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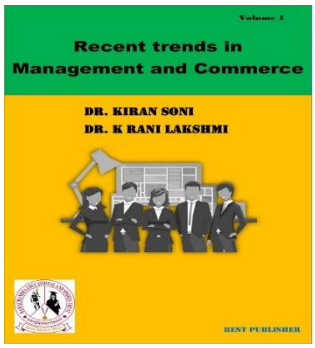

A TOPSIS Method for Financial Report Analysis to Choose the Best Company

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Abstract: *An evaluation of their management of diversity programs led to the identification of a set of practices shared by all five of the companies mentioned for diversity. Using a benchmarking analysis, this study looked at diversity management efforts from a sample of catering and customer service businesses, known as Variety Inc. Based on analysis of financial statements, this paper provides a multi-criteria decision-making method for support decisions. The proposed method assesses five companies. TOPSIS (a technique for choosing an order similar to the ideal resolution) is used to determine the best option based on various factors. The relative importance of the selection factors are evaluated using TOPSIS. A numerical example is also used to illustrate the recommended course of action. Through analysis of specific practices used by firms, the following seven complementary and closely linked diversity management practices were discovered: current ratios, equity/debt ratio, operating profit ratio, income before tax ratio, net income return, return on total assets, and debt ratio. These policies have led to very diverse workforces and reasonably diverse management at the sample companies. This paper presents an optimal approach for standardisation within organizations that is based on a methodical method for creating corporate standards. A best practice is created for a process based on research conducted within multinational corporations and, if applicable, a study of the relevant literature. The results are compared to observations made in three areas that are comparable: knowledge management, quality management, and IT management. Even though there are more internal standards than external standards, a benchmarking study has largely ignored them. The study's authors hope that environmental practitioners will gain from it and that it will encourage other academics to focus more on this area.*

Keywords: *corporate social responsibility, financial, TOPSIS*

1. INTRODUCTION

Making decisions is a challenge that everyone in life encounters. The process of choosing the best-preferred option from all alternatives taken into account in accordance with evaluation criteria is known as MCTM (multi-criteria decision-making). It has proven to be crucial in a number of fields, including management science and engineering, education, public administration, and military affairs. It is customary to treat the ratings of options and the relative importance of criteria as softer values when making judgments. In MCDM issues, user data is frequently ambiguous and imprecise in the actual world. As everyone is aware, linguistic expressions are frequently used to assess options and standards. The fuzzy set theory is a popular tool for handling ambiguity. Fuzzy MCTM problems have received a lot of study attention. Investment issues unquestionably qualify as MCDM issues. A person may invest their money in a bank, purchase stock, gold, real estate, currency, or property. The selection of an appropriate stock for the business is the main topic of this essay. Financial reporting is also used to evaluate the performance of the business. According to the suggested model, there are three steps that must be taken before investors and practitioners can decide on the goals of the alternatives and standards. Following that, it will be assessed by professionals with more expertise in the financial sector. Let's create a hierarchical model with parameters and options. In order to accomplish the desired/desirable levels based on the proposed organization, TOPSIS is used to determine the best alternative. Financial statement analysis is one of the frequently employed techniques in observational studies. Ratio analysis and performance evaluation were used by Dogem (2009) to evaluate the performance of banks. He emphasized the need for a multidimensional evaluation of the company's success because traditional ratio analyses alone are insufficient to gauge its performance. Data Envelopment Analysis is a crucial technique for assessing bank success. (DEA). This technique is employed to evaluate how well the bank's locations are performing. Demir and Astarcioglu (2007) used DEA

to evaluate the performance of Turkish commercial banks. They took into account each bank's overall advertising, interest income, interest expense, and non-interest expense. A few models were proposed by Ravi et al. al. (2008) to evaluate the financial success of banks. Mergan et al. al.'s 2003 study used specific financial ratios for the years 1989 to 1999 to examine how ownership and development of banks affected performance. In order to predict financial variables and the financial performance of banks, Thai and Kumar (2008) created some models and combined them with statistical methods and neural networks. Informed investment and bank results were compared by Beckley in 2007. A business can evaluate a variety of financial ratios. The challenge is assessing the options. I therefore created a questionnaire to evaluate key financial statistics. This questionnaire's goal is to decrease the amount of financial ratios and provide calculation support. The top seven financial measures have been chosen. A few studies have looked into how being designated a "best company to work for" affects a company's performance, and the findings have generally shown a positive correlation. Better employee attitudes and relationships are associated with better companies (Fulmer et al., 2003), which has benefits for luring, motivating, and keeping employees. (Ostroff and Bowen, 2000). As a result, one can anticipate that these businesses will offer their clients high-quality goods and top-notch services. To account for this possibility, we examine how appearing on the Forbes list of the "100 Best Businesses to Work For" impacts a company's total customer happiness as measured by the United States Customer Satisfaction Index. Our findings demonstrate that firms gain from having stronger institutional standing, though the effect varies by industry type and is greater in the service sector than the manufacturing sector. We also track the amount of three-year returns on assets to assess the beneficial impact of superior firm status. The literature on the impact of being a "best company" on performance is still sparse, but it is growing. This is a crucial problem for strategic management because organizations spend a lot of money trying to win awards as the best businesses, and because the media pays a lot of attention to it. It's critical to evaluate whether becoming a better company actually affects how well a firm performs. We place more emphasis on customer satisfaction than on monetary indicators of firm success. Customer satisfaction and workplace culture are more closely related than the company's financial success. By examining the impact of being an outstanding company on a firm's customer satisfaction, we untangle the causal link, revealing the process through which being a great firm result in better financial success. Understanding the factors that affect customer happiness is also important because happy customers can be the most important resource for an economy; they can even serve as a stand-in for all other resources. We investigate the circumstances in which there is a stronger or weaker correlation between customer happiness and organizational excellence. We focus on how the advantages of best firm status vary by sector type. By defining a boundary condition for the association between organizational excellence and firm performance, the research contributes to its definition. The processes by which being the best firm affects firm performance are further improved by analyzing the impact of industry on the effect of interest. Over a nine-year span, the impact of top firm status is examined. This increases the accuracy of our findings. This is due to the possibility that choosing a specific year as a "good year" could lead to finding in a positive impact (common in the research on the performance benefits of an perfect firm condition). This is because if the real performance effect of the perfect firm situation is not constant over time. To make finding a positive impact more significant, we evaluate the mean impact of the best firm's location over a nine-year period.

2. MATERIALS AND METHODS

What do you mean by a successful business? Three items: First, a successful business is lucrative. You are not in business if you are not turning a profit. I had to fire some workers last summer. When I did that, I didn't feel like a successful business. We handled the company poorly. It's your responsibility if your workers lose their jobs. The remainder will take care of itself if you can't offer jobs or your goods and services. A successful company also tries to meet the needs of all of its different stakeholders, such as its employees, clients, shareholders, and the communities within which it operates. Striving is key because it's not something you can truly accomplish. It's interesting, but not enough. You are in a unique position with a special set of tools and opportunities. You must exert more effort than just "enough."A good organization also possesses integrity in the way that we previously defined it. Profitability, achieving stakeholder aspirations, and having integrity are the three qualities we have highlighted as defining a good business. By adopting corporate social responsibility, a company acts not only in the interests of the stakeholders but also for the benefit of the stakeholders. The legitimacy theory, on which corporate social responsibility is based, makes sure that the company continues to operate in accordance with the rules and regulations of the community or ecosystem in which it is located and in which it wants to have its business operations recognized as "legitimate." By enhancing a company's image and competitiveness, CSR implementation can boost performance. The relationship between CSR and a company's financial performance has been the subject of extensive research. However, the results of earlier research are still contradictory. A study by Saleh et al. found empirical evidence that CSR has no effect on business performance among manufacturing and construction companies listed on the stock exchange in Nairobi between 2007 and 2011. The results of the earlier study were inconsistent, so the researcher chose to use a different variable that might link the connection

between a GCG and CSR with the financial performance of the business. By including managing earnings as a mediating factor, the authors hope to reassess the connection between GCG, CSR, and financial success. Because there is an information gap between management (the agent) and the owner (the principal), management of earnings can occur when the manager sends the owner a mixed message about the status of the business. A control mechanism that brings together the different goals of the two parties is required in these circumstances. The GCG mechanism is one of the possible systems. Order choice by the resemblance to the perfect solution is a technique developed by Hwang & Yoon [3] for evaluating how well alternatives perform in comparison to the ideal solution. This method states that the best choice is the one that is most distant from the negative-fall solution and most near to the positive-ideal answer. A solution that maximizes benefit criteria and reduces expense criteria is said to be positive-objective. In a negative-objective solution, expense criteria are increased and benefit criteria are decreased. In other words, all the best values that can be obtained for the criteria are contained in the positive-fall solution, and all the worst values are contained in the negative-fall solution. For a thorough examination of TOPSIS, the reader who is intrigued is directed to [4]. A direct treatment of data represented as probability distributions through the Hellinger distance is now possible with TOPSIS [5]. In the context of MCTM problems, This opens up a new possibility for ranking options expressed as a set of probability distributions using TOPSIS with Hellinger similarity [6]. Due to the stochastic character of evolutionary algorithms, their performance is frequently expressed in terms of the standard deviation and mean. The precise spread of an algorithm's solutions need not be known. If the algorithm goes R times R large enough, the variation in the shape of the distribution of the average of the results can be approximated by a Gaussian spectrum, and in this case, Hellinger-TOPSIS may be employed to directly provide the order of rank of the algorithms. When comparing means, options are made up of various means, and criteria have definitions. MCTM is a well-known method for reaching decisions. It is a subset of a broader class of research models that deals with problem-solving in situations where there are multiple factors to take into account. The MCDM approach to criterion selection and assessment is presented in this part. A quick overview of the MCDM model using a standard decision-making procedure is provided.

3. ANALYSIS AND DISSECTION

In this study, we first create a list of performance evaluation indicators based on the standards and ratios of financial reporting, and then we poll Taiwanese experts in pertinent financial fields. The TOPSIS questionnaire design method was used to create a questionnaire that included financial reporting standards, ratios, and a list of chosen businesses. These findings can give investors some direction and suggestions for future investment plans. The application chooses a functional system based on four major criteria and seven supporting criteria. Three experts were asked to evaluate five options in conjunction with the assessment of the company's financial statements. The TOPSIS method is used to determine the various priority weights for each criterion attribute and alternative after the hierarchy has been constructed. A survey questionnaire can be used to compare the significance or choice of a criterion, attribute, or alternative. Below is a formula for determining the priority weights of various decision options.

Table 1. Data set for best company financial report

	Current ratios	Equity/ Debt ratio	Operation profit ratio	Income before tax ratio	Net income revenue	Return on total assets	Debt ratio
company 1	63.14	75.49	42.16	73.19	59.73	38.13	22.05
company 2	96.34	46.38	32.15	69.42	73.45	49.34	27.30
company 3	75.13	86.37	55.76	74.18	63.12	69.73	23.10
company 4	76.35	73.19	29.18	84.75	68.46	57.46	17.59
company 5	84.15	68.12	38.15	65.63	70.48	42.13	18.89

Table 1 show the Data set of the company 1, company 2, company 3, company 4 and company 5 of the Current ratios, Equity/ Debt ratio, Operation profit ratio, Income before tax ratio, Net income revenue, Return on total assets, Debt ratio.

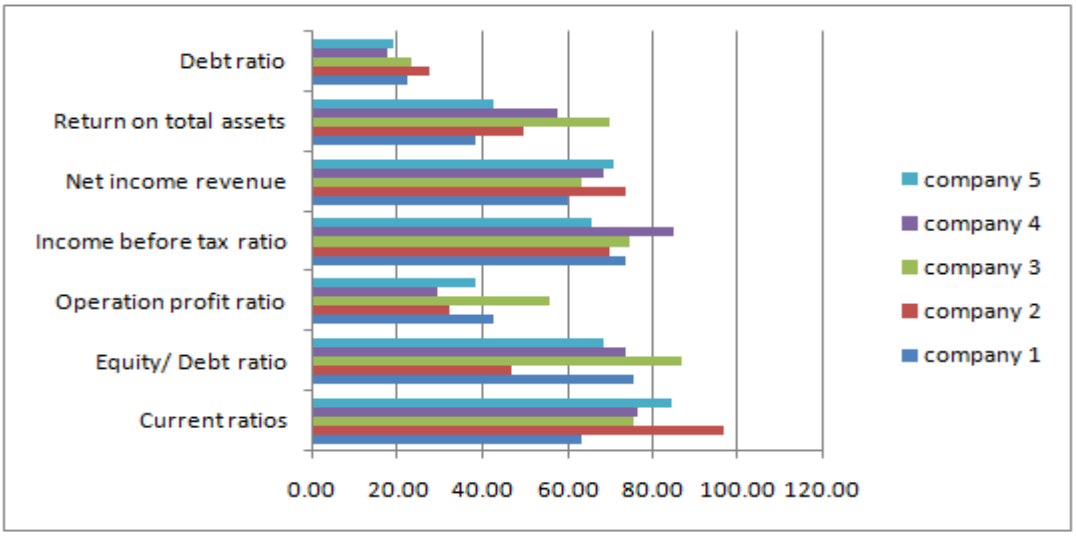

FIGURE 1. Data Set for best company in TOPSIS method

Figure 1 shows the graphical view of Data set of the company 1, company 2, company 3, company 4 and company 5 of the Current ratios, Equity/ Debt ratio, Operation profit ratio, Income before tax ratio, Net income revenue, Return on total assets, Debt ratio.

TABLE 2. Normalized Data

	Current ratios	Equity/ Debt ratio	Operation profit ratio	Income before tax ratio	Income before tax ratio	Return on total assets	Debt ratio
company 1	0.3539	0.4232	0.2363	0.4103	0.3348	0.2137	0.4472
company 2	0.5401	0.2600	0.1802	0.3891	0.4117	0.2766	0.5537
company 3	0.4212	0.4842	0.3126	0.4158	0.3538	0.3909	0.4685
company 4	0.4280	0.4103	0.1636	0.4751	0.3838	0.3221	0.3567
company 5	0.4717	0.3819	0.2139	0.3679	0.3951	0.2362	0.3831

Table 2 shows the Normalized data that The Normalized data is calculated from the data set value is divided by the sum of the square root of the column value. It is the Normalization of Data set of the company 1, company 2, company 3, company 4 and company 5 of the Current ratios, Equity/ Debt ratio, Operation profit ratio, Income before tax ratio, Net income revenue, Return on total assets, Debt ratio..

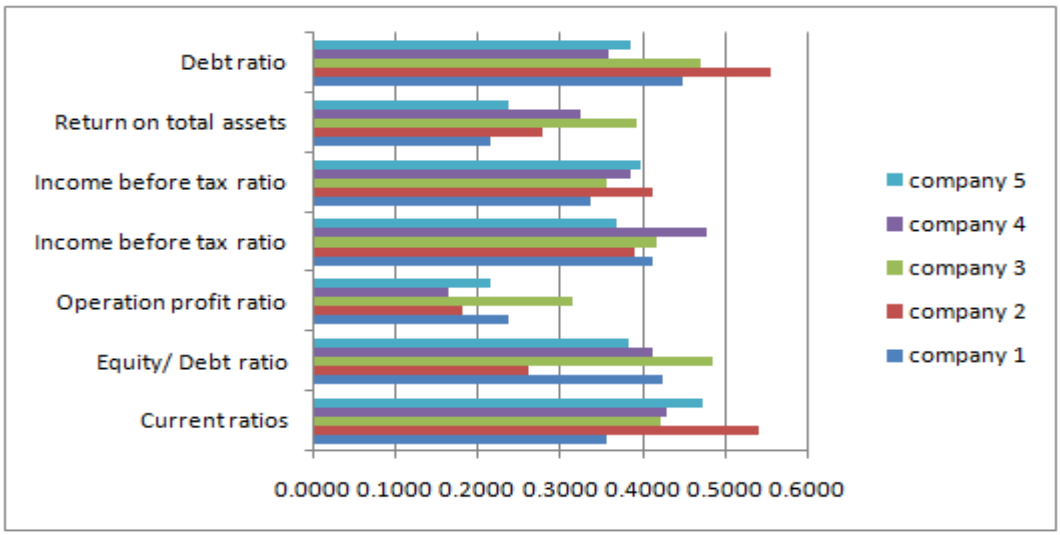

FIGURE 2. Normalized Data

Figure 2 shows the Normalized data that The Normalized data is calculated from the data set value is divided by the sum of the square root of the column value. It is the Normalization of Data set of the company 1, company 2, company 3, company 4 and company 5 of the Current ratios, Equity/ Debt ratio, Operation profit ratio, Income before tax ratio, Net income revenue, Return on total assets, Debt ratio.

TABLE 3. Weight ages

company 1	0.25	0.25	0.25	0.25	0.25	0.25	0.25
company 2	0.25	0.25	0.25	0.25	0.25	0.25	0.25
company 3	0.25	0.25	0.25	0.25	0.25	0.25	0.25
company 4	0.25	0.25	0.25	0.25	0.25	0.25	0.25
company 5	0.25	0.25	0.25	0.25	0.25	0.25	0.25

Table 3 shows the weight of the data set the weight is equal for all the value in the set of data in the table 1. The weight is multiplied with the previous table to get the next value.

TABLE 4. Weighted normalized decision matrix

company 1	0.0885	0.1058	0.0591	0.1026	0.0837	0.0534	0.1118
company 2	0.1350	0.0650	0.0451	0.0973	0.1029	0.0691	0.1384
company 3	0.1053	0.1210	0.0781	0.1040	0.0885	0.0977	0.1171
company 4	0.1070	0.1026	0.0409	0.1188	0.0959	0.0805	0.0892
company 5	0.1179	0.0955	0.0535	0.0920	0.0988	0.0590	0.0958

Table 4 shows the weighted normalization decision matrix it is calculated by multiplying the weight and performance value in table 2 and table 3.

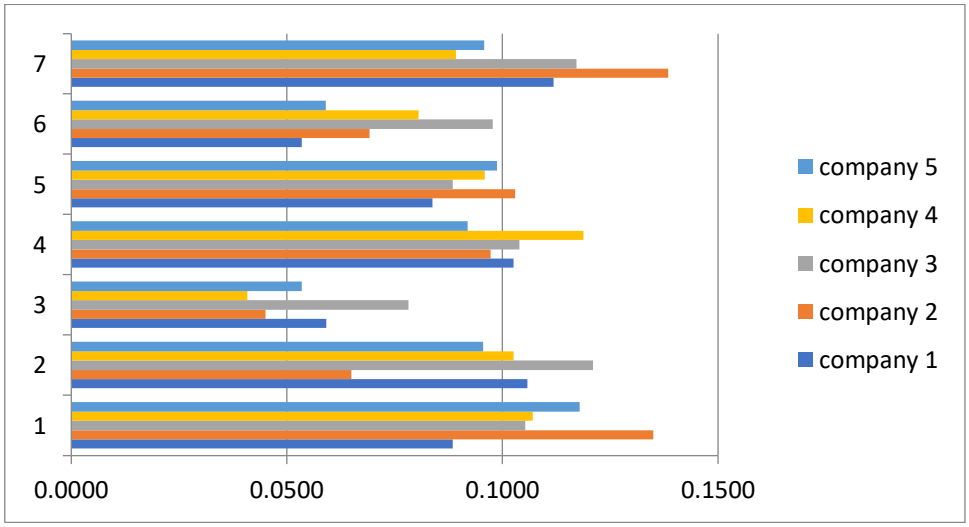

FIGURE 3 . Weighted normalized decision matrix

Figure 3 shows the company 1, company 2, company 3, company 4 and company 5 of the Current ratios, Equity/ Debt ratio, Operation profit ratio, Income before tax ratio, Net income revenue, Return on total assets, Debt ratio.

TABLE 5. Positive Matrix

company 1	0.1350	0.1210	0.0781	0.1188	0.1029	0.0977	0.0892
company 2	0.1350	0.1210	0.0781	0.1188	0.1029	0.0977	0.0892
company 3	0.1350	0.1210	0.0781	0.1188	0.1029	0.0977	0.0892
company 4	0.1350	0.1210	0.0781	0.1188	0.1029	0.0977	0.0892
company 5	0.1350	0.1210	0.0781	0.1188	0.1029	0.0977	0.0892

Table 5 shows the positive matrix of the data set that is calculated from the weighted normalized decision matrix by calculating the maximum and minimum of the benefit factor and the cost factor.

TABLE 6. Negative matrix

company 1	0.0885	0.0650	0.0409	0.0920	0.0837	0.0534	0.1384
company 2	0.0885	0.0650	0.0409	0.0920	0.0837	0.0534	0.1384
company 3	0.0885	0.0650	0.0409	0.0920	0.0837	0.0534	0.1384
company 4	0.0885	0.0650	0.0409	0.0920	0.0837	0.0534	0.1384
company 5	0.0885	0.0650	0.0409	0.0920	0.0837	0.0534	0.1384

Table 6 shows the positive matrix of the data set that is calculated from the weighted normalized decision matrix by calculating the minimum and maximum of the benefit factor and the cost factor.

TABLE 7. Si plus &Si Negative &Ci

	SI Plus	Si Negative	Ci
company 1	0.076584	0.053065	0.409298
company 2	0.089092	0.053168	0.373738
company 3	0.045749	0.085973	0.652687
company 4	0.053461	0.076023	0.587123
company 5	0.061886	0.06348	0.506358

Table 7 show the sum of the calculation positive and negative matrix , the Si plus is calculated from the positive matrix, Si negative is calculated from the negative matrix and the Ci is calculated grom the sum of the Si plus and Si negative. as seeing figure 4 and figure 5.

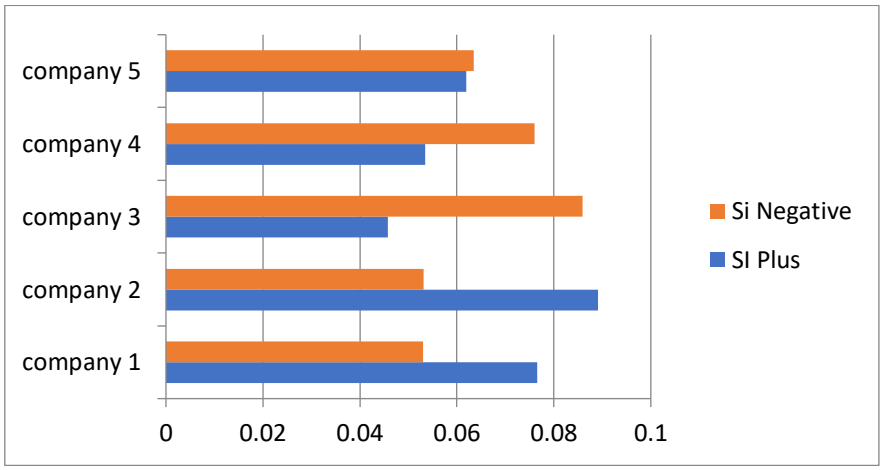

FIGURE 4. Si plus and Si negative

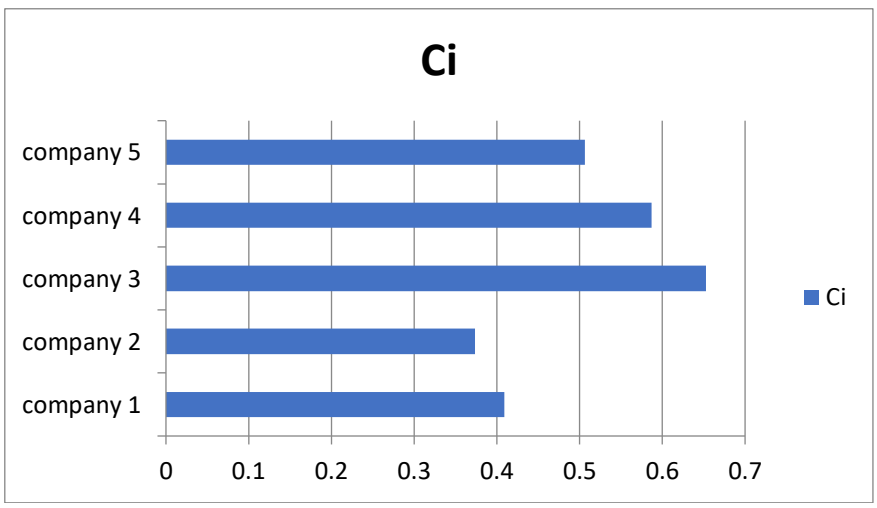

FIGURE 5. Ci value

TABLE 8. Rank for best company in TOPSIS method

	Rank
company 1	4
company 2	5
company 3	1
company 4	2
company 5	3

Table 8 shows the company 1is on 4th rank, company 2 is on 5th rank, company 3 is on 1st rank, company 4 is on 2nd rank, company 5 is on 3rd rank.

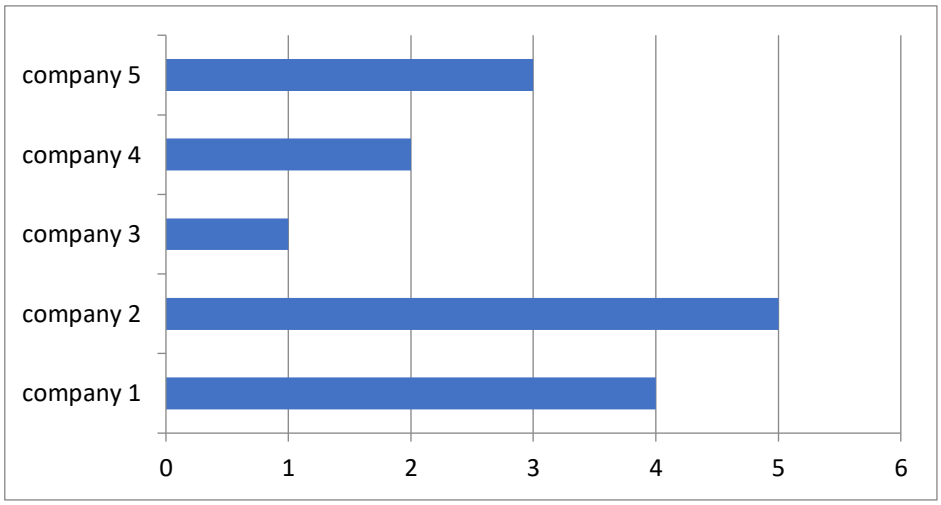

FIGURE 6. Rank for best company in TOPSIS method

Figure 6 shows the rank of the data set above figure shows the company 1is on 4th rank, company 2 is on 5th rank, company 3 is on 1st rank, company 4 is on 2nd rank, and company 5 is on 3rd rank.

4. CONCLUSION

The findings of this study can help us decide which business among the group is best. By examining data from financial statements and applying the MCDM technique, it enables people to invest in the best option. The study's novel conclusion is that the user only requires rudimentary financial knowledge to build the hierarchy of criteria and get the desired result. Other sectors can use the study's methodology, though the criteria looked at may change. For instance, banks give a lot of weight to loan rates. They are, however, less significant than industrial firms. We will attempt to create or use the MCDM method to solve decision problems in the future. An essential point is that if we mistakenly label some firms as better firms when that is not the case, the coefficient on the better firm variable will be biased toward zero, which is a conservative error and lowers the possibility of finding a statistically significant effect. The fact that only a thousand businesses are nominated or recruited to the list each year, which is thought to include numerous businesses in the sample that are not on the list for a specific year, provides an additional possibility of bias in the top company position. Because of this, some example companies that did not submit an application for listing might provide comparable or even better benefits than some companies on the list.

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