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Subject Category: Business, Management and Accounting (miscellaneous) ⌷ , Economics, Econometrics and Finance (miscellaneous) ⌷ .

Publisher: Euro Journals, Inc. **Publication type:** Journals. **ISSN:** 14502275

Coverage: 2006-2011

H index: 2

Scope:

European Journal of Economics, Finance and Administrative Sciences is a quarterly, peer-reviewed international research journal that addresses both applied and [...]
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Charts   Data

SJR indicator vs. Cites per Doc (2y)

■ Cites per Doc (2 years)   ■ SJR
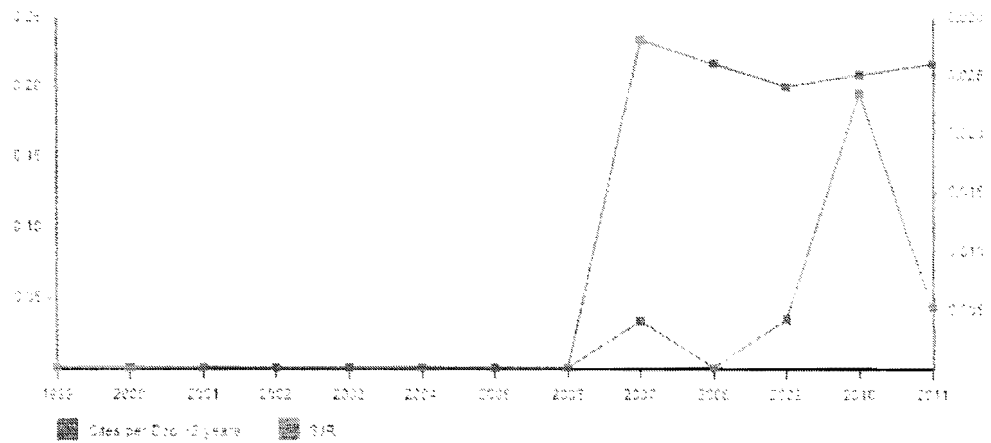
The SJR indicator measures the scientific influence of the average article in a journal, it expresses how central to the global scientific discussion an average article of the journal is. Cites per Doc. (2y) measures the scientific impact of an average article published in the journal, it is computed using the same formula that journal impact factor ™ (Thomson Reuters).

Citation vs. Self-Citation
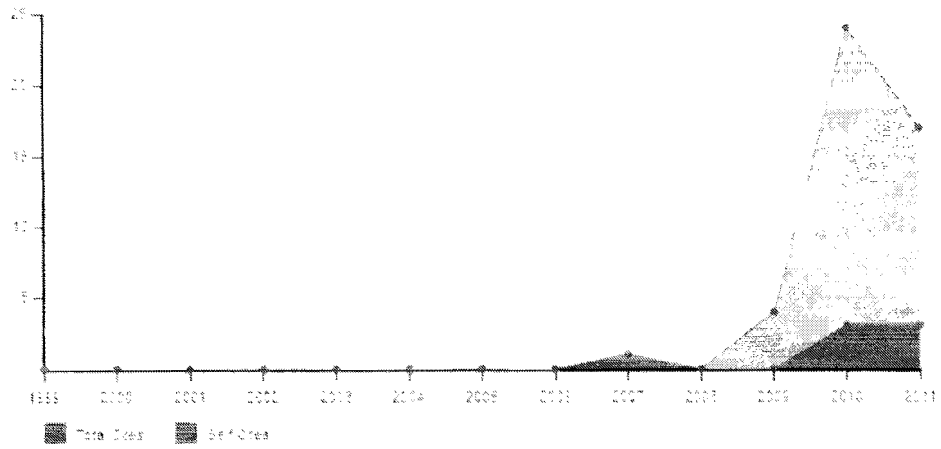
Evolution of the total number of citations and journal's self-citations received by a journal's published documents during the three previous years.

Cites per Document vs. External Cites per Document
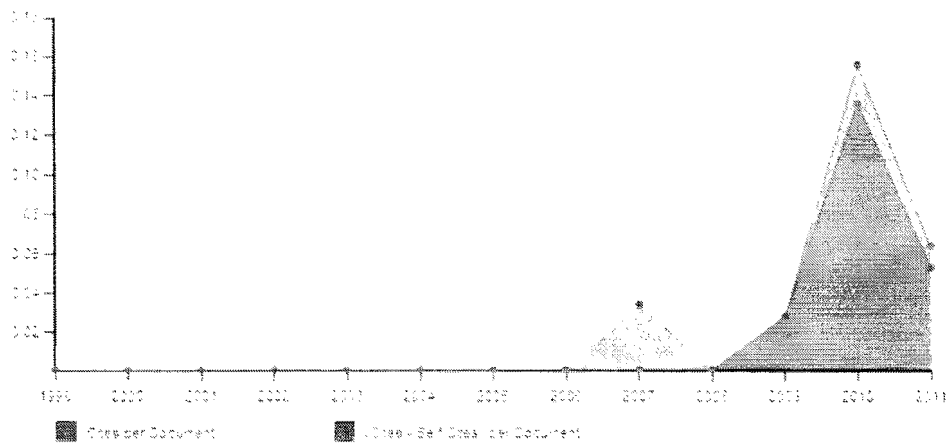
Evolution of the number of total cites per document and external cites per document (i.e. journal self-citations removed) received by a journal's published documents during the three previous years.

Cites per Document in 2, 3 and 4 years windows
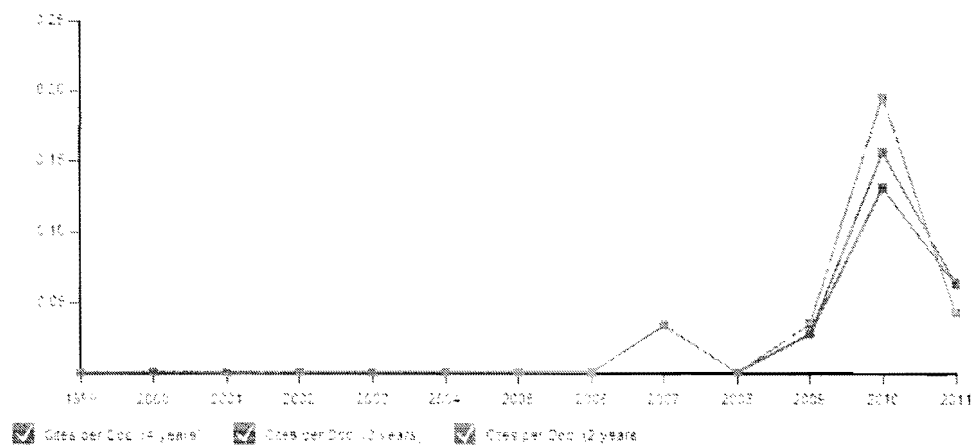

Evolution of Citations per Document to a journal's published documents during the two, three and four previous years. The two years line is equivalent to journal impact factor ™ (Thomson Reuters) metric.

International Collaboration
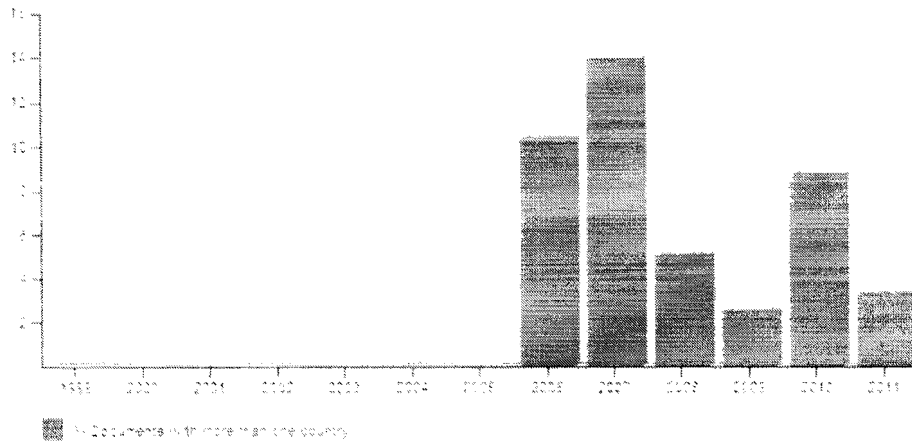
International Collaboration accounts for the articles that have been produced by researchers from several countries. The chart shows the ratio of a journal's documents signed by researchers from more than one country.

Journal's Citable vs. Non Citable Documents

Non-citable documents   Citable documents
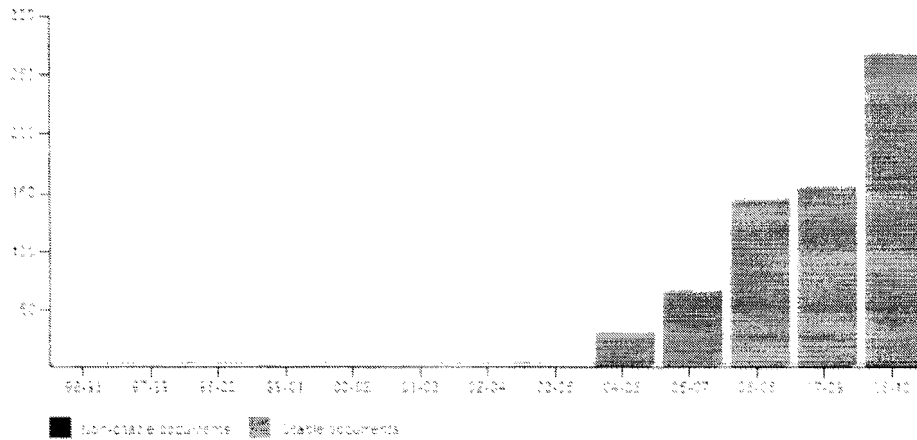
Not every article in a journal is considered primary research and therefore "citable", this chart shows the ratio of a journal's articles including substantial research (research articles, conference papers and reviews) in three year windows.

Journal's Cited vs. Uncited Documents

Uncited documents   Cited documents
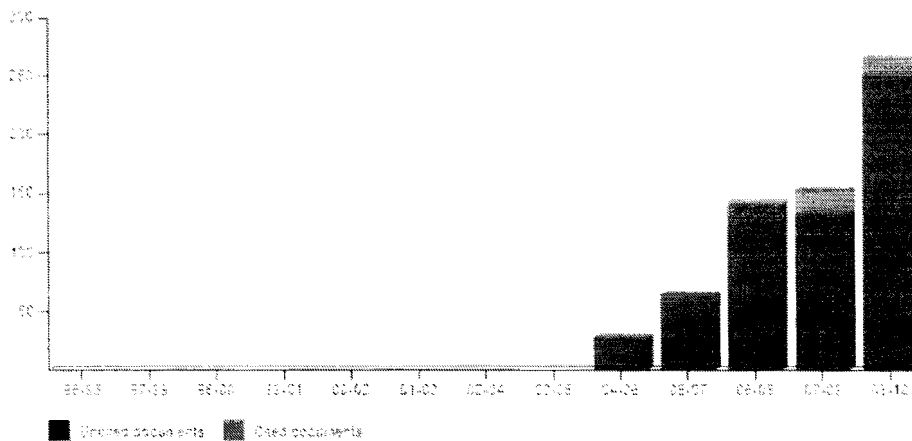
Ratio of a journal's items, grouped in three years windows, that have been cited at least once vs. those not cited during the following year.

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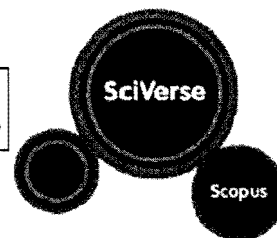
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5700166475	European Journal of East Asian Studies	15680584		2007-ongoing, 2001	Active	0.113	0.025	0.400	0.025	0.280	0.029
23187	European Journal of Echocardiography	15252167	15322114	2000-ongoing	Active	0.824	0.187	0.998	0.199	1.093	0.209
4900153302	European Journal of Economics, Finance and Administrative Sciences	14502275		2006-ongoing	Active	0.093	0.024	0.208	0.025	0.191	0.026
100147342	European Journal of Education	01418211		2005-ongoing	Active	0.936	0.029	0.828	0.028	0.937	0.031
29694	European Journal of Emergency Medicine	09699546		1994-ongoing	Active	0.517	0.070	0.369	0.104	0.409	0.087
26082	European Journal of Endocrinology	08044643		1994-ongoing	Active	1.588	0.408	1.632	0.357	1.662	0.309
26083	European Journal of Endocrinology, Supplement	08044635		2002-ongoing, 2000, 1995	Active	0.866	0.238	1.645	0.358		0.316
11300153314	European Journal of Engineering Education	03043797	14695898	2008-ongoing	Active	0.856	0.030	1.045	0.032	1.092	0.031
20316	European Journal of Entomology	12105759		1993-ongoing	Active	0.565	0.047	0.666	0.055	0.747	0.047
28438	European Journal of Environmental and Engineering Geophysics	13598155		1996-2002	Inactive						
13213	European Journal of Epidemiology	03932990	15737284	1985-ongoing	Active	1.338	0.483	1.968	0.513	2.103	0.301
14971	European Journal of Finance	1351847X	14664364	2003-ongoing	Active	0.584	0.029	0.753	0.031	0.656	0.033
30206	European Journal of Forest Pathology	03001237		1994-1999, 1983-1989, 1973-1981	Inactive						
50088	European Journal of Forest Research	16124669	16124677	2004-ongoing, 2002	Active	1.015	0.054	1.243	0.059	1.028	0.054
28310	European Journal of Gastroenterology and Hepatology	0954691X		1989-ongoing	Active	0.832	0.196	0.788	0.188	0.791	0.164
65911	European Journal of Gastroenterology and Hepatology, Supplement	09699163		1994-2001	Inactive						
800147114	European Journal of General Medicine	13043889	13043897	2005-ongoing	Active	0.097	0.031	0.156	0.027	0.177	0.027
13214	European Journal of General Practice	13814788		2000-ongoing	Active	0.424	0.059	0.444	0.057	0.597	0.061
52740	European journal of genetics in society : an ethical approach to genetics	10239022		1995-1997	Inactive						
29001	European Journal of Geriatrics	14391147		1999-2003	Inactive						
29764	European Journal of Gynaecological Oncology	03922936		1980-ongoing	Active	0.379	0.075	0.394	0.088	0.368	0.063
25948	European Journal of Haematology	09024441	16000609	1987-ongoing	Active	0.824	0.308	0.931	0.330	0.902	0.291
34553	European Journal of Haematology, Supplement	09024506		2007-ongoing, 2004-2005, 2001, 1998	Active	0.390	0.145	0.285	0.099	0.172	0.053
13217	European Journal of Health Economics	16187598	14396637	2002-ongoing	Active	0.739	0.084	0.902	0.138	0.920	0.090
13220	European Journal of Health Law	09290273	15718093	1994-ongoing	Active	0.157	0.065	0.228	0.038	0.201	0.044
23188	European Journal of Heart Failure	13889842		1999-ongoing	Active	1.508	0.444	1.839	0.519	1.952	0.593
4100151615	European Journal of Heart Failure, Supplement	15674215		2008-ongoing, 2006, 2003	Active	0.000	0.026	0.272	0.052	0.120	0.026
21329	European Journal of Herbal Medicine	13524755		2001-2004	Inactive						
17461	European Journal of Histochemistry	1121760X		1992-ongoing	Active	0.310	0.156	0.514	0.080	0.529	0.064
85975	European Journal of Horticultural Science	16114426		2003-ongoing	Active	0.495	0.034	0.459	0.033	0.368	0.031
13278	European Journal of Housing Policy	14616718	14733269	2002-ongoing	Active	1.215	0.032	0.879	0.028	0.867	0.029
22101	European Journal of Human Genetics	10184813		1993-ongoing	Active	1.278	0.783	1.332	0.687	1.368	0.459
39750	European Journal of Immunogenetics	09607420	13652370	1991-2004	Inactive						
20779	European Journal of Immunology	00142980	15214141	1971-ongoing	Active	1.361	1.263	1.357	1.285	1.444	0.942
91335	European Journal of Implant and Refractive Surgery	09553681		1989-1995	Inactive						
11200153401	European Journal of Industrial Engineering	17515254		2008-ongoing	Active	0.501	0.036	1.096	0.056	0.985	0.034
18961	European Journal of Industrial Relations	09596801		1996-ongoing	Active	1.739	0.033	1.099	0.030	1.394	0.033
56321	European Journal of Inflammation	1721727X		2004-ongoing	Active	0.252	0.056	0.490	0.076	0.507	0.033
15074	European Journal of Information Systems	0960085X	14769344	1995-ongoing	Active	2.001	0.040	2.228	0.049	2.496	0.047
144961	European Journal of Innovation Management	14601060		2005-ongoing	Active	1.171	0.032	1.105	0.031	1.089	0.035
25256	European Journal of Inorganic Chemistry	14341948		1998-ongoing	Active	0.975	0.124	0.945	0.137	0.982	0.183
17300154952	European Journal of Integrative Medicine	18763820		2008-ongoing	Active		0.000	0.847	0.048	0.720	0.040
33614	European Journal of Intensive Care Medicine	03400964		1975-1976	Inactive						
26617	European Journal of Internal Medicine	09536205		1989-ongoing	Active	0.573	0.117	0.661	0.132	0.747	0.133
145598	European Journal of International Law	09385428		2005-ongoing	Active	1.296	0.027	1.405	0.026	1.423	0.028
17200154705	European Journal of International Management	17516757	17516765	2009-ongoing	Active		0.000	0.111	0.025	0.193	0.027
24592	European Journal of International Relations	13540661		1996-ongoing	Active	2.173	0.034	2.230	0.038	2.001	0.034
16800154749	European Journal of Jewish Studies	10259996		2007-ongoing	Active	0.171	0.024	0.154	0.024	0.000	0.025
73175	European Journal of Laboratory Medicine	11228652		1994-1999	Inactive						

The Operation Efficiency Evaluation by Financial Ratio of Listed Company in Food and Beverage Industry by Grey Principal Component Analysis

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Abstract

The initial of this research was the efficiency evaluation model, namely Grey Principal Component Analysis. It was favourites to use financial ratio as variable because of ease to access, reliable, and qualified by Certified Public Accountant. However, the redundancy variable selection may take advantage to some companies. The sample of this research was 22 listed companies in food and beverage industry, which be used 3 year financial ratio from financial statement since 2007 – 2009. The first test used 12 financial ratios and the second test used 9 financial ratios, which cut redundancy variable off. It was found that it was not differ in evaluated position significantly.

Keywords: Grey Principal Component Analysis / Efficiency Evaluation / Food and Beverage Industry / Financial Ratio

1. Introduction

Thailand is considered as the Land of Plenty which is equal to the kitchen of the world. This affects the core income of the country which has to rely on food production. In addition, food and beverages are also considered as one of the four crucial factors for human being. Therefore, food and beverage industries are being interested by investors both direct and indirect way. According to the indirect way, this can be explained that it means the investment through The Stock Exchange of Thailand. When investors decide to invest in any company, surely they will select the companies which give them the maximum profit. The profit may be measured by the effective company on highest operation.

One of the appropriate factors for ranking the effectiveness on operation is financial ratio. This is because the financial ratio is calculated by financial report which makes a result of reliability since it is approved by certified public accountants. Moreover, it's easy to access, make understanding and analyze by quantitative method. The example of researches which use financial ratio to be the variable

for ranking the effectiveness of operation include, such as, Altman (1968), Meinster and Elyas (1988) and Canbas, Cabuk and Kilic (2005)

For Grey Theory developed by Deng (1982), it has important advantage, that is, it can manage the data which are not completed, unclear or imperfect very well. Furthermore, it can be applied to a few data and no need to consider any statistical hypothesis. The Grey Theory has been developed numerously both its process and empirical data for the test, for example, Jiang, Yao, Deng and Ma (2004) predicted the usage of energy of air-condition, Yao and Chi (2004) used the Grey Taguchi Forecasting Model to forecast the electricity need, Yao, Chi, and Chen (2005) used the Grey Fuzzy Forecasting Model to forecast the electricity need, Phuangnark and Homsud (2007) used the Grey Trigonometry Forecasting Model to forecast the stock index of The Stock Exchange of Thailand, Homsud and Kaewkem (2009) used the Grey Forecasting Model to forecast the movement orientation of the stock index in the Stock Exchange of Thailand and Homsud (2009) used the Grey Principal Component Analysis Model to rank the effectiveness of shipping companies in the Stock Exchange of Thailand, etc.

Not only the method mentioned above, but there is also the application of Grey Theory, which refers to the Grey Relational Analysis Model: GRA; this is appropriate for using in selection of investment project, analysis of factors to be used in assessment and for the selection of organizational or project assessment. The research examples which used the Grey Relational Analysis Model: GRA include Wang. Ho, Feng and Yang (2004), the assessment of airport management and the research of Wang (2008), the assessment of financial operation of the airport, etc.

However, using the financial ratio for the assessment can make a problem of excess data. Hence, the statistic technique of Principal Component Analysis: PCA has to be used to reduce the variables in order to find the crucial information. Moreover, it can indicate the relationship, which could not be seen at the previous time (Wanichbancha, 2008)

According to the research of Tung and Lee (2009), it gathered the Grey Relational Analysis Model: GRA and Principal Component Analysis: PCA altogether and renamed it as Grey Principal Component Analysis. Homsud (2009) ever used this Model to test with shipping companies. From this research, it is noticed that if the variable tested has high correlation, it may cause the company which has the positive ratio to get higher effective score of assessment. On the other hand, it causes bias inevitably.

From the causes mentioned above, the research of "The Operation Efficiency Evaluation by Financial Ratio of Listed Company in Food and Beverage Industry by Grey Principal Component Analysis" occurred. The purpose of this research is to test the result of ranking effectiveness by Grey Principal Component Analysis between the normal financial ratio and financial ratio which cut the ratio which had high correlation off by using the 22 listed companies in The Stock Exchange of Thailand within food and beverage industries to be the sample data.

2. Research Method

2.1. Sample Data

The companies ranked the effectiveness of operation were 22 listed companies in the food and beverage industry in the Stock Exchange of Thailand consisted of

APURE	:	Agripure Holdings Public Company Limited
F&D	:	Food and Drinks Public Company Limited
HTC	:	Haad Thip Public Company Limited
KSL	:	Khon Kaen Sugar Industry Public Company Limited
LST	:	Lam Soon (Thailand) Public Company Limited
MINT	:	Minor International Public Company Limited
OISHI	:	Oishi Group Public Company Limited

PB	:	President Bakery Public Company Limited
PM	:	Premier Marketing Public Company Limited
PR	:	President Rice Products Public Company Limited
S&P	:	S&P Syndicate Public Company Limited
SAUCE	:	Thaitheparos Public Company Limited
SFP	:	Siam Food Products Public Company Limited
SORKON	:	S.Khonkaen Foods Public Company Limited
SSC	:	Serm Suk Public Company Limited
TC	:	Tropical Canning (Thailand) Public Company Limited
TF	:	Thai President Foods Public Company Limited
TIPCO	:	Tipco Foods Public Company Limited
TUF	:	Thai Union Frozen Products Public Company Limited
TVO	:	Thai Vegetable Oil Public Company Limited
TWFP	:	Thai Wah Food Products Public Company Limited
UFM	:	United Flour Mill Public Company Limited

2.2. Financial Ratio

The financial ratio used in this research was from financial statement of all 22 companies in the year of 2007 – 2009. The calculation was categorized by main 12 financial ratios of The Stock Exchange of Thailand consisted of

- Current Ratio
- Quick Ratio
- Debt to Equity Ratio
- Interest Coverage Ratio
- Gross Profit Margin
- Net Profit Margin
- Return on Assets
- Return of Equity
- Receivable Turnover
- Inventory Turnover
- Net Fixed Asset Turnover
- Total Asset Turnover

2.3. Testing Design

The test was divided into 2 times. Firstly, all 12 ratios were used, and secondly, only 9 ratios were used. The ratios cut included 1) current ratio; this is because it was redundancy with the quick ratio 2) the gross profit margin; this is because it was redundancy with the net profit margin, and 3) return on assets which was redundancy with return on equity. All 3 pairs of these ratios were redundancy to one another. Thus, the research staff asked the financial and accounting experts for 3 persons to give opinions which the ratio had better use the most. The opinion result was unanimously to cut off according to the mentioned above.

The calculation according to the Grey Principal Component Analysis Model can be studied additionally from the research of Tung and Lee (2009) and Homsud (2009).

3. Results

From Table 1; when analyzing in year 2009, it was found that there were 8 companies which their rank was not changed. These included S&P, TF, PB, TC, LST, TIPCO, SORCON and APURE. However, there were 5 companies which their rank was changed at 1 level, which were OISHI, MINT, KSL, SFP and HTC. There were 2 companies which their rank was changed at 2 levels, which were TWFP and

TUF. There were 3 companies which their rank was changed, which were PM, F&D and UFM. Moreover, there is 1 company which its rank was changed at 4 levels, which was PR and 1 company which its rank was changed at 6 levels, which were TVO.

From Table 1; when analyzing in year 2008, it was found that there were 2 companies which their rank was not changed, these included KSL and SORCON. There were 13 companies which their rank was change at 1 level, these included PM, S&P, PR, OISHI, TWFP, TIPCO, HTC, SFP, LST, TC, TUF, UFM and APURE. There were 2 companies which their rank was changed at 2 level, these included PB and F&D. There is one company which its rank was changed at 3 levels, this included TF and there was 1 company which its rank was changed at 4 levels, this included MINT. The last was one company which its rank was changed at 6 levels, this included TVO.

From Table 1; when analyzing in year 2007, it was found that there were 7 companies which their rank was not changed, these included TF, KSL, PB, S&P, HTC, TC and F&D. There were 7 companies which their rank was changed at 1 level, these included PR, PM, TVO, TWFP, OISHI, APURE and SFP. There were 2 companies which their rank were changed at 2 levels, these included TIPCO and UFM. There were 3 companies which their rank was changed at 3 levels, these included SORKON, TUF and LST and 1 company which its rank was changed at 4 levels, and this included MINT.

Table 1: Name of companies and the scores of rank on effectiveness from much to little classified by year and the amount of financial ratio used

2009				2008				2007			
12 Ratios		9 Ratios		12 Ratios		9 Ratios		12 Ratios		9 Ratios	
Company	Score	Company	Score	Company	Score	Company	Score	Company	Score	Company	Score
S&P	4.32	S&P	3.27	S&P	4.53	PM	3.73	TF	4.18	TF	2.80
TF	3.92	TF	2.73	PM	4.05	S&P	3.33	PM	3.25	PR	2.70
PM	3.76	OISHI	2.58	TF	3.74	PR	3.02	PR	3.13	PM	2.67
OISHI	3.58	PR	2.40	PR	3.38	PB	3.00	KSL	3.02	KSL	2.53
PB	3.30	PB	2.38	KSL	3.32	KSL	2.96	TVO	2.53	MINT	2.09
MINT	3.27	PM	2.29	PB	3.27	TF	2.91	TIPCO	2.40	TVO	1.93
TWFP	2.74	MINT	2.22	OISHI	3.19	MINT	2.79	TUF	2.36	SORKON	1.91
PR	2.74	KSL	1.87	TVO	3.06	OISHI	2.63	TWFP	2.25	TIPCO	1.85
KSL	2.34	TWFP	1.80	TIPCO	2.80	TWFP	2.26	MINT	2.25	TWFP	1.85
TVO	2.27	SFP	1.77	TWFP	2.73	TIPCO	2.11	SORKON	2.12	TUF	1.79
SFP	2.17	HTC	1.55	MINT	2.66	HTC	2.10	LST	2.09	UFM	1.78
HTC	2.13	F&D	1.22	HTC	2.52	SFP	2.00	PB	2.04	PB	1.68
TC	2.06	TC	1.19	SFP	2.48	F&D	1.78	UFM	2.02	OISHI	1.65
LST	2.01	LST	1.14	LST	2.33	TVO	1.63	OISHI	1.88	LST	1.62
F&D	1.61	UFM	1.07	F&D	2.25	LST	1.55	S&P	1.73	S&P	1.43
TUF	1.53	TVO	1.01	TUF	2.13	TC	1.35	HTC	1.58	HTC	1.41
TIPCO	1.52	TIPCO	0.90	TC	2.01	TUF	1.24	TC	1.45	TC	1.17
UFM	1.42	TUF	0.74	SORKON	1.67	SORKON	1.16	SFP	1.26	APURE	1.07
SORKON	1.39	SORKON	0.61	APURE	1.19	UFM	0.90	APURE	1.19	SFP	0.90
APURE	1.27	APURE	0.36	UFM	0.87	APURE	0.44	F&D	0.96	F&D	0.69

4. Research Conclusion

The purpose of this research was to test the ranking of effectiveness on food and beverage industrial companies by the Grey Principal Component Analysis Model. When using 12 and 9 financial ratios, respectively, the research result revealed that mostly the rank wasn't changed much. The change was between 1-2 ranks, approximately. This indicates that the financial ratios which were redundancy to one another weren't the main factors which cause the change for ranking the effectiveness. Nevertheless, the difference of rank occurred was carried out by judgment of the researcher to be the main for indicating that if it changed or not or how it changed. Thus, this is the interesting point for other researchers to find the statistic methods to be the criteria for indicating that if the changed rank has the implication or not and how its implication is.

This research can be the way for improvement or application in several parts, such as, to use for testing with the financial ratio of other industries or to test with the assessment of effectiveness from other things, such as the teaching effectiveness or library effectiveness, etc. This research also has the crucial objectives to offer alternatives for assessing the effectiveness apart from the method of Data Envelopment Analysis: DEA which is famous highly at the present time.

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