is considered a special feature of humanities articles, is the effect of variables that are beyond the control of the author of the article, and the possibility of their impact on the results of the article is not out of mind. In such a way that it is not possible for the writer to check or control them. In this article, variables such as the individual characteristics of employees, their different cultures, and the climate and living conditions of employees can affect some of the relationships in the study.

References

Aliqlifar, Zain al-Abidin, Ghorbani, Reza; (2015), selling insurance in the style of sales cards, Gostar coverage. https://doi.org/10.1201/98564736.

Anderson, D., & Anderson, L. A. (2010). *Beyond change management: How to achieve breakthrough results through conscious change leadership* (Vol. 36). John Wiley & Sons.

Bagherabadi, Seyyed Mohammad, Reserves in insurance companies, article in the magazine: Accountant" (series 306), Mehr 2016, No. 7. https://www.sid.ir/journal/issue/10637/en

Brown, A. (2012). Demystifying the Risk Margin: Theory, Practice and Regulation. *Staple Inn Actuarial Society*.

Błach, J. (2010). Financial risk identification based on the balance sheet information. *Managing and Modelling of Financial Risks*, *21*, 10-19. https://doi.org/10.1202/5646765

Chime,Ahmad.(2023).Providing a model for predicting the financial prosperity of insurance companies based on early warning indicators. *The 28th Insurance and Development Conference.* https://doi.org/10.1201/878675778.

Chen, D. X., Damar, H. E., Soubra, H., & Terajima, Y. (2012). An analysis of indicators of balance-sheet risks at Canadian financial institutions. *Bank of Canada Review*, *2012* (Summer), 21-33. 2012:y:2012:i:summer12:p:21-33.

(CEA) Sandstrom, A. (2005). *Solvency: models, assessment and regulation*. Chapman and Hall/CRC. https://doi.org/10.1201/9781420034882.

Danielsson, J., Song Shin, H., & Zigrand, J. P. (2011). Balance sheet capacity and endogenous risk. http://eprints.lse.ac.uk/id/eprint/43141

Dosti,ali, Saeidi, A. A., & Yoshinari, M. (2023). Governing by partnership: the role of Abdolhossein Nikpour and the Chambers of Commerce in Iran's national economy. *Middle Eastern Studies*, *59*(1), 85-102. - 2016. 10.1080/00263206.2022.2043851

Eulerich, M., Georgi, C., & Schmidt, A. (2020). Continuous auditing and risk-based audit planning—an empirical analysis. Journal of Emerging technologies in Accounting, 17(2), 141-155 https://doi.org/10.2308/JETA-2020-004.

Farzin Bailandi, Ali, (2015), the computational model of the financial solvency of insurance

General Chairman's report to the General Assembly on the performance of the insurance and central insurance industry in 2015, J.A. Iran Central Insurance. https://www.sid.ir/paper/100899/en

Gholipourfereydooni,shahrbano.rezasoultani.mina.(2023). Designing and Explaining the Model of Brand Experience with the Citizenship Behavior of Customers in the Banking Industry. Journal of System Management.20.1001.1.23222301.2023.9.3.14.7.

Hosseinabadi,mahnaz,musakhani,morteza.(2022). Presenting a Conceptual Framework in the Entrepreneurial Strategic Factors of Government Managers (Managers of Isfahan Province). Journal of System Management. 10.30495/jsm.2022.1972003.1705

Khshnoud, Zahra, Khavansari, Rasool, (2013), *key guidelines for liquidity risk management, monetary and banking code* article. RBI No. 2012-13/285

Hezarvand, E. M.Abbasi.ali (2013). *An investigation of job satisfaction organizational commitment and turnover intention in Iranian insurance industry* (Doctoral dissertation, Universiti Teknologi Malaysia). http://test.ppu.edu/handle/123456789/720

Hajiha zahra, (2 19). "An Investigation on the Relationship between Inherent and Control Risks in Risk Based Audit Approach*," Financial Accounting*, Vol. 2, No. 6, Pp. 95–120, 2010, [Online]. Available: Https://Sid.Ir/Paper/168177/En.

Jafari,amirhosein,dadashi.iman.(2023). Identifying the Dimensions and Components of the Perceptual Cognitive Model of Investors with Regard to the Information Environment of the Iranian Capital Market. Journal of System Management. 10.30495/jsm.2023.1972755.1712

Kwon, W. J., & Wolfrom, L. (2017). Analytical tools for the insurance market and macro-prudential surveillance. *OECD Journal: Financial Market Trends*, *2016*(1), 1-47. https://doi.org/10.22056/ijir.2017.01.03

Mossadegh, Rahim, (2013). "The number of insurance companies in Iran reached 28", website A, publication. https://doi.org/10.22056/ijir.2018.01.03

Majdi, ZFatima, N. (2019). Institutional Setup of Market Economy & Property Rights in Islam. Building an Islamic Case for Open Markets. ISBN- 978-969-7576-78-4.

Matiei, Ali, Ismailzadeh, Ali; The relationship between wealth and financial variables of insurance companies, "Insurance Journal" article (125 series), spring 2016, number 1. 10.1257/aer.91.3.351

Mehrabian, Jahanshah, 2015, selling insurance by sales insurance method, marketing, Poshsh Gostar. https://sid.ir/paper/100961/en

Modaresi, Y., Seyed Naghavi, M. A., Roodsaz, H., & Raeesi Vanani, I. (2023). Designing a Conceptual Framework for the Soft Components of Digital Transformation Using Thematic Analysis. *Journal of Human Resource Management*, *13*(1), 57-88. 10.22034/jhrs.2023.172970.

Picarjo.Kambiz. (2023). Presenting the model of early warning system of financial wealth of insurance companies using composite data (panel) case study*: Iranian insurance companies. Scientific Research Quarterly*

Journal of Investment Knowledge. Volume 11, No. 44 - serial number 44. D.

Rahimi Bagh Abrishami, Mansour Ali, (2010), study of the impact of requirements of accounting standard 28 on risk management of insurance companies, 18th National Conference and 4th International Conference on Insurance and Development.

Rais Dana, Fariborz, (2013), actuarial accounting, article in the publication: Transportation Industry, No. 329. RePEc:nbr:nberwo

Saadi, Ali, (2017), *risk and capital management*, book: Arad Kitab. 2020. 28001679.

Shirzadi, Neda, 2016, *investigating the relationship between profit volatility and financial prosperity in companies listed on the Tehran Stock Exchange according to Altman's model*. 20.1001.1.28211960.1401.1.2.6.0

Sadeghi, Abdullah, Nabavi Chashmi, Seyyed Ali, (2015). *Conference paper on the study of the relationship between risks in the financial wealth model of the central insurance* of J.A., the first national industrial management conference 2015. 10.3390/jrfm13010012

Solgi, L., Asadi, M. Z., & Mohamadian, E. (2019). Phenomenology in Geomorphology. *Geography and Development*, *17*(54), 1-14.

Schwarcz, D., & Schwarcz, S. L. (2014). Regulating systemic risk in insurance. *The University of Chicago Law Review*, 1569-1640. 10.1008/s13387-020-00345

Scherer, M., & Stahl, G. (2021). The standard formula of Solvency II: a critical discussion. *European Actuarial Journal*, *11*, 3-20. 10.1007/s13385-020-00252-z

Turkestani Mohammad Saleh, Ghanbrund Hamid, (2014), a pathological look at monitoring the financial solvency of insurance companies in Iran with a comparative approach, conference paper*: International Conference on Insurance and Development*. JE/57007420180107

Yaghoubi Farani, A., Karimi, S., Izadi, N., & Ataei, P. (2019). Effect of virtual social networks on entrepreneurial behaviour of agriculture students in Iran. *Applied economics*, 51(21), 2326-2335. 10.1080/00036846.2018.1543940