

Financial Analysis on the Company Performance in Malaysia with Multi-Criteria Decision Making Model

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Abstract

In stock market investment, an appropriate and accurate financial analysis is needed to be adopted on the evaluation of the company performance. The investors can analyze the financial performance of the company scientifically for their investment by using a multi-criteria decision making model which is Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) model. The objectives of this study are to evaluate, compare and rank the overall performance of the companies from the financial sector in Malaysia stock market with TOPSIS model. The overall performance of the companies is evaluated in terms of seven financial ratios. In this study, the data consists of 23 companies from the financial sector in Malaysia stock market. The period of study is from year 2012 to 2014. The results show that HWANG, RCECAP, CIMB, AFG and LPI achieve the top five ranking within the study period. This study is significant to the investors because it is able to evaluate and rank the overall performance of the companies from the financial sector in Malaysia by considering all the financial ratios with TOPSIS mathematical model.

Keywords

TOPSIS, Optimal Solution, Ranking, Financial Ratios

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1. Introduction

In stock market investment, the evaluation of the financial companies is very crucial to the investors. The financial performance of the companies measures the level of success of the companies. Li and Sun [1] mentioned that the ranking of companies is a practical tool to ensure the financial strength of the companies. In order to yield a better and accurate result, there are a lot of financial ratios or criteria to be considered. Therefore, current ratio, return on equity (ROE), profit margin, debt to equity ratio, earnings per share (EPS), dividend yield and price earnings ratio (PE) are the important criteria that used in this study. According to Tozum [2], a traditional ratio analysis fails to measure financial

performances effectively. Based on the recommendation from Tozum [2], Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) model is applied in this study.

TOPSIS model is a multi-criteria decision making model which was introduced by Hwang and Yoon [3]. TOPSIS model aims to select the most preferred alternative based on the optimal solution which has the closest distance to the positive ideal solution as well as the farthest distance from the negative ideal solution. The positive ideal alternative is the one which has the best level for all criteria considered whereas the negative ideal alternative is the one which has the worst attribute values and the least desirable among all the alternatives. The objectives of this paper are to evaluate,

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compare and rank the overall performance of the companies from the financial sector in Malaysia stock market with TOPSIS model. The rest of the paper is organized as follows. The next section describes the literature review of TOPSIS model in the evaluation of company performance. Section 3 discusses about the data and methodology of the study. Section 4 presents the empirical results of this study. Section 5 concludes the paper.

2. Literature Review

Hasanloo *et al.* [4] evaluated the performance of companies in Iran by ranking the companies with TOPSIS model. There were 12 companies evaluated in their study based on various financial ratios. Yilmaz and Konyar [5] determined the financial performance of nine lodging companies listed in the Istanbul Stock Exchange (ISE) from 2008 until 2011 by using TOPSIS model. The lodging companies that involved in the evaluation were AYCES, FVORI, MAALT, MARTI, METUR, NTTUR, PKENT, TEKTU and UTPYA. The results showed that PKENT achieved the highest rankings in terms of financial performance over the four-years period.

Gündoğdu [6] evaluated the financial performance of foreign banks operating in the Turkish banking sector by using TOPSIS model. The financial ratios of 10 foreign banks were used in his study. Alternatif Bank, Arab Turkish Bank, Burgan Bank, Citibank, Deniz Bank, Deutsche Bank, Finans Bank, HSBC Bank, ING Bank and Turkland Bank were investigated in his study. The results showed that Deutsche Bank achieved the best financial performance in his study.

İşseveroğlu and Sezer [7] investigated the financial performance of the pension companies operating in Turkey with TOPSIS model. The financial performance of the 16 companies was evaluated from year 2008 to 2012. The results showed that TOPSIS model could determine the financial performance of companies effectively in different sectors such as technology, food, automotive and transporting. Cam *et al.* [8] evaluated the financial performance of nine textile firms in Istanbul from year 2010 until 2013 with TOPSIS model. The textile firms were ATEKS, ARSAN, BISAS, VAKKO, KRTEK, MNDRS, SKTAS, HATEK and DAGI. The results showed that DAGI, ATEKS and HATEK were ranked at the top in their study.

Based on the past research, TOPSIS model is able to evaluate the financial performance of the companies based on multiple criteria in various countries. However, this model has not been studied actively in Malaysia stock market. Therefore, this paper aims to fill the research gap by evaluating the performance of the companies from the financial sector in Malaysia stock market by using TOPSIS model.

3. Data and Methodology

3.1. Data

In this study, the data consists of 23 companies from the financial sector listed in Malaysia Main Market which is shown in Table 1.

Table 1. Companies from the Financial Sector in Malaysia Main Market.

CompanyName	Abbreviations	Code
AEON Credit Service (M) Berhad	AEONCR	5139
Affin Holdings Berhad	AFFIN	5185
Alliance Financial Group Berhad	AFG	2488
AMMB Holdings Berhad	AMBANK	1015
APEX Equity Holdings Berhad	APEX	5088
BIMB Holdings Berhad [S]	BIMB	5258
Bursa Malaysia Berhad	BURSA	1818
CIMB Group Holdings Berhad	CIMB	1023
ECM Libra Financial Group Berhad	ECM	2143
Hong Leong Bank Berhad	HLBANK	5819
Hong Leong Financial Group Berhad	HLFG	1082
Hwang Capital (Malaysia) Berhad	HWANG	6688
Insas Berhad	INSAS	3379
Kaf-Seagroatt & Campbell Berhad	KAF	5096
LPI Capital Bhd	LPI	8621
Manulife Holdings Berhad	MANULFE	1058
Malayan Banking Berhad	MAYBANK	1155
Malaysia Building Society Berhad	MBSB	1171
OSK Holdings Berhad	OSK	5053
Public Bank Berhad	PBBANK	1295
RCE Capital Berhad	RCECAP	9296
RHB Capital Berhad	RHBCAP	1066
Syarikat Takaful Malaysia Berhad [S]	TAKAFUL	6139

There are total seven financial ratios considered in this study, which are current ratio, return on equity (ROE), profit margin, debt to equity ratio, earnings per share (EPS), dividend yield and price earnings (PE) ratio. The data from year 2012 to 2014 are collected from the companies' financial annual report on Bursa Malaysia. Table 2 presents the description of the financial ratios used in this study.

Table 2. Description of the Criteria Used in the Evaluation on the Company Performance.

Financial Ratio	Description
Current ratio	Measures a company's ability to counter balance current assets with the current liabilities. (Price, Haddock and Brock [9])
Return on equity (ROE)	Measures a company's efficiency at generating profits from every unit of shareholders' equity. (Akguc [10])
Profit margin	An accounting measure designed to gauge how profitable a company's sales are after all expenses. (Akguc [10])
Debt to equity ratio	The relative proportion of shareholders' equity and debt used to finance a company's assets. (Östring [11])
Earnings per share (EPS)	The monetary value of earnings per outstanding share of common stock for a company. (Östring [11])
Dividend yield	The dividend yield is the income component of a stock's return stated on a percentage basis. (Jones [12])
Price earnings ratio (PE)	The other half of the earnings multiplier model, indicating the amount per dollar of earnings investors are willing to pay for a stock. (Jones [12])

Table 3 presents the formula for the financial ratios used in the evaluation on the company performance (Jones [12]).

Table 3. Formula for the Financial Ratio Used in the Evaluation on the Company Performance.

Financial Ratio	Formula
Current ratio	$\frac{\text{Current assets}}{\text{Current liabilities}}$
Return on equity (ROE)	$\frac{\text{Net profit}}{\text{Total shareholders' equity}} \times 100\%$
Profit margin	$\frac{\text{Net profit}}{\text{Net sales}} \times 100\%$
Debt to equity ratio	$\frac{\text{Total liabilities}}{\text{Total shareholders' equity}}$
Earnings per share (EPS)	$\frac{\text{Net profit}}{\text{Number of shares}}$
Dividend yield	$\frac{\text{Dividend per share}}{\text{Market price per share}} \times 100\%$
Price earnings ratio (PE)	$\frac{\text{Market price per share}}{\text{Earnings per share}}$

The best ideal alternatives seek the criteria that need to be maximized are current ratio, ROE, profit margin, EPS and dividend yield whereas the criteria that should be minimized are debt to equity ratio and PE ratio.

3.2. Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS)

TOPSIS model is a multi-criteria decision making model which was introduced by Hwang and Yoon [3]. TOPSIS model determines the optimal solution by considering the distance of each criterion from negative and positive ideal solution. The benefit of TOPSIS model is to solve multi-criteria decision-making problems by determining the best alternative. TOPSIS model aims to rank the alternatives and obtain the best alternative in decision-making problem. The best alternative selection has the farthest distance from the negative ideal solution and also has the closest distance to the positive ideal solution. TOPSIS model consists of seven steps as shown below:

Step 1: Formation of decision matrix $((x_{ij})_{m \times n})$:

Construct an evaluation matrix which consists of m alternatives and n criteria. The score of each alternative with respect to each criterion is given as x_{ij} , and then a matrix $(x_{ij})_{m \times n}$ is formed as below.

$$(x_{ij})_{m \times n} = \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ x_{m1} & x_{m2} & \dots & x_{mn} \end{bmatrix} \quad (1)$$

Step 2: Formation of normalized decision matrix:

Construct normalized decision matrix $R = (r_{ij})_{m \times n}$ by transforms various attribute dimensions into non-dimensional attributes, which allows comparisons across criteria by using the normalization method as shown below.

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^m x_{ij}^2}}, i = 1, 2, \dots, m, j = 1, 2, \dots, n \quad (2)$$

$$R = (r_{ij})_{m \times n} = \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{22} & \dots & r_{2n} \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ r_{m1} & r_{m2} & \dots & r_{mn} \end{bmatrix} \quad (3)$$

Step 3: Formation of nominal normalized decision matrix (T):

Calculate the weighted normalized decision matrix as follow.

$$T = (t_{ij})_{m \times n} = (w_j r_{ij})_{m \times n}, i = 1, 2, \dots, m \quad (4)$$

where $w_j = \frac{W_j}{\sum_{j=1}^n W_j}, j = 1, 2, \dots, n$

$\sum_{j=1}^n w_j = 1$ and W_j is the original weight given to the indicator $w_j, j = 1, 2, \dots, n$.

$$T = \begin{bmatrix} w_1 r_{11} & w_2 r_{12} & \dots & w_n r_{1n} \\ w_1 r_{21} & w_2 r_{22} & \dots & w_n r_{2n} \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ w_1 r_{m1} & w_2 r_{m2} & \dots & w_n r_{mn} \end{bmatrix} \quad (5)$$

Step 4: Determination of the positive/best ideal (A_b) solution and negative/worst ideal (A_w) solution:

$$A_b = \{ \langle \min(t_{ij} | i = 1, 2, \dots, m) | j \in J_- \rangle, \langle \max(t_{ij} | i = 1, 2, \dots, m) | j \in J_+ \rangle \} \equiv \{ t_{bj} | j = 1, 2, \dots, n \}, \quad (6)$$

$$A_w = \{ \langle \max(t_{ij} | i = 1, 2, \dots, m) | j \in J_- \rangle, \langle \min(t_{ij} | i = 1, 2, \dots, m) | j \in J_+ \rangle \} \equiv \{ t_{wj} | j = 1, 2, \dots, n \}, \quad (7)$$

where,

$J_+ = \{j = 1, 2, \dots, n \mid j \text{ associates with the criteria having a positive impact, and}$

$J_- = \{j = 1, 2, \dots, n \mid j \text{ associates with the criteria having a negative impact.}$

Step 5: Calculation of separation measures for each alternative:

Calculate the separation measures for each alternative. The separation from the positive ideal solution is formulated as follow:

$$d_{ib} = \sqrt{\sum_{j=1}^n (t_{ij} - t_{bj})^2}, i = 1, 2, \dots, m \quad (8)$$

The separation from the negative ideal solution is formulated as follow:

$$d_{iw} = \sqrt{\sum_{j=1}^n (t_{ij} - t_{wj})^2}, i = 1, 2, \dots, m \quad (9)$$

Step 6: Calculation of relative distances to the ideal solution:

Calculate the relative closeness to the ideal solution s_{iw} in

which s_{iw} represents the relative closeness coefficient.

$$s_{iw} = \frac{d_{iw}}{d_{ib} + d_{iw}}, 0 \leq s_{iw} \leq 1, i = 1, 2, \dots, m \quad (10)$$

$s_{iw} = 0$ if and only if the alternative solution has the worst condition whereas $s_{iw} = 1$ if and only if the alternative solution has the best condition.

Step 7:

Alternatives are calculated in the context of existing criteria and ranked depending on their proximity to the ideal solution. Rank the alternatives according to s_{iw} ($i = 1, 2, \dots, m$) in descending order and select the alternative with highest value of s_{iw} which is closest to 1. The alternative that is closest to the ideal solution is the best alternative.

4. Empirical Results

The empirical results for the overall performance of the companies are presented based on the optimal ranking over three years period from 2012 until 2014.

Table 4. Multi Criteria Decision Making Matrix.

Company	Current ratio	ROE	Profit margin	Debt to equity ratio	EPS	Dividend yield	PE ratio
AEONCR	5.907	86.430	82.548	13.096	2.946	7.519	41.021
AFFIN	6.395	26.036	1305.459	1.171	0.632	12.768	49.559
AFG	30.881	43.257	28299.298	0.005	0.504	10.382	85.003
AMBANK	18.887	24.987	259.557	0.468	0.661	8.756	104.008
APEX	32.139	28.419	462.777	0.067	0.325	25.529	38.560
BIMB	82.357	16.643	210.028	0.685	0.346	12.315	103.481
BURSA	11.708	67.785	139.339	0.459	0.837	17.140	81.333
CIMB	520.335	28.662	27388.926	1.179	0.650	9.538	98.475
ECM	9.256	11.794	6663.054	0.442	0.133	4.646	126.427
HLBANK	3.336	38.044	76.634	35.791	2.281	5.772	57.537
HCFG	12.889	10.697	20333.031	0.823	0.807	6.472	191.533
HWANG	53.842	134.179	9207.930	1.071	3.466	137.274	93.065
INSAS	20.018	1.675	273.009	0.416	0.018	2.272	695.102
KAF	160.103	33.437	580.571	0.034	0.629	19.169	70.113
LPI	139.681	46.082	313.443	0.083	2.582	12.300	60.055
MANULFE	35.963	39.835	166.369	0.088	1.060	11.180	567.088
MAYBANK	3.427	36.519	79.703	25.903	1.695	15.796	50.612
MBSB	3.356	77.441	87.436	38.995	1.065	18.258	18.604
OSK	4.059	64.837	1917.745	0.173	1.550	10.808	116.818
PBBANK	3.186	57.500	99.122	35.059	3.148	8.755	48.950
RCECAP	968.734	5.755	347.898	0.003	0.026	16.465	150.747
RHBCAP	28.132	9.234	29268.234	1.155	0.293	6.432	739.709
TAKAFUL	9.730	68.851	25.993	31.533	2.372	8.667	132.454

Table 5. Normalized Decision Matrix (2012-2014).

Company	Current ratio	ROE	Profit margin	Debt to equity ratio	EPS	Dividend yield	PE ratio
AEONCR	0.00524	0.34886	0.00152	0.17086	0.38277	0.05030	0.03311
AFFIN	0.00568	0.10509	0.02401	0.01527	0.08210	0.08541	0.04000
AFG	0.02741	0.17460	0.52044	0.00006	0.06544	0.06945	0.06861
AMBANK	0.01676	0.10086	0.00477	0.00611	0.08595	0.05858	0.08395
APEX	0.02852	0.11471	0.00851	0.00087	0.04219	0.17078	0.03112
BIMB	0.07310	0.06718	0.00386	0.00893	0.04500	0.08239	0.08352
BURSA	0.01039	0.27360	0.00256	0.00599	0.10882	0.11466	0.06565
CIMB	0.46182	0.11569	0.50370	0.01538	0.08442	0.06381	0.07948
ECM	0.00821	0.04760	0.12254	0.00576	0.01730	0.03108	0.10204
HLBANK	0.00296	0.15356	0.00141	0.46696	0.29642	0.03861	0.04644
HLFG	0.01144	0.04318	0.37394	0.01073	0.10491	0.04330	0.15459
HWANG	0.04779	0.54159	0.16934	0.01397	0.45038	0.91831	0.07512
INSAS	0.01777	0.00676	0.00502	0.00542	0.00240	0.01520	0.56104
KAF	0.14210	0.13496	0.01068	0.00044	0.08176	0.12824	0.05659
LPI	0.12397	0.18600	0.00576	0.00108	0.33553	0.08228	0.04847
MANULFE	0.03192	0.16079	0.00306	0.00114	0.13771	0.07479	0.45772
MAYBANK	0.00304	0.14740	0.00147	0.33796	0.22023	0.10567	0.04085
MBSB	0.00298	0.31258	0.00161	0.50876	0.13836	0.12214	0.01502
OSK	0.00360	0.26170	0.03527	0.00225	0.20144	0.07230	0.09429
PBBANK	0.00283	0.23209	0.00182	0.45741	0.40908	0.05857	0.03951
RCECAP	0.85979	0.02323	0.00640	0.00004	0.00337	0.11014	0.12167
RHBCAP	0.02497	0.03727	0.53826	0.01506	0.03811	0.04303	0.59705
TAKAFUL	0.00864	0.27791	0.00048	0.41140	0.30826	0.05798	0.10691

Table 6. Weighted Normalized Decision Matrix (2012-2014).

Company	Current ratio	ROE	Profit margin	Debt to equity ratio	EPS	Dividend yield	PE ratio
AEONCR	0.00075	0.04984	0.00022	0.02441	0.05468	0.00719	0.00473
AFFIN	0.00081	0.01501	0.00343	0.00218	0.01173	0.01220	0.00571
AFG	0.00392	0.02494	0.07435	0.00001	0.00935	0.00992	0.00980
AMBANK	0.00239	0.01441	0.00068	0.00087	0.01228	0.00837	0.01199
APEX	0.00407	0.01639	0.00122	0.00012	0.00603	0.02440	0.00445
BIMB	0.01044	0.00960	0.00055	0.00128	0.00643	0.01177	0.01193
BURSA	0.00148	0.03909	0.00037	0.00086	0.01555	0.01638	0.00938
CIMB	0.06597	0.01653	0.07196	0.00220	0.01206	0.00912	0.01135
ECM	0.00117	0.00680	0.01751	0.00082	0.00247	0.00444	0.01458
HLBANK	0.00042	0.02194	0.00020	0.06671	0.04235	0.00552	0.00663
HLFG	0.00163	0.00617	0.05342	0.00153	0.01499	0.00619	0.02208
HWANG	0.00683	0.07737	0.02419	0.00200	0.06434	0.13119	0.01073
INSAS	0.00254	0.00097	0.00072	0.00077	0.00034	0.00217	0.08015
KAF	0.02030	0.01928	0.00153	0.00006	0.01168	0.01832	0.00808
LPI	0.01771	0.02657	0.00082	0.00015	0.04793	0.01175	0.00692
MANULFE	0.00456	0.02297	0.00044	0.00016	0.01967	0.01068	0.06539
MAYBANK	0.00043	0.02106	0.00021	0.04828	0.03146	0.01510	0.00584
MBSB	0.00043	0.04465	0.00023	0.07268	0.01977	0.01745	0.00215
OSK	0.00051	0.03739	0.00504	0.00032	0.02878	0.01033	0.01347
PBBANK	0.00040	0.03316	0.00026	0.06534	0.05844	0.00837	0.00564
RCECAP	0.12283	0.00332	0.00091	0.00001	0.00048	0.01573	0.01738
RHBCAP	0.00357	0.00532	0.07689	0.00215	0.00544	0.00615	0.08529
TAKAFUL	0.00123	0.03970	0.00007	0.05877	0.04404	0.00828	0.01527

Positive ideal (A_b) and negative ideal (A_w) solutions sets are formed and presented in Table 7.

Table 7. Positive Ideal (A_b) and Negative Ideal (A_w) Solutions.

	Current ratio	ROE	Profit margin	Debt to equity ratio	EPS	Dividend yield	PE ratio
A_b	0.12282747	0.07736989	0.07689481	0.00000500	0.06434067	0.13118700	0.00214510
A_w	0.00040391	0.00096589	0.00006829	0.07267932	0.00034327	0.00217157	0.08529218

The distance of all alternatives from positive ideal solution (d_{ib}) and the distance of all alternatives from negative ideal solution (d_{iw}) are calculated by using the equation (8) and (9) respectively.

The distance of all alternatives from positive ideal solution (d_{ib}) for AEONCR, AFFIN, AFG, AMBANK, APEX, BIMB, BURSA, CIMB, ECM, HLBANK, HLFG, HWANG, INSAS, KAF, LPI, MANULFE, MAYBANK, MBSB, OSK,

PBBANK, RCECAP, RHBCAP and TAKAFUL are 0.193940, 0.202772, 0.186234, 0.205352, 0.195853, 0.201900, 0.194065, 0.157108, 0.208217, 0.211386, 0.196900, 0.127716, 0.230078, 0.187388, 0.184318, 0.208106, 0.202322, 0.205268, 0.194222, 0.205466, 0.169989, 0.213156 and 0.203101 respectively.

The distance of all alternatives from negative ideal solution (d_{iw}) for AEONCR, AFFIN, AFG, AMBANK, APEX, BIMB, BURSA, CIMB, ECM, HLBANK, HLF, HWANG, INSAS, KAF, LPI, MANULFE, MAYBANK, MBSB, OSK, PBBANK, RCECAP, RHBCAP and TAKAFUL are 0.119108, 0.108358, 0.131248, 0.104379, 0.112157, 0.103850, 0.113177, 0.142582, 0.102529, 0.091858, 0.110284, 0.194312, 0.072123, 0.111161, 0.121299, 0.081255, 0.091911, 0.097122, 0.112340, 0.104151, 0.158339, 0.104629 and 0.092432 respectively.

By using equation (10), the relative closeness to the ideal solution, s_{iw} for each alternative is determined. After their proximity to the ideal solution is determined, all the alternatives are arranged in descending order depending on s_{iw} so that the rank of preference can be determined. The relative closeness distance of each decision alternative to the ideal solution, s_{iw} for overall performance is shown in Table 8. If the relative closeness to the ideal solution, s_{iw} is higher, the particular alternative is closest to the positive ideal solution and farthest from the negative ideal solution.

Table 8. Overall Performance of the Companies Over the Three Years Period.

Companies	Relative Closeness to the Ideal Solution, s_{iw}	Rank, T
HWANG	0.6033996	1
RCECAP	0.4822587	2
CIMB	0.4757646	3
AFG	0.4134022	4
LPI	0.3968994	5
AEONCR	0.3804778	6
KAF	0.3723376	7
BURSA	0.3683639	8
OSK	0.3664508	9
APEX	0.3641349	10
HLFG	0.3590147	11
AFFIN	0.3482733	12
BIMB	0.3396563	13
AMBANK	0.3369986	14
PBBANK	0.3363864	15
ECM	0.3299441	16
RHBCAP	0.3292446	17
MBSB	0.3211815	18
TAKAFUL	0.3127645	19
MAYBANK	0.3123754	20
HLBANK	0.3029178	21
MANULFE	0.2808092	22
INSAS	0.2386582	23

The overall performance of the companies over the three years period is determined by combining all the score of each financial ratio from year 2012 until 2014. After that, an optimal overall ranking of companies is generated by using TOPSIS model. As shown in Table 8, HWANG achieved the first ranking among the financial companies with 0.6033996 relative closeness to the ideal solution, which is the highest among the companies. This is because HWANG Company generates a large amount of profit in the year 2014 [13]. Therefore, HWANG Company achieved the first ranking as compared to other companies. The relative closeness to the ideal solution, for RCECAP, CIMB, AFG and LPI are 0.4822587, 0.4757646, 0.4134022 and 0.3968994 respectively. Therefore, RCECAP, CIMB, AFG and LPI obtained the second, third, fourth and fifth ranking respectively. On the other hand, the relative closeness to the ideal solution, for MANULFE and INSAS are 0.2808092 and 0.2386582 respectively. Thus, INSAS achieved the lowest ranking in this study. In summary, TOPSIS model is able to rank the financial performances of companies effectively in this study based on multiple criteria.

5. Conclusion

TOPSIS model is a mathematical model which involves multi-criteria assessment in providing useful information to decision makers to evaluate the financial performance of the companies. In this study, financial performance of 23 companies from the financial sector which are listed in Malaysia stock market are analyzed by using their financial statements for a time-period between 2012 and 2014. Based on the results in this study, HWANG is the most successful company as compared to the other financial companies. In summary, the top five companies in the highest ranking are HWANG followed by RCECAP, CIMB, AFG and LPI. This study is significant to the investors because it is able to evaluate and rank the overall performance of the companies from the financial sector in Malaysia by considering all the financial ratios with TOPSIS model.

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