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Ranking Iranian Private Banks Based on the CAMELS Model Using the AHP Hybrid Approach and TOPSIS

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Abstract *This research was done to evaluate and compare performance of Iranian banks based on the CAMELS rating system. For this purpose, after studying the related literature, factors relating to efficiency and soundness were identified and used to assess banks; these were Capital Adequacy, Asset Quality, Management Capability, Earnings, Liquidity, and Sensitivity to Market Risk. Then, an importance coefficient was determined for each of these factors using the Analytical Hierarchy Process. Iranian private banks were then ranked according to evaluations on indices from audited financial statements at the end of the Solar year 1393 (March 2015) and the TOPSIS method. Results determined high-ranking banks as follows: Pasargad Bank, Khavarmiane, Karafarin, Sina and Ansar.*

Key words Analytical hierarchy process, banks ranking, CAMELS, performance, TOPSIS

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1. Introduction

Banks and financial institutions play a vital role in growth and economic development of a country through deposits of money from units with excess liquidity resources, risk measurement and management, evaluating business and investment projects and granting facilities to commercial and production units. It is therefore very important to evaluate performance as these banking institutions impact on a country's economy in terms of growth and development. Analysis of the status of countries that have experienced crises and instability in their banking system shows that weakness and instability in banking can bring about irreparable damage to a country's economic body (Gunsel, 2012).

In Iran, there has been a recent increase in the number of private banks and this has increased competition among banks. However, the presence of private banks in the stock exchange market has led to increased sensitivity among shareholders of banks to financial performance (Rezaei and Ketabi, 2016). There is a wide range of indicators for financial reports that can be applied to evaluate financial performance. The Basel Committee on Banking Supervision proposed the CAMEL model for investigating financial organizations in 1988. The CAMEL model is a simple and appropriate model for managerial and financial assessment of organizations (Kouser and Saba, 2012). It is classified as a modern approach for evaluating performance (Nimalathasan, 2008). The method has been much used in many countries but little effort has been made in Iran to apply this model and only some banks have used it to measure performance. However it has not been used formally as recommended by the Central Bank, so there remains the need for further investigation in this field. In this study, the CAMELS model was used to measure and compare financial performance of some Iranian banks.

2. Literature review

In recent decades the CAMEL model has been used by academics scholars and administrators to analyze financial performance of banks; both public and private and a summary of some of these studies are given below:

Kwan and Eisenbeis (1997) observed that Asset Quality was commonly used as a risk indicator for financial institutions; it determines the reliability of capital ratios. The study indicated that capitalization affects the operation of a financial institution. More capital relates to higher efficiency. Cole *et al.* (1998) conducted a study on "A CAMEL Rating's Shelf Life" and the findings suggest that if a bank had not been examined for more than two quarters, off-site monitoring systems usually provide a more accurate indication of survivability than its CAMEL rating. Godlewski (2003) tested validity of CAMEL rating typology for bank's default monetization in emerging markets. The research focused explicitly on using a logical model applied to a database of defaulted banks in emerging markets. Prasuna (2003) analyzed the performance of 65 Indian banks according to the CAMEL Model. The performance of 65 banks was studied for the period 2003-04. The author concluded that the competition was tough and that consumers benefited from better quality services, innovative products and better bargains. Said and Saucier (2003) examined Japanese banks for liquidity, solvency and efficiency using the CAMEL rating method, for a representative sample of Japanese banks for the period 1993-1999, they evaluated capital adequacy, assets and management quality, earnings ability and liquidity position. Sarker (2005) scrutinized the CAMEL model for regulation and supervision of Islamic banks by the central bank in Bangladesh. The study enabled regulators and supervisors to get a Shariah benchmark to supervise and inspect Islamic banks and financial institutions from an Islamic perspective.

Bhayani (2006) analyzed performance of new private sector banks through the CAMEL model. Four leading private sector banks; the Industrial Credit and Investment Corporation of India, the Housing Development Finance Corporation, the Unit Trust of India and the Industrial Development Bank of India were used as samples. Derviz *et al*. (2008) investigated determinants of movement in the long-term Standard and Poor's and CAMEL bank ratings in the Czech Republic during the period when the three biggest banks, representing approximately 60% of the Czech banking sector's total assets, were privatized. Gupta (2008) conducted the study with the main objective of assessing performance of Indian Private Sector Banks based on the Camel Model and rated banks according to the top five and the bottom five. They ranked 20 old and 10 new private sector banks based on the CAMEL model. They considered financial data for the five-year period of 2003-07. Siva and Natarajan (2011) reports on empirical tests on the applicability of CAMEL norms and its consequential impact on performance of SBI Groups. The study concluded that annual CAMEL scanning helped a commercial bank to diagnose its financial health and alerted the bank that was then able to take preventive steps and maintain its sustainability. Chaudhry and Singh (2012) reports on analysis of the impact of financial reforms on the soundness of Indian Banking through its impact on asset quality. The study identified the key factors as; risk management, NPA level, effective cost management and financial inclusion. Trivedi and Rehman (2015) reports on analysis of performance of 4 Indian public and private banks, according to the CAMEL model. Performance of 4 banks was studied for the period 2008-12. The author concluded that performance of private banks was better than that of public banks.

3. Research questions

According to the proposed theoretical fundamentals, the following research questions were formulated:

Question 1. What are the performance indicators of banks in each of the six areas of the CAMELS system?

Question 2. How important is the coefficient of each index in measuring a bank's performance?

Question 3. How are private Iranian banks ranked according to the CAMELS ranking system?

4. Methodology of research

The aim of the current research was descriptive analysis in terms of functional - development and data collection. The following steps were taken to address the research questions, as shown in Figure 1.

Statistical population used for implementation of the analytic hierarchy process, banking industry experts is simultaneously with the following two characteristics:

• Having at least a bachelor's degree in the field of banking, accounting, economics or management.

• Having management experience of over 10 years in the banking system or 5 years' experience in banking industry analysis in investment companies, brokerage and supplying capital.

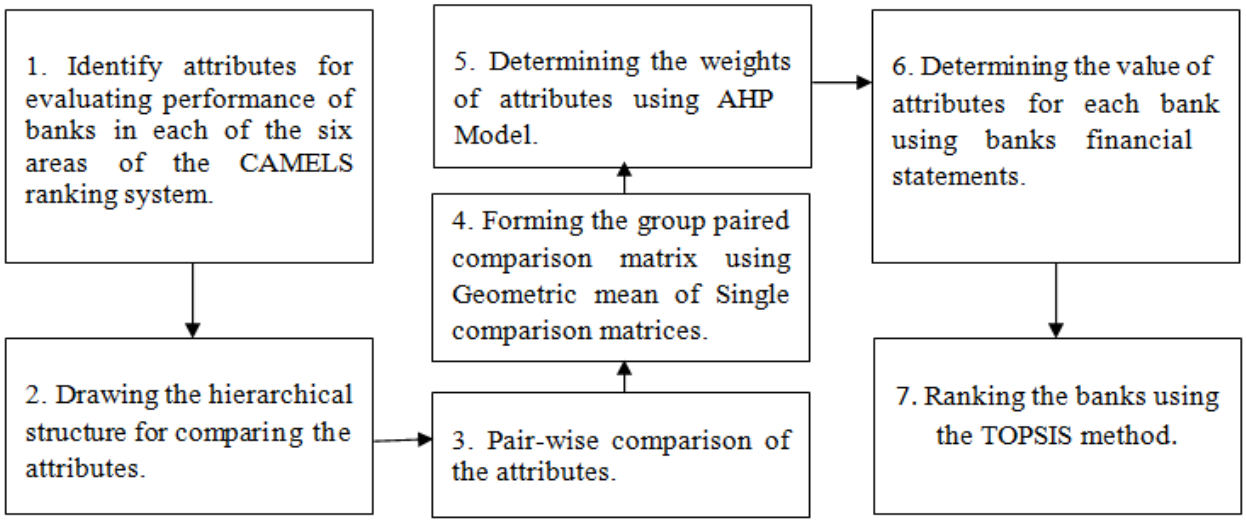

Figure 1. Research methodology and process

According to the above-mentioned features, a primary list of 20 banking industry experts was presented after investigating their experimental and scientific experiences regarding the research topic and the initial questions presented to them. After complementary reviewing, ultimately 10 of them were selected through purposive sampling (of judgment) and subsequent research questionnaires were exposed to the poll. Statistical populations of banks under study for ranking included all banks accepted by the Tehran Stock Exchange or the OTC Company that their financial statements for the fiscal year ending 29/12/1393 available on the Codal website; sampling was not carried out until the whole population had been reviewed. Expert Choice software was used to do the research and for implementation of the Analytic Hierarchy Process and the Excel spreadsheet was used to perform other necessary calculations.

4. 1. The CAMELS model

The Uniform Financial Institution Rating system, commonly referred to by the acronym CAMEL rating, was adopted by the Federal Financial Institution Examination Council on November 13 1979, and then adopted by the National Credit Union Administration in October 1987. It has proven to be an effective internal supervisory tool for evaluating soundness of a financial firm on the basis of identifying institutions that require special attention. Also the Federal Reserve Bank of America assesses its banks on a scale of one to five by application of the components of the CAMEL model that monitor various aspects of a bank's health. Reliability, profitability and liquidity are the most important criteria for assessing performance. Therefore, since 1988 the Basel Committee on Banking Supervision has stated that application of the CAMEL model is essential in order to evaluate financial institutions (Mahdian and Asadi Afshordi, 2014). In 1997, another component, called market risk (S) was added to the CAMEL model. The CAMEL framework is a common approach to evaluate the financial health of an organization. Barr *et al.* (1999) reports "CAMEL rating has become a concise and indispensable tool for examiners and regulators". This rating ensures a bank's health by reviewing different aspects of a bank based on various sources of information such as financial statements, funding sources, macroeconomic data, budget and cash flow. CAMELS are an acronym for six components used for assessment of bank safety and soundness; these are described below:

Capital adequacy: Capital adequacy is one of the most important indicators for financial health of the banking sector because it guarantees a capacity to absorb eventual losses generated by the manifestation of certain risks or certain significant macroeconomic imbalances. It is important for a bank to maintain confidence among its depositors and to prevent bankruptcy. It reflects the overall financial condition of a bank (Saghafi, 2005).

Asset quality: Asset quality is an important measure of the strength of a bank. Poor asset quality is the major cause of most cases of bank failure. Asset quality determines the health of a financial institution against loss of value in its assets as asset impairment places solvency of a financial institution at risk. The weakening value of a bank's assets has a spillover effect, as losses are eventually written-off against capital

that eventually exposes the earning capacity of an institution. Within this framework, asset quality is assessed with respect to level and severity of nonperforming assets, adequacy of provisions, distribution of assets and such like (Romana, 2013).

Management quality: Management quality is basically the capability of the board of directors and management to identify, measure and control the risks of an institution's activities and to ensure safe, sound, and efficient operation in compliance with applicable laws and regulations (Gupta, 2014). Many researchers believe that management quality plays a substantial role in a bank's success.

Earning ability: Earning ability is a very important criterion as it determines the ability of a bank to earn consistently. It basically determines a bank's profitability and presents predictions for sustainability and future growth. This criterion reflects trends and evaluations of earnings as well as factors that may affect sustainability of such earnings. Inadequate management may result in loan losses and may in return require higher loan allowance or present high-level market risks. Future performance in earning should be given equal or greater value than past and present performance. A consistent profit not only builds on public confidence in a bank but it also absorbs loan losses and provides sufficient provisions. It is also necessary for a balanced financial structure and helps to provide shareholder reward. Thus consistently healthy earnings are essential for sustainability in banking institutions (Sangmi, 2010).

Liquidity: Liquidity refers to the ability of a bank or financial institution to hold the level of cash required to meet its requirements. Liquidity is a significant factor affecting determinations of regular cash flow and new investments. Therefore, banks are obliged to have appropriate and adequate liquidity to meet demands of depositors and borrowers and to attract public confidence. To achieve this, banks and financial institutions need to have an effective and efficient asset and liability management system to maintain their liquidity power through minimizing the gap between asset maturities and liabilities (Dang, 2001).

Sensitive to market risk: Sensitivity to market risk refers to the level of undesirable effects caused by fluctuations of interest rates, exchange rates and the value of equity venture capital and income in a bank. In fact, risk sensitivity has a direct relation with factors such as change in interest rates, exchange rates and equity value. This factor therefore has an impact on profitability and capitalization of banks and financial institutions (Madura, 1995).

4.2. Analytic hierarchy process

Analytic Hierarchy Process is an important method for multi-attribute decision-making, first presented in 1980 by Thomas L. It aims to quantify the relative priorities for a given set of alternatives on a ratio scale, based on judgment of the decision-maker and it stresses importance of the intuitive judgments of a decision-maker as well as consistency of comparisons of alternatives in the decision-making process (Hunjak, 2001). A decision-maker bases its judgments on knowledge and experience and makes decisions accordingly, so the AHP approach agrees well with the behavior of a decision-maker. The strength of this approach is that it organizes tangible and intangible factors in a systematic way and provides a structured yet relatively simple solution to decision-making problems. In addition, by breaking a problem down in a logical fashion from large-scale, descending in gradual steps, to a smaller and smaller scale, it enables connections from small to large through simple paired comparison judgments. The following steps were developed for application of AHP (Satty, 1990):

Step 1. To define the problem and determine its goal.

Step 2. To structure the hierarchy from the top (the objectives from a decision-makers viewpoint) through intermediate levels (criteria on which subsequent levels depend) to the lowest level that usually contain the list of alternatives.

Step 3. To construct a set of pair-wise comparison matrices (size $n \times n$) for each of the lower levels with one matrix for each element in the level immediately above it by using the relative scale measurement shown in Table 1. Pair-wise comparisons are made according to elements that dominate another.

Step 4. There are n (n-1) judgments that are required to develop the set of matrices in step 3. Reciprocals are automatically assigned in each pair-wise comparison.

Table 1.Pair-wise comparison scale for AHP preferences

Verbal judgments of preferences	**Numerical rating**
Extremely preferred	9
Very strongly to extremely	8
Very strongly preferred	7
Strongly to very strongly	6
Strongly preferred	5
Moderately to strongly	4
Moderately preferred	3
Equally to moderately	2
Equally preferred	1

Step 5. Hierarchical synthesis is now used to weight the eigenvectors by the weights of the criteria and the sum is taken over all weighted eigenvector entries corresponding to those in the next lower level of the hierarchy.λ_{max}

Step 6. Having made all the pair-wise comparisons, consistency is determined by using the eigenvalue, λ_{max} to calculate consistency index, CI as follows:

$$CI = (\lambda_{max} - n)/(n-1) \quad (1)$$

Where n is the matrix size. Judgment consistency can be checked by taking the consistency ratio (CR) of CI with the appropriate value in Table 2.

Table 2. Average random consistency (RI)

Size of matrix	1	2	3	4	5	6	7	8	9	10
Random consistency	0	0	0.56	0.9	1.12	1.24	1.32	1.41	1.45	1.45

The CR is acceptable, if it does not exceed 0.10. If it is more, then the judgment matrix is inconsistent. To obtain a consistent matrix, judgments should be reviewed and improved.

Step 7. Steps 3-6 are performed for all levels in the hierarchy and at the end the final weight of each indicator in a hierarchical process is made by collecting works of each index on the ultimate goal, calculated through equation. 1

$$W_{Fi} = \sum W_k W_i \quad (2)$$

In which W_k is relative importance coefficient of k criteria and W_i relative importance coefficient of sub criteria i.

4.3. TOPSIS techniques

The TOPSIS method was introduced for the first time by Yoon and Hwang and was appraised by surveyors and different operators. TOPSIS is a decision-making technique. It is a goal-based approach for finding the alternative that is closest to the ideal solution. In this method, options are graded based on ideal solution similarity. If an option is more similar to an ideal solution, then it has a higher grade. An ideal solution is one that is considered best from any aspect that does not exist in practical terms so it is approximation is attempted. Basically, for measuring similarity of a design (or option) to ideal level and non-ideal, we consider distance of that design from ideal and non-ideal solutions (Sechme *et al*., 2009). General TOPSIS process with 7 steps is listed below:

Step 1. Formation of a decision matrix; the structure of the matrix can be expressed as follows:

$$D = \begin{bmatrix} & X_1 & X_2 & . & . & X_j & . & . & X_n \\ A_1 & X_{11} & X_{12} & & . & X_{1j} & . & . & X_{1n} \\ A_2 & X_{21} & X_{22} & & . & X_{2j} & . & . & X_{2n} \\ . & . & . & & & . & & & . \\ & . & . & & & . & & & . \\ A_i & X_{i1} & X_{i2} & . & . & Xij & . & . & X_{in} \\ . & . & . & & & . & & & . \\ . & . & . & & & . & & & . \\ A_m & X_{m1} & X_{m2} & . & . & X_{mj} & . & . & X_{mn} \end{bmatrix}$$

Where

Ai = ith alternative projects.

Xij = the numerical outcome of the ith alternative projects with respect to jth criteria.

Step 2. Normalize the decision matrix D by using the following formula:

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{n} x_{ij}^2}} \tag{3}$$

Step 3. To construct the weighted normalized decision matrix by multiplying the normalized decision matrix by its associated weights. The weighted normalized value V_{ij} is calculated as:

$$V_{ij} = w_{ij} \times r_{ij} \tag{4}$$

Step 4. To determine the positive ideal solution and negative ideal solution.

$$\mathrm{A}^* = \{(\max \mathrm{vij} \mid \mathrm{j} \in \mathrm{J}), (\min \mathrm{vij} \mid \mathrm{j} \in \mathrm{J}')\} \tag{5}$$

$$\mathrm{A}^- = \{(\min \mathrm{vij} \mid \mathrm{j} \in \mathrm{J}), (\max \mathrm{vij} \mid \mathrm{j} \in \mathrm{J}')\} \tag{6}$$

J = 1, 2, 3,….,n

where J is associated with the benefit criteria

J’ = 1,2,3,….,n

where J’ is associated with the cost criteria

Step 5. Calculate the separation measure. The separation of each alternative from the positive ideal one is given by:

$$S_i^* = \sqrt{\sum_{j=1}^{n} \left(v_{ij} - v_j^*\right)^2} \quad \text{where i = 1,2,…,m} \tag{7}$$

Similarly, the separation of each alternative from the negative ideal one is given by:

$$S_i^- = \sqrt{\sum_{j=1}^{n} \left(v_{ij} - v_j^-\right)^2} \quad \text{where i = 1,2,…,m} \tag{8}$$

Step 6. To calculate the relative closeness to the ideal solution. The relative closeness of Ai with respect to A* is defined as:

$$C_i^* = \frac{S_i^-}{S_i^- + S_i^*}, 0 \le C_i^* \le 1 \tag{9}$$

Where i = 1, 2,…,m

The larger the Ci* value, the better the performance of the alternatives.

Step 7. To rank the preference order.

5. Results

5.1. Identifying performance evaluation indicators in the CAMELS model framework

Further to a review of the literature, a set of the most important components for performance evaluation of banking systems was identified in each of the six dimensions of the CAMELS ranking system. Then according to the rules and conditions governing Iran's banking system, a decision model of the study was explained as the following table with six dimensions and 16 components, as shown in Table 3.

Table 3. Performance evaluation indicators in CAMELS model framework

Criterion	sub Criterion	Symbol
Capital adequacy	(Capital/Total Risk Weighted Assets)	C_1
	(Debt/Equity)	C_2
Asset quality	(Non-performing Loans/Total Loans)	A_1
	(Total loans/Total assets)	A_2
	(doubtful receivables costs/Total receivables)	A_3
Management quality	(Net income/Number of Employees)	M_1
	(total revenue – Interest expenditure)/Total Expenses)	M_2
	(Deposit growth rate + Loan growth rate)	M_3
Earning ability	(Interest Earned - Interest expenditure)	E_1
	(Net Income/Total Assets)	E_2
	(Net Income/Equity)	E_3
Liquidity	(Liquid asset/Total Deposits)	L_1
	(Liquid Assets/Demand Deposits and short term funding)	L_2
	(Total loans/Total Deposits)	L_3
Sensitive to market risk	((Foreign currency assets - Foreign currency debt)/Equity)	S_1
	(Company's beta in Exchange)	S_2

5.2. Determining the importance coefficient of each indicator

The process of analytic hierarchy process is an efficient method of multi-attribute decision making to determine importance coefficients of the indices. For this purpose, in the first stage, the hierarchical structure of the problem was designed as Figure 2.

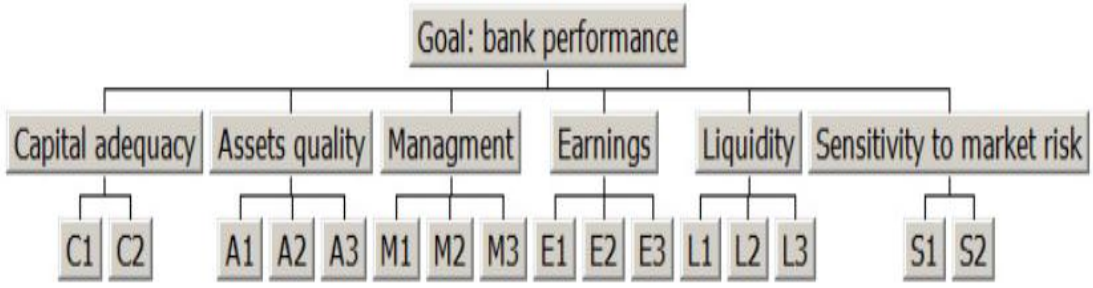

Figure 2. The structure of hierarchical ranking for banks

Then questionnaire of paired comparisons between criteria and sub criteria based on L-Saaty nine quantile scale (according to Table 1) designed and distributed banking industry experts. Thus, after receiving and reviewing responses, the geometric mean of scores given by experts and relative weight of each criterion and sub criterion were calculated as shown in Tables 4 to 10. Then the inconsistency rate was reviewed for each of the pair wise comparison matrices. Finally, the final weight of each sub-criterion was calculated and presented in Table 11.

Table 4. Priority of the main criteria

Bank Performance	Capital adequacy	Asset quality	Management quality	Earning ability	Liquidity	Sensitive to market risk	Geometric mean	relative weight
Capital adequacy	1	0.68	1.67	0.71	1.47	2.16	1.17	0.19
Asset quality	1.46	1	1.71	1.14	0.77	1.76	1.25	0.20
Management quality	0.59	0.58	1	0.97	1.47	1.60	0.96	0.15
Earning ability	1.39	0.87	1.02	1	2.29	2.14	1.35	0.22
Liquidity	0.67	0.67	0.67	0.43	1	1.29	0.74	0.12
Sensitive to market risk	0.46	0.56	0.62	0.46	0.77	1	0.62	0.10

Table 5. Setting priorities of capital adequacy sub criteria

Capital adequacy	C1	C2	Geometric mean	relative weight
C1	1	1.50	1.22	0.60
C2	0.66	1	0.81	0.40

Table 6. Setting priorities of asset quality sub criteria

Asset quality	A1	A2	A3	Geometric mean	relative weight
A1	1	2.00	2.07	1.61	0.50
A2	0.50	1	2.00	1	0.31
A3	0.48	0.50	1	0.62	0.19

Table 7. Setting priorities of quality management sub criteria

Management quality	M1	M2	M3	Geometric mean	relative weight
M1	1	1.13	0.85	0.99	0.33
M2	0.88	1	0.95	0.94	0.31
M3	1.16	1.05	1	1.07	0.35

Table 8. Setting priorities of earning ability sub criteria

Earning ability	E1	E2	E3	Geometric mean	relative weight
E1	1	1.26	0.45	0.83	0.26
E2	0.79	1	0.55	0.75	0.23
E3	2.20	1.81	1	1.58	0.50

Table 9. Setting priorities of liquidity sub criteria

Liquidity	L1	L2	L3	Geometric mean	relative weight
L1	1	1.41	1.11	1.16	0.38
L2	0.70	1	0.63	0.76	0.25
L3	0.89	1.56	1	1.12	0.37

Table 10. Setting priorities of sensitivity to market risk sub criteria

Sensitive to market risk	S1	S2	Geometric mean	relative weight
S1	1	1.62	1.27	0.62
S2	0.61	1	0.78	0.38

Table 11. Partial and final weights and the rate of incompatibility of criteria and sub criteria

Criterion	Weight	CR	Sub Criterion	relative weight	final weight
Capital adequacy	0.192	0	C1	0.60	0.1152
			C2	0.40	0.0768
Asset quality	0.205	0.04	A1	0.50	0.1018
			A2	0.31	0.0635
			A3	0.19	0.0395
Management Quality	0.158	0.005	M1	0.33	0.0521
			M2	0.31	0.0496
			M3	0.35	0.0562
Earning ability	0.221	0.07	E1	0.26	0.0574
			E2	0.23	0.0530
			E3	0.50	0.1105
Liquidity	0.122	0.004	L1	0.38	0.0466
			L2	0.25	0.0306
			L3	0.37	0.0447
Sensitive to market risk	0.102	0	S1	0.62	0.0632
			S2	0.38	0.0387
Total	1	0.004	-	6	1

5.3. Ranking of Iranian private banks

The Topsis method was used to rank the private banks included in the study. This was done by means of after decision matrix formation and its descaling through norm, tunable de- Scale Matrix was formed using the weight of each of the indices based on Table 11 and started to calculate the relative closeness of each option to the ideal solution after positive ideal calculation (A +) and a negative ideal (A-) and priority status for each bank included in the study is presented in Table 12.

Table 12. Ranking the results for banks in the study

Bank	+D	D-	CL	Rank
Pasargad	0.0007	0.0216	0.967	1
Khavarmiane	0.0010	0.0221	0.955	2
Karafarin	0.0013	0.0213	0.942	3
Sina	0.0026	0.0174	0.870	4
Ansar	0.0030	0.0189	0.865	5
Eghtesadnovin	0.0033	0.0164	0.834	6
Dey	0.0041	0.0196	0.829	7
Saman	0.0048	0.0139	0.745	8
Tejarat	0.0053	0.0138	0.724	9
Saderat	0.0054	0.0134	0.713	10
Melat	0.0071	0.0135	0.655	11
Ghavamin	0.0092	0.0143	0.609	12
Parsian	0.0084	0.0114	0.577	13
Sarmaye	0.0101	0.108	0.516	14
Iranzamin	0.0158	0.0093	0.371	15

6. Discussion and conclusions

This study was done with the purpose of ranking Iran's stock and OTC banks based on the CAMELS ranking system. For this purpose, the first step was a review of the literature to determine the indices to require to measure efficiency, soundness and stability of banks, according to the conditions and rules governing the banking system in six zones based on the CAMELS ranking system. These consisted of 16

indices in six dimensions; capital adequacy, asset quality, management, profitability, liquidity and sensitivity to market risk. Prioritization of these indices using Analytical Hierarchy Process showed that, among indices of capital adequacy dimension, capital adequacy ratio, among the indices of quality of assets dimension, non-current facilities to total granted facilities, among the indices of quality of management dimension, net profit growth rate, among the indices among the indices of capital adequacy dimension, received dividends difference from granted facilities and interest paid to deposits, among the indices of liquidity dimension, cash and cash equivalents indices to total deposits and among the indices of sensitivity to risk dimension, The absolute value of foreign exchange net assets to equity, are very important for evaluating performance of banks active in the country's banking system. Additionally, in general, among indices applied to the research model for ranking the country's banks according to performance, the indicator Capital Adequacy Ratio had the highest priority with normal weight of 0.1152 and the indicator Liquid Assets to Demand Deposits and Short Term Funding Ratio had lower priority with normal weight of 0.0306. Results of prioritization of overall dimensions of the research suggest that profitability had the highest level of importance and sensitivity to market risk had the least importance for performance measurement and ranking among the model's dimensions. Eventually, results of the calculation and supply of actual values for the model indicators and their ranking using TOPSIS method and based on importance coefficients for each indicator show that Pasargad Bank, the Khavarmiane, Karafarin, Sina and Ansar had more favorable function compared to the other studied banks.

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