

Research on Performance Evaluation of Life Insurance Industry in China based on Factor Analysis

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Abstract. In recent years, China's insurance industry has achieved rapid development and progress due to the support of national policies and the continuous adjustment of the social consumption structure, which indicates that more resources should flow to the life insurance industry but also faces great challenges. Therefore, this paper will analyze and evaluate the operating performance of current life insurance companies in China, and formulate effective policy suggestions. This paper introduces the research background and research meaning, selecting 25 2020 Chinese and foreign joint venture life insurance companies as the research sample, and from five aspects such as profitability, debt paying ability chosen from 20 indexes, set up the China life insurance business performance evaluation index system, through the principal component analysis (PCA), according to the common factor to explain the reasons for the influence of development conditions, Finally, combined with the factor ranking and the actual situation of China's insurance industry, the evaluation and analysis are carried out. The research results show that although China's insurance industry started late, the current development speed is objective. Small and medium-sized life insurance companies are also prominent in the overall ranking of business performance due to their operational flexibility and innovation. Based on the research results, the current problems of life insurance companies in China can be concluded, and reasonable suggestions can be put forward for further improving the business performance of life insurance companies.

Keywords: Life insurance company; factor analysis; principal component analysis; business performance.

1. Introduction

With the maturity of the mobile Internet exhibition industry, traditional insurance in product sales, premium payment, mobile marketing, customer maintenance services, and other aspects are carried out around the mobile terminal, Internet insurance breaks the time and space restrictions to usher in a comprehensive outbreak.

According to the "2021 Annual life Insurance Company Internet insurance Business Analysis Report" released by the Insurance Industry Association of China, in 2021, the Internet life insurance business continued to maintain steady growth, with a cumulative scale of premium 291.67billion yuan, a year-on-year increase of 38.2% compared with last year [1]. As of July 2022, according to the business statement of Chinese life insurance companies released by the China Banking and Insurance Regulatory Commission, Chinese insurance companies have realized a primary insurance premium income of 3,148.4 billion yuan, among which the total primary insurance premium income of life insurance is 2,390.5billion yuan, accounting for 75.93% of the total premium income. In terms of property insurance, the total original premium income is 757.9billion yuan, accounting for 24.07% of the total premium income [2]. Overall, the premium income of China's Internet insurance market has significantly improved, but obviously, the insurance industry and insurance companies have become an essential part of China's economic and social development. In terms of premiums by size, Chinese companies still dominate, with a market share of 83.2%, but that is down 1 percentage point from 2020. According to the current situation of the insurance market, the efficiency of insurance companies also needs to be improved.

Under the impact of 5G technology, insurance technology, and COVID-19, some operational drawbacks of life insurance companies may be exposed. The regulatory authorities have issued the Measures for the Supervision of Internet Insurance Business to further promote the reasonable

development of Internet insurance business. Regulatory departments also need to further urge and guide personal insurance institutions to actively fulfill the insurance guarantee role and actively complete claims. Life insurance institutions also need significant changes to improve the convenience and availability of services to consumers. In the long term, the regulatory authorities need to further improve the regulatory system, create a fair and just trading environment for life insurance companies and consumers, and promote the healthy development of life insurance companies through a series of policies [3]. Life insurance companies should enhance the awareness of risk response and the ability of innovative products, excavate the vulnerabilities of the industry with keen eyes to correct deficiencies, improve the supply of insurance products, meet the needs of the development of policyholder and age, the insurance of insurance supervision system further improved also has great realistic significance [4].

2. Methodology

2.1 Principal Component Analysis

Due to the large number of indicators selected in this paper, the calculation is complicated and tedious. However, the principal component analysis method uses the concept of scaling to transform parts containing multiple identical indicators (principal component indicators), each of which can reflect most of the original variables, but the available information is different, which is not repeated with other indicators. In addition, to prevent subjectivity in index scoring, the principal component analysis method is chosen in this paper [5].

Principal Component Analysis (PCA) is a statistical method. It was first introduced by Karl Pearson for non-random variables, and then Hotelling extended this method to the case of random vectors. The size of information is usually measured by the sum of squared deviations or variance. The goal is to use the concept of scaling to reduce a large number of indicators through correlation to a few comprehensive indicators (i.e., principal elements). Each principal element index can reflect most of the information in the original index data [6, 7]. This method not only simplifies the problem by eliminating the complex elements in multiple principal components but also provides more scientific and effective data information.

2.2 Variable Selection

Profitability reflects a company's ability to obtain profits within a certain period and is an important index for the performance evaluation of a company's operation. This paper chooses operating profit margin, return on equity, return on total assets, sales profit margin, and return on shareholders' equity as five descriptive indicators [8].

Solvency refers to the ability of an enterprise to repay long-term debt and short-term debt with its assets, which is the key to the good survival and development of an enterprise. This paper chooses asset-liability ratio, comprehensive solvency adequacy ratio, and core solvency adequacy ratio as three descriptive indicators [9].

Management ability is the sum of enterprise management strategy, management, and decision-making ability. This paper chooses the premium receivable rate, asset turnover rate, fixed asset ratio, payment rate, and surrender rate as five descriptive indicators [10].

Growth ability refers to the development trend and development speed of the enterprise in the future with the change in the market environment. This paper chooses asset growth rate, premium income growth rate, profit growth rate, and net asset growth rate as four descriptive indicators [11].

Digital transformation capability is to use digital technology to promote the enterprise organization to change the business model, aiming to use a variety of new technologies to change the business model, to generate new value for the enterprise. This paper chooses the proportion of researchers and the proportion of the labor force as two descriptive indicators [12].

2.3 Data Description

In view of a large number of life insurance companies, the selected samples should be convenient for data research. This paper, referring to the official ‘Internet Insurance Development Report’ and ‘Yearbook of China’s Insurance’, selected 15 Chinese life insurance companies and 10 joint-venture insurance companies from 2013 to 2021, as shown in Table 1. In addition, insurance companies established before 2013 were selected as the research objects to ensure the credibility and accuracy of the results [13, 14].

Table 1. List of Sample Companies

Decision-making units	company name	Type of Equity	Established in Year
1	People's Insurance Corporation of China	Chinese-capital	2005
2	China Life Insurance	Chinese-capital	1949
3	MINGSHENG Life Insurance	Chinese-capital	2003
4	China Pacific Insurance	Chinese-capital	1991
5	Ping An Life Insurance	Chinese-capital	1988
6	Sunshine Life Insurance	Chinese-capital	2007
7	TAIKANG Life Insurance	Chinese-capital	1996
8	New China Life Insurance	Chinese-capital	1996
9	Fudo Sino Life Insurance	Chinese-capital	2002
10	Union Life Insurance	Chinese-capital	2005
11	Great Wall Life Insurance	Chinese-capital	2005
12	ABC Life Insurance	Chinese-capital	2007
13	June Life Insurance	Chinese-capital	2006
14	SINATAY Life Insurance	Chinese-capital	2007
15	Ying Da Life Insurance	Chinese-capital	2007
16	Guo Hua Life Insurance	Sino-foreign joint venture	2007
17	HONGKANG Life HK	Sino-foreign joint venture	2012
18	Manulife-Sinochem Life Insurance	Sino-foreign joint venture	1996
19	ICBC-AXA	Sino-foreign joint venture	2012
20	Bo Comm Life Insurance	Sino-foreign joint venture	2000
21	Generali-China Life Insurance	Sino-foreign joint venture	2002
22	Sun Life Everbright Life Insurance	Sino-foreign joint venture	2002
23	CIGNA and CMC Life Insurance	Sino-foreign joint venture	2003
24	Pramerica Fosun Life Insurance	Sino-foreign joint venture	2012
25	American Ally Shanghai	Sino-foreign joint venture	1992

3. Results and Discussion

3.1 Data Pre-Processing

In this paper, 20 performance indicators are selected from the four aspects of profitability, debt-paying ability, operating ability, and growth ability. The principal component analysis method in the factor analysis method is adopted, and the SPSS software is used to reduce the dimension of data. To eliminate the influence of dimensionality, SPSS was used to standardize the data. Let x_{ij} be the index value of the j th index of the i th listed company and the data after convergence is x_{ij} , then the normal standardized treatment is shown in the following equation:

$$z = \frac{x_{ij} - \bar{x}_j}{s_j} \quad (1)$$

In this formula, $\bar{x}_j$ is the average of the forward data of this index of all life insurance companies under the j th index. S_j is the standard deviation of the j th index.

3.2 Test for Suitability

Before factor analysis, KMO(Kaiser-Meyer-Olkin) test and Bartlett spherical test were used to verify the suitability of factor analysis, and the results were shown in Table 2. It can be seen from the table that the sampling appropriateness quantity of KMO is 0.510, which meets the requirement of KMO value ≥ 0.5 . The chi-square statistic value of Bartlett spherical test was 783.985, and the significant result was $=0.00 < 0.05$. The test results showed that the index data in this paper were suitable for factor analysis.

Table 2. KMO and Bartlett's test

KMO and Bartlett's test		
KMO measure of sampling adequacy		0.510
	Approximate Chi-Square	783.985
Bartlett Test of Sphericity	degree of freedom	190
	significance	0.000

3.3 Determine the Common Factors

The third column of Table 3 indicates the extent to which the information contained in each variable can be expressed by the extracted common factor. It can be found from Table 3 that the variables of these 20 indicators have a high degree of commonality, most of which are more than 80%, which proves that the extracted common factors are sufficient to explain and express the original data.

Table 3. Communalities

Common Factor Variance			
Variable	initial	Extraction	
Z-score (Profit margin of operation)	1.000	0.960	
Z-score (Return on equity)	1.000	0.954	
Z-score (Return on total assets)	10.000	0.973	
Z-score (Profit margin on sales)	10.000	0.967	
Z-score (Return on shareholders' equity)	10.000	0.961	
Z-score (Asset liability ratio)	10.000	0.906	
Z-score (Comprehensive solvency adequacy ratio)	10.000	0.898	
Z-score (Core solvency adequacy ratio)	10.000	0.912	
Z-score (Premium receivable rate)	10.000	0.861	
Z-score (Turnover of assets)	10.000	0.976	
Z-score (Surrender rate)	10.000	0.847	
Z-score (Total asset turnover)	10.000	0.976	
Z-score (Ratio of fixed assets)	10.000	0.797	
Z-score (Growth rate of assets)	10.000	0.985	
Z-score (Growth rate of premium income)	10.000	0.973	
Z-score (Growth rate of net assets)	10.000	0.969	
Z-score (Rate of profit growth)	10.000	0.972	
Z-score (The percentage of researchers)	10.000	0.827	
Z-score (Proportion of labor force)	10.000	0.697	
Z-score (The payment rate)	10.000	0.631	

In factor analysis, the appropriate number of common factors must be selected to reasonably describe the structure of the original variable correlation matrix. The determination of number of

common factors can be determined according to Table 4 and Figure 1 as shown in Table 4, six main components were extracted according to the index with eigenvalue >1. The cumulative variance of the 6 main components was 90.502%. Figure 1 is the Scree Plot, the figure the horizontal axis shows performance indicators variables, and the vertical axis represents characteristic value size, according to the characteristic value from big to small lined, from which it can be seen that the first six principal components factor eigenvalues of attachment are very steep, to the seventh common factor, characteristic value starts steady, that almost six principal component factors can explain this article before constructing performance evaluation system, Therefore, it is appropriate to extract 6 components.

Table 4. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	70.430	370.148	370.148	70.430	370.148	370.148	50.180	250.901	250.901
2	30.715	180.577	550.725	30.715	180.577	550.725	30.787	180.934	440.835
3	20.321	110.603	670.327	20.321	110.603	670.327	20.703	130.516	580.351
4	10.969	90.844	770.171	10.969	90.844	770.171	20.276	110.381	690.732
5	10.492	70.460	840.631	10.492	70.460	840.631	20.253	110.263	800.995
6	10.116	50.578	900.209	10.116	50.578	900.209	10.843	90.215	900.209
7	0.738	30.689	930.898						
8	0.361	10.806	950.704						
9	0.286	10.432	970.136						
10	0.262	10.311	980.447						
11	0.149	0.747	990.193						
12	0.073	0.365	990.558						
13	0.035	0.175	990.733						
14	0.026	0.129	990.861						
15	0.012	0.061	990.922						
16	0.008	0.038	990.960						
17	0.004	0.022	990.982						
18	0.003	0.015	990.997						
19	0.001	0.003	1000.000						
20	80.424E-5	0.000	1000.000						

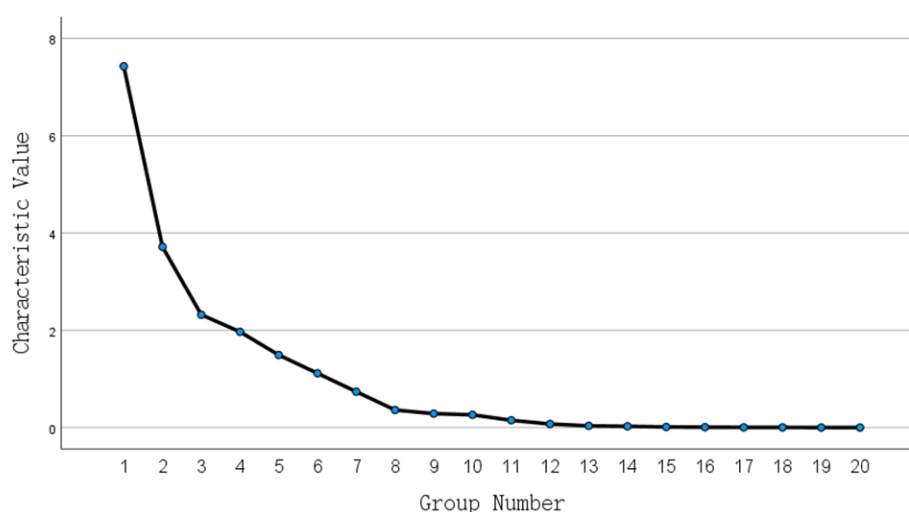


Fig. 1 Scree Plot

3.4 The Factor Named

Table 5. Component Matrix

	Component					
	1	2	3	4	5	6
Z-score (Return on shareholders' equity)	0.895	0.166	-0.160	-0.183	0.153	-0.225
Z-score (Return on equity)	0.891	-0.198	0.159	0.002	0.183	0.280
Z-score (Growth rate of premium income)	0.885	-0.181	0.330	-0.031	0.053	0.211
Z-score (Rate of profit growth)	0.884	0.045	0.259	0.260	-0.011	0.231
Z-score (Core solvency adequacy ratio)	0.860	0.124	-0.381	-0.008	-0.107	-0.002
Z-score (Comprehensive solvency adequacy ratio)	0.858	0.204	-0.308	-0.045	-0.148	0.043
Z-score (Return on equity)	0.830	0.452	0.114	0.192	-0.034	-0.100
Z-score (Growth rate of assets)	0.815	-0.398	0.266	-0.120	0.179	0.209
Z-score (Return on total assets)	0.767	0.500	0.046	0.230	-0.136	-0.248
Z-score (Profit margin of operation)	0.698	0.325	-0.353	-0.265	0.203	-0.362
Z-score (The payment rate)	0.041	0.700	0.054	-0.341	-0.016	0.140
Z-score (Ratio of fixed assets)	-0.218	0.633	0.093	-0.352	0.052	0.462
Z-score (Proportion of labor force)	0.093	-0.630	-0.249	0.348	0.243	-0.220
Z-score (Turnover of assets)	0.265	-0.591	0.513	-0.349	-0.385	-0.152
Z-score (The percentage of researchers)	0.259	-0.570	-0.102	0.562	0.326	0.052
Z-score (Total asset turnover)	0.284	-0.477	0.587	-0.218	-0.493	-0.181
Z-score (Surrender rate)	-0.237	0.434	0.444	0.634	0.036	-0.040
Z-score (Profit margin on sales)	-0.028	0.558	0.264	0.633	-0.430	0.005
Z-score (Asset liability ratio)	-0.130	0.174	0.635	-0.070	0.670	0.050
Z-score (Premium receivable rate)	0.130	-0.344	-0.530	0.189	-0.335	0.545

Factor naming is an important goal of factor analysis, and factor naming must cover the meaning of all the original variables represented. Therefore, researchers can not only try to name according to the meaning of several original variables corresponding to the large factor loading but also according to the rotated factor loading matrix, as shown in Table 5. After the common factor is determined, it is processed in the Analysis - dimension reduction - Factor Analysis - rotation module to name the factor.

The component matrix mainly reflects the correlation degree between common factors and variables. The closer its absolute value is to 1, the higher the correlation degree, and the greater the influence of variables on common factors. To make the information between factors independent and better analyze the newly extracted variables, this paper uses the maximum variance method to rotate the factors, and the rotated component matrix is shown in Table 6.

Table 6. Rotated Component Matrix

	Component					
	1	2	3	4	5	6
Z-score (Profit margin of operation)	0.926	0.047	-0.061	-0.267	-0.122	-0.103
Z-score (Return on shareholders' equity)	0.894	0.346	0.017	-0.192	0.039	-0.066
Z-score (Return on total assets)	0.848	0.226	-0.087	0.438	0.044	-0.032
Z-score (Core solvency adequacy ratio)	0.813	0.344	0.038	-0.078	-0.038	0.352
Z-score (Comprehensive solvency adequacy ratio)	0.802	0.369	-0.076	-0.033	-0.009	0.335
Z-score (Return on equity)	0.792	0.412	-0.113	0.374	0.016	-0.066
Z-score (Growth rate of net assets)	0.423	0.863	0.132	-0.112	0.120	0.029
Z-score (Growth rate of premium income)	0.410	0.838	0.067	-0.020	0.310	-0.022
Z-score (Growth rate of assets)	0.301	0.837	0.200	-0.243	0.304	-0.045
Z-score (Rate of profit growth)	0.488	0.792	0.066	0.289	0.126	0.063
Z-score (Ratio of fixed assets)	-0.147	0.051	-0.822	0.010	-0.302	-0.072
Z-score (Proportion of labor force)	-0.015	0.041	0.812	-0.172	-0.050	0.058
Z-score (The percentage of researchers)	-0.049	0.393	0.799	0.030	-0.166	0.064
Z-score (The payment rate)	0.229	-0.033	-0.728	0.058	-0.169	-0.126
Z-score (Profit margin on sales)	0.072	-0.080	-0.177	0.956	-0.029	0.098
Z-score (Surrender rate)	-0.176	-0.034	-0.022	0.822	-0.180	-0.327
Z-score (Total asset turnover)	-0.027	0.217	0.082	0.016	0.960	-0.006
Z-score (Turnover of assets)	-0.068	0.234	0.112	-0.196	0.930	-0.018
Z-score (Premium receivable rate)	-0.118	0.231	0.171	-0.105	-0.151	0.855
Z-score (Asset liability ratio)	-0.259	0.304	-0.149	0.033	-0.143	-0.839

Through the rotated component matrix, we can get a clearer evaluation meaning. To facilitate the research, this paper names the six factors respectively. As can be seen from Table 3-7, in the first principal component, the factor loadings are mainly distributed in the operating profit rate, the return on shareholders' equity, and the return on total assets. In particular, the loadings on the operating profit rate are as high as 0.926. This indicates that the first principal component reflects that the profitability index of life insurance companies contributes the most to the company's performance, so it can be named the profitability factor.

In terms of the second principal component, the growth rate of net assets, the growth rate of premium income, and the growth rate of assets have a large load, so component 2 is named the growth ability factor.

The third principal component, the ratio of fixed assets, the proportion of labor force, and the proportion of researchers have a large load, so component 3 is named the digital transformation ability factor.

As for the fourth principal component, the profit growth rate, sales profit rate, and total asset return rate have a large load, so the fourth component is named the income return factor.

In the fifth principal component, total asset turnover and asset turnover have a large load, so component 5 is named the operational ability factor.

The sixth principal component, the core solvency adequacy ratio, comprehensive solvency adequacy ratio, and asset-liability ratio have a large load, so component 6 is named the solvency factor.

3.5 Factor Score

This paper uses SPSS.27 to get the matrix of the component score coefficient as shown in Table 7.

Table 7. Component Score Coefficient Matrix

	Component					
	1	2	3	4	5	6
Z-score (Profit margin of operation)	0.299	-0.192	0.051	-0.160	-0.038	-0.160
Z-score (Return on equity)	0.149	0.010	0.001	0.151	0.008	-0.052
Z-score (Return on total assets)	0.216	-0.106	0.040	0.187	0.061	-0.047
Z-score (Profit margin on sales)	0.003	-0.033	-0.011	0.445	0.070	0.134
Z-score (Return on shareholders' equity)	0.222	-0.067	0.039	-0.108	-0.003	-0.119
Z-score (Asset liability ratio)	-0.107	0.214	-0.016	-0.057	-0.144	-0.448
Z-score (Comprehensive solvency adequacy ratio)	0.133	0.012	-0.052	-0.014	-0.019	0.157
Z-score (Core solvency adequacy ratio)	0.151	-0.012	0.000	-0.028	-0.036	0.147
Z-score (Premium receivable rate)	-0.172	0.205	-0.071	0.009	-0.129	0.515
Z-score (Turnover of assets)	-0.018	-0.035	-0.035	-0.030	0.434	-0.006
Z-score (Surrender rate)	-0.043	0.036	0.081	0.357	-0.052	-0.129
Z-score (Total asset turnover)	-0.006	-0.056	-0.031	0.071	0.469	0.015
Z-score (Ratio of fixed assets)	-0.147	0.216	-0.369	-0.071	-0.144	0.074
Z-score (Growth rate of assets)	-0.074	0.270	-0.012	-0.097	0.012	-0.043
Z-score (Growth rate of premium income)	-0.055	0.258	-0.050	0.000	0.040	-0.008
Z-score (Growth rate of net assets)	-0.065	0.296	-0.028	-0.047	-0.072	0.007
Z-score (Rate of profit growth)	-0.040	0.249	-0.020	0.140	-0.025	0.052
Z-score (The percentage of researchers)	-0.061	0.143	0.307	0.060	-0.188	-0.032
Z-score (Proportion of labor force)	0.053	-0.066	0.343	-0.027	-0.077	-0.075
Z-score (The payment rate)	0.021	0.037	-0.277	-0.043	-0.040	-0.008

According to the score coefficient matrix of factor components, common factors 1-6 are set as Y_1 - Y_6 in order, and indicators 1-20 are set as X_1 - X_{20} , Then according to the score coefficient of factor, the factor score function is expressed as follows (taking common factor 1 as an example):

$$Y_1 = 0.299X_1 + 0.149X_2 + 0.216X_3 + 0.003X_4 + 0.222X_5 - 0.107X_6 + 0.133X_7 + 0.151X_8 - 0.172X_9 - 0.018X_{10} - 0.43X_{11} - 0.006X_{12} - 0.147X_{13} - 0.074X_{14} - 0.055X_{15} - 0.065X_{16} - 0.040X_{17} - 0.061X_{18} + 0.053X_{19} + 0.021X_{20} \quad (2)$$

Through the above factor score function, the factor scores of 25 insurance companies can be calculated, and then the variance contribution of each factor is taken as the weight to summarize the scores, and the performance evaluation model is constructed as follows:

$$Y = (25.901Y_1 + 18.934Y_2 + 13.516Y_3 + 11.381Y_4 + 11.263Y_5 + 9.215Y_6)/90.21 \quad (3)$$

Finally, the total factor scores and ranking of 25 life insurance companies are obtained. The results are shown in Table 8.

Table 8. Comprehensive score table

company name	factor score						Total Points	Ranking
	F1	F2	F3	F4	F5	F6		
AIA Life	2.083	4.174	0.602	-0.008	0.558	0.156	1.65	1
PICC Life	0.871	-0.497	-0.673	4.404	-0.003	0.244	0.63	2
CIGNA & CMB Life	1.007	-0.946	1.151	-0.097	0.921	0.395	0.41	3
Manu Life-Sino chem Life	0.696	-0.573	0.637	-0.225	0.325	1.979	0.39	4
BOCOM MSIG Life	-0.143	-0.267	1.712	0.275	0.193	-0.348	0.18	5
MINSHENG Life	1.845	-1.312	0.323	-0.725	-0.77	0.291	0.14	6
Ping An Life	1.329	-0.738	0.685	-0.371	-0.711	-0.646	0.13	7
SINATAY Life	-0.898	-0.013	0.128	-0.247	3.435	-0.753	0.08	8
Pramerica Fosun Life	-2.013	0.626	0.921	-0.022	-0.43	3.074	-0.05	9
China Life	0.209	-0.133	-0.1	-0.456	-0.752	0.7	-0.06	10
Taiping Life	0.46	-0.453	-0.535	-0.245	0.364	-0.449	-0.07	11
ICBC-AXA Assurance	-0.245	-0.486	0.447	-0.229	0.611	-0.366	-0.1	12
Great Wall Life	-0.848	-0.056	-0.273	0.526	-0.082	1.161	-0.12	13
Generali China Life	0.203	-0.367	-0.028	-0.425	-0.247	-0.142	-0.12	13
Ying da Tai he Life	-0.47	-0.319	-0.371	-0.231	1.708	-0.53	-0.13	15
ABC Life	-0.692	-0.023	0.177	0.539	0.385	-1.069	-0.17	16
Guo Hua Life	-0.405	-0.57	0.884	-0.333	-0.345	-0.058	-0.19	17
TAIKANG Life	0.63	-0.024	-1.439	-0.592	-0.467	-0.219	-0.2	18
HONGKANG Life	-0.993	0.521	2.212	0.02	-1.693	-1.647	-0.22	19
Sunshine Life	-0.054	-0.11	-0.79	-0.344	-0.281	0.063	-0.23	20
NEW CHINA Life	0.426	-0.093	-1.798	-0.548	-0.372	0.252	-0.26	21
CHINA PACIFIC Life	0.209	-0.03	-1.115	-0.478	-0.526	-0.395	-0.28	22
Union Life	-0.615	0.296	-0.566	-0.624	-0.506	-0.872	-0.43	23
Sun Life Everbright Life	-1.112	0.728	-1.722	-0.499	-0.112	0.456	-0.45	24
Fun de Sino Life	-1.481	0.665	-0.466	0.934	-1.203	-1.278	-0.52	25

3.6 Analysis of Evaluation Results

There are 8 insurance companies with positive comprehensive scores, accounting for 32% of the total sample. There are no longer only large life insurance companies occupying the top spot, indicating that the comprehensive competitiveness of China's life insurance industry has been improved. Although the market share is still dominated by the life insurance companies established earlier, the top ten are also relatively new life insurance companies, such as China Recruitment Trust and Fosun Prudential, which have a relatively small scale in China.

There are two main reasons for this. On the one hand, with the continuous increase of competition subjects in the life insurance market, the market competition is intensified. The situation of relying solely on premium income as a source of profit is being changed, and the market competition forces life insurance enterprises to improve their investment capacity. The expansion of the life insurance business needs time to accumulate, and the investment income can effectively improve the profitability of enterprises. In this process, small and medium-sized life insurance enterprises are often faster on the road to strengthening the investment income ability. On the other hand, the innovation ability of traditional large life insurance enterprises is not strong, and the product and service lack individuation. With the social and economic development of China, the demand for life insurance service is gradually developed to individuation from the standard product. It is also an important aspect of the competitiveness of life insurance enterprises to find the change in customer needs and make corresponding adjustments.

4. Conclusion

In this paper, 25 2020 operating performance of life insurance company, first of all, to build the life insurance company performance indicators evaluation system, and on this basis the influence factors of the performance of life insurance company principal component analysis, then according to its total factor score and ranking, combined with the actual situation of China's insurance industry, the following main conclusions:

Growth ability and profitability are relatively prominent factors affecting the operating performance of life insurance companies. Life insurance companies with significant advantages in operating profit margin, return on equity, and growth rate of premium income rank relatively high in the total factor score. This indicates that China's insurance industry is developing rapidly at present, but because China's life insurance market began to take shape after the reform and opening up in 1980, the development time is relatively short, and in the product structure, marketing mode, corporate governance, and other aspects are inherited from foreign experience, the overall competitiveness is low. However, the market share of the newly entered insurance companies is small in a short period, the market position of the larger insurance companies is difficult to shake, and the market concentration degree also changes slowly. Therefore, adjusting the market structure is the core of industry optimization, and the government adjusting the structure of the market is the key to establishing effective competition mechanism, promoting the common development of small and medium-sized enterprises, increasing economic efficiency from the industry as a whole, should encourage innovation to increase the insurance product differentiation, improve the open policy to appropriate insurance market, gradually reduce the market concentration.

In general, it is considered that the assets of insurance companies' size and significantly positively related to business performance, the company can through enlarging the scale of assets, save costs and create economies of scale, improve the level of corporate performance, and consumers favor choosing a larger life insurance company, it also to improve the level of company's business performance have a positive effect. However, in this article, AIA Life, Manulife, MINSHENG Life, and other small life insurance companies ranked high. The main reason is that the enhancement of capital strength will not bring the improvement of overall efficiency, and the scale of the company does not match the development status, there will be a bloated organization, redundant personnel, multiple leaders, and other problems, resulting in the decline of operational efficiency. Standardized management will be more difficult and business risks will be more, which means that scale needs reasonable structure management and system construction, rather than blindly pursuing scale.

Asset-liability ratio and core solvency ratio are indicators to explain F6. Asset-liability ratio ranking high companies, solvency factor scores are not ideal. Large life insurance companies should strive to improve their profitability and the ability to use capital in investment business based on the reasonable arrangement of asset scale and structure, to continuously improve their solvency; However, the investment business of small and medium-sized life insurance companies is small, and the contribution to the improvement of solvency is weak. It is suggested that while expanding the underwriting business scale, medium-sized life insurance companies should reasonably arrange the structure of life insurance, actively develop their investment business, and strive to expand the market share of traditional life insurance.

There are great differences in digital transformation among different types of insurance companies. Traditional large life insurance companies have a high investment in science and technology and a large number of agents. Affected by the epidemic, the direction of digital transformation is mainly applied to improve the capacity of agents, layout online sales mode, and vigorously develop the insurance ecosystem. Although the top small and medium-sized life insurance companies have a high proportion of researchers, their overall digitalization investment is not ideal, and they often rely on third-party technical institutions to select technology application technologies in line with business scenarios to shorten the overall duration of technology application. However, the output quality of third-party technology suppliers may vary, and the length of the life cycle is also different in the fierce market competition. Changing suppliers will inevitably lead to a certain delay in the digital

transformation strategy of life insurance companies. Such risks must be of particular concern to small and medium-sized insurers.

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