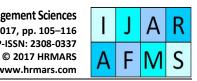


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Ranking of Factoring Companies in Accordance with ARAS and COPRAS Methods

Aşir ÖZBEK¹ **Emel EROL²**

¹Kirıkkale University, Vocational School, Department of Computer Technology, Kirıkkale, Turkey, ¹E-mail: <u>ozbek@kku.edu.tr</u> (Corresponding author) ²Kirıkkale University, Faculty of Economics and Administrative Sciences, Kirıkkale, Turkey, ²E-mail: emeel 90@hotmail.com

Abstract

Along with the development of international trade, financing techniques have also begun to make a progress. In parallel to this progress, factoring transactions in trade financing make a significant contribution. Factoring, which brings a positive impact on national economy, has been following a course with a progressive trading volume. Turkey has performed an improvement in world ranking by means of factoring capacity in recent years. This, therefore, demonstrates that emphasis on factoring transactions has also been increasing. Need for factoring companies that have a great role in domestic and foreign financing of trade has also been mounting. Determination of the most appropriate factoring company for the managements that have an intention of receiving factoring services is considered as a multi-criteria decision making (MCDM) problem through which a series of factors shall be regarded. Consequently, selection of a factoring company that is in compliance with the financing structure of the management is considerably important. Within the scope of this study, ranking of 7 factoring firms that are active in Istanbul Stock Exchange (BIST) was made by considering their financial data between the years of 2013 and 2016. Data were collected through Public Disclosure Platform. Criteria were designated in consequence of literature review. Additive Ratio Assessment (ARAS) and Complex Proportional Assessment (COPRAS) techniques, which are the two of MCDM methods, were used in an integrated way in the direction of rating the aforementioned companies. When the years of 2013-2016 were considered as integrated, it was observed that GAFRA is placed on the top while SMRFT is placed at the bottom according to both methods.

Key words

ARAS, COPRAS, Factoring Companies, Multi-Criteria Decision Making

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1. Introduction

One of the primary elements of maintaining managements' activities in a healthy way is uninterrupted cash flow. While managements take intercompany precautions and directly intervene in quality of production, efficiency of sales and costs of purchasing raw materials when necessary, a little problem that occurs in the period of collection that is fully under the control of external factors may ruin futuristic plans of managements and may cause a disruption in cash flow. Continuous maintenance of cash flow is the most important basis of managements in the direction of making prudential plans. Particularly, progressively-increasing competition conditions, getting into international markets, business combinations, developments in money and capital markets and rapid technologic changes raised the importance of financing for managements (İnal, 2006).

Hand in hand with the development of international trading, techniques of trade financing have also developed; certain company and corporation structures, which push the limits of resources in fields where financing resources are required all around the world and succeed in providing resources within the bounds of possibilities, have been rising to the surface. Financing companies that have an impact on the question that to which field the financial resources shall be directed have been becoming prevalent; factoring transactions along with trading transactions that have been controlled by a qualified international or domestic institution, reciprocal financing of committed trades and applicable techniques have begun to play an important role (Özdemir, 2005).

Fulfillment of cash flow that is required for managements to maintain their activities without any disruption is an important topic. In meeting the requirements of providing external sources that are needed by companies for actualizing their commercial activities, a series of financing techniques were developed in recent years. Factoring is an alternative financing technique that is used in fulfillment of external sources that are needed by managements for actualizing their commercial activities. Uninterrupted cash flow, which is required for managements to maintain their activities in a healthy way both in terms of domestic and foreign trade, may be fulfilled through the use of factoring method (Tosun, 2007).

Determination of financial institutions with which managements will work together for the purpose of gaining financing support has been coming into prominence. Within this period, a lot of factors, interacting with each other, shall be taken into consideration. Due to the fact that several factors shall be considered in the phase of problem-solving, this matter is observed as a problem of multi-criteria decision making (MCDM). Making managements' activities permanent is directly in connection with the stabilization of their financial conditions. For this reason, right choices of managements that are to work with such financial institutions are pretty fundamental.

Within the scope of this study, seven factoring companies that are active in Istanbul Stock Exchange (BIST) were evaluated and the ranking of companies was made by considering their financial data between the years of 2013 and 2016. Criteria which were used for evaluation were designated in consequence of literature review. Evaluation procedure was performed through Additive Ratio Assessment (ARAS) and Complex Proportional Assessment (COPRAS) which are the most commonly used MCDM methods.

In the second part of the study, the term of factoring was introduced and factoring procedures in Turkey and around the world were addressed. In the third part, literature research was performed, and in forth part, methods were presented. In fifth part, factoring companies were analyzed via MCDM methods. In the last part, moreover, findings were evaluated.

2. Factoring

The concept of factoring was initially imported to our country in 1983. Studies in relation to factoring, moreover, were commenced in 1988 by the banks and first factoring transaction was carried out within this year. Factoring transactions, which had a thin trading volume at the beginning, has shown acceleration over the years. Factoring services have generally been used by sub-industry companies; and small-scale and midsized companies on sectoral basis, which carry on a business in certain sectors such as food, iron, steel, automotive, machinery and equipment, textile, spare parts, trade, health, office machinery, cleaning, publishing, etc. Furthermore, supervision of factoring companies has been performed by Banking Regulation and Supervision Agency (BDDK) by the date of 01. 01. 2006 (Ölmez, 2012).

Factoring applications provide various advantages for clients, factoring companies and national economy. In addition to this, they also bring certain disadvantages (İnal, 2006). Factoring transactions that gained an international characteristic after 1980s causes a series of problems in operation due to the differences between tax and trade regulations in different countries. This situation, moreover, decelerates the development of factoring applications (Öncel, 1991).

Factoring is the transfer of dated receivables, arising from sale of goods and services, to a factoring corporation and management of these receivables by the factoring corporation. Factoring transaction is performed between the factoring company, trade debtors (buyers) and Business Corporation (seller) that sells goods or provides services. Factoring may provide three different services which are financing, warrant and collection as integrated or separated in accordance with the needs of managements (FKB).

Parties of factoring transactions vary according to domestic and foreign operations. Domestic factoring transactions consist of 3 parties as the client, factoring company and the debtor while foreign factoring circulation does not contain a factoring company. Parties may be presented as it follows (Tiryaki, 2006):

• Client: Client is the party who intends to carry out factoring transaction, i.e. who sells goods or services.

- Debtor: Debtors are the persons who bought services or goods from the client and who are obliged to redeem the debt.
- Factoring Company: Factoring Company is the company that undertakes receivables that arise as a result of debtor's purchasing any services or goods from the client collects receivables and makes payments in exchange for those receivables.
- Foreign Factoring Company: Foreign Factoring Company is a company that follows certain factors such as payment status, economic condition and solvency of the debtor in case the debtor is on abroad, by making a deal with the domestic factoring company.

By the end of 2016, trade volume of factoring sector was concluded approximately as 34 billion USD (122 billion 261 million Turkish Lira – TL). Size of assets belonging to the sector performed a 24% growth when compared to the previous year and reached to 9.16 billion USD (33 billion TL) while equities reached to 1.45 billion USD (4.8 billion TL) with a growth of 5.6%. Factoring receivables were stated as 8.6 billion USD (31.027 million TL) while net non-performing loans constituted 62 million USD (223 million TL) and net income of the period was 185 million USD (665 million TL). Dynamically expanding customer portfolio of the sector that has been active with 62 companies exceeded 98.000 (Blomberght; FKB; FCI).

Around the world, volume of factoring was concluded as 2.595 billion USD by 2015. 2.015 billion USD of this amount aroused from domestic factoring transactions while 580 billion USD of this amount aroused from foreign factoring transactions. Transaction volume of factoring performs 11% growth in each year around the world. Distribution of factoring volume by regions is given in Table 1 (FCI).

		in millions of USD					
Country	Domestic	International	Total				
Africa	14.592	63	14.655				
Asia-Pacific	415.793	236.256	652.049				
Europe	1.381.546	320.632	1.702.178				
MENA	11.310	1.399	12.709				
North America	91.381	18.508	109.889				
South America	100.555	2.694	103.249				
Grand Total	2.015.177	579.552	2.594.729				

Table 1. Factoring Trading Volume

3. Literature review

Banerjee (2003) measured the financial and operational performance of 5 factoring firms that are active in India. For this measurement, Annual Average, Average Per Annum Growth Rate, Compound Growth Rate and Mann-Whitney U test were governed. Authors confirmed that the operational and financial performances of the factoring firms that get into the act had accrued as time progressed. Ravaş and David (2010) propounded that financing with a factoring method could be an alternative fund that is suitable for Roman companies in international crisis period when cash flow problem was present. Ece and Özdemir (2011) analyzed performance levels of seven companies between 2005 – 2010 by Economic Value Added (EVA) and Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) methods and comparing it to annual changes in market price of equity shares. Janekova (2012) stated within the scope of her study that companies continuously use factoring technique as an alternative source of fund to a large extent. She summarized the advantages and disadvantages of factoring market. Kaur and Dhaliwal (2014) evaluated the financial performances of SBI Global Factors and Canbank Factors companies that are active in Indian market. It was observed that financial performance of Canbank Factors was more successful than the financial performance of SBI Global Factors by means of operating income, net profit ratio, return on equity, and return on assets. Concepts such as acquisition per share, equity dividend coverage ratio and dividend per share were higher in the name of Canbank Factors when they are compared and contrasted to the values of SBI Global Factors. It was discovered that the operating income and profitability were higher for Canbank Factors then they were for SBI Global Factors in due course of the aforementioned research. It was recommended that the SBI Global Factors shall make use of its assets in a more sufficient way in order to gain better advantages from its assets. Koch (2015), as a result of a study that was conducted in Germany, inferred that scale of corporation and shareholders highly affect the profitability of factoring companies. Bağcı and Esmer (2016) procured the order of preference of publicly-traded companies that are active within BIST between 2009 and 2015 through the use of PROMETHEE method. In creation of preference order, factoring receivables, factoring incomes, non-performed factoring receivables, factoring debts and net profit/loss of the period were determined as the criteria to be used.

4. Methodology of research

4.1. ARAS method

ARAS method is a new MCDM procedure which is asserted by Zavadskas and Turskis (Zavadskas and Turskis, 2010). This method determines the performance of alternatives and sets a comparison between the scores of those alternatives and the ideal alternative. ARAS method relies on quantitative evaluations and the utility theory of value. Within the scope of this method, a utility function value is used to determine the dependent efficiency of an alternative on the other alternatives. This utility behavior is directly proportional with the relative outcome of the criteria values and weight importance of the aforementioned criteria. The utility value belonging to an alternative is defined by a comparison between the variant and the ideal alternative.

The ARAS method has also been utilized for figuring out a lot of MCDM problems in different fields which can be exemplified as the selection of the logistics centers location (Zavadskas and Turskis, 2010), appraisal of project managers in a structure (Zavadskas *et al.*, 2012), selection of energy generation methods (Sliogeriene *et al.*, 2013), the choice of waste dump site (Shariati *et al.*, 2014), choosing the best alternative material for the end product (Darji and Rao, 2014), selecting the most befitting strategy for brand extension (Zamani *et al.*, 2014), solving the problems that are related to construction (Medineckiene *et al.*, 2015), unraveling the green supplier selection problems (Liao et al.,2016) and evaluation of the performance of research centers in terms of research and technology organizations (Varmazyar *et al.*, 2016).

The stages of ARAS method can be put in an order as follows (Zavadskas and Turskis, 2010):

Stage 1: The first stage is the forming of decision-making matrix (DMM). The under-mentioned DMM of preferences (x_{ii}) for m alternatives (rows) rated n sign full criteria (columns):

$$X = \begin{bmatrix} x_{01} & x_{02} & \dots & x_{0n} \\ x_{11} & x_{12} & \dots & x_{1n} \\ \vdots & \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots \\ x_{m1} & x_{n2} & \dots & x_{mn} \end{bmatrix} \quad i = 0, 1, \dots, m \; ; \; j = 1, 2, \dots, n$$

$$(1)$$

Where m is the representative of alternatives, n is the representative of criteria defining each alternative, x_{ij} is the value corresponding the performance value of the alternative named as i, under the j criterion while x_{oj} is the optimal value for j criterion. When optimal value of j criterion is absent, then:

$$x_{0j} = \max_{i} x_{ij}, \quad \text{if} \quad \max_{i} x_{ij}, \quad \text{is preferable}$$
 (2a)

$$x_{0j} = \min_{i} x_{ij}$$
, if $\min_{i} x_{ij}$, is preferable (2b)

The performance values x_{ij} and the criteria weights w_j are observed as the ingresses of a DMM. For the purpose of avoiding the difficulties arising from dissimilar dimensions of the criteria, the ratio of the optimal value shall be used.

Stage 2: The decision matrix is regularized. Profitable criteria are normalized through linear normalization methodology as it follows:

$$\bar{x}_{ij} = \frac{x_{ij}}{\sum_{i=0}^{m} x_{ij}} \tag{3}$$

The criteria, preferable values of which are minima, are normalized through a two-stage process.

$$x_{ij} = \frac{1}{x_{ij}^*}; \qquad \bar{x}_{ij} = \frac{x_{ij}}{\sum_{i=0}^{m} x_{ij}}$$
 (4)

Stage 3: Identify the weighted normalized decision matrix. Normalized-weighted values of the criteria are assessed as it follows:

$$\hat{x}_{ij} = \bar{x}_{ij} w_j; i = 0, ..., m,$$
 (5)

$$\hat{X} = \begin{bmatrix} \hat{x}_{01} & \hat{x}_{02} & \dots & \hat{x}_{0n} \\ \hat{x}_{11} & \hat{x}_{12} & \dots & \hat{x}_{1n} \\ \vdots & \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots \\ \hat{x}_{m1} & \hat{x}_{n2} & \dots & \hat{x}_{mn} \end{bmatrix} \quad i = 0, 1, 2, \dots, m \quad ve j = 1, 2, \dots, n$$
(6)

 \hat{x}_{ij} is the weighted-normalized performance rating of the i alternative by means of the j criterion.

Stage 4: Determine the optimality function S_i for the alternative.

The optimality function S_i for each alternative can be figured out as the total for the weighted normalized performance ratings, as it follows:

$$S_i = \sum_{j=1}^n \hat{x}_{ij}; \quad i = 0, ..., m; j = 1, ..., n$$
 (7)

When S_i is the value of optimality function of i alternative, it is observed that higher the S_i value, the better is the alternative. The optimality function S_i has a direct and proportional connection with the values in the decision matrix and criteria weights. The higher the value of the optimality function S_i the more effective is the alternative (Zavadskas and Turskis, 2010).

Stage 5: Figure out the degree of utility K_i for each of the alternatives. The equalizing procedure that is used for the calculation of the utility degree K_i of an alternative ai is given as it follows:

$$K_i = \frac{S_i}{S_0}; \quad i = 0, ..., m$$
 (8)

 K_i are in the interval [0, 1] and may be classified in an increasing sequence, i.e. the desired order of precedence.

4.2. COPRAS method

The COPRAS method is coined by Zavadskas and Kaklauskas who were the researchers at Vilnius Gediminas Technical University in 1996 (Zavadskas and Kaklauskas, 1996). It is taken into consideration for multi-criteria rating of both maximizing and minimizing criteria values. This procedure quotes direct and proportional basis of the significance and utility degree of investigated versions on a system of criteria thoroughly defining the alternatives and values and weights of the criteria. Identification of significance, the priority order and utility degree of the alternatives is performed.

The COPRAS has also been utilized for figuring out a lot of MCDM problems in different fields which can be exemplified as searching for optimal solution of public building renovation (Uzsilaityte and Martinaitis, 2010), for a comprehensive analysis of intelligent built environment (Kaklauskas *et al.*, 2010), for the assessment of indoor environment of dwelling houses (Zavadskas *et al.*, 2008), in selecting

supervisors (Datta *et al.*, 2009), in assessment of neglected areas in Vilnius province (Vytautas *et al.*, 2015), for evaluating construction projects by means of hotels (Zolfani *et al.*, 2017), for evaluating building structures (Zolfani and Zavadskas, 2013), and for the performance evaluation of oil producing companies (Rabbani *et al.*, 2014).

The procedure of the COPRAS method consists of the under-mentioned steps (Kaklauskas *et al.*, 2005; Antucheviciene *et al.*, 2011; Zavadskas *et al.*, 2008):

Stage 1: Preparation of the decision-making matrix. Decision- making matrix is formulated is it is shown in Equality (1).

$$X = \begin{bmatrix} x_{11}x_{12}...x_{1m} \\ x_{21}x_{22}...x_{2m} \\ \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots \\ x_{n1}x_{n2}...x_{nm} \end{bmatrix}$$
(9)

When x_{ij} is the value of i criterion in j alternative of a solution; m is the representative of criteria; n the representative of the alternatives compared; q_i weight of i criterion.

Stage 2: Calculation of the weighted normalized decision matrix D. The weighted normalized decision-making matrix D is formulated within this stage. The purpose of this is to receive dimensionless weighted values through comparative indexes. Where the dimensionless values of the indexes are given, all criteria can be compared to each other. The normalized values of this matrix are calculated as it follows:

$$d_{ij} = \frac{x_{ij}q_i}{\sum_{j=1}^{n} x_{ij}}, \quad i = \overline{1, m}; \quad j = \overline{1, n},$$
(10)

when q_i weight of i criterion. After this stage, we have the normalized decision-making matrix:

$$D = \begin{bmatrix} d_{11} d_{12} \cdots d_{1m} \\ d_{21} d_{22} \cdots d_{2m} \\ \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots \\ d_{n1} d_{n2} \cdots d_{nm} \end{bmatrix}$$
(11)

The total for dimensionless weighted index values d_{ij} of each criterion x_i is always equal to the weight q_i .

$$q_i = \sum_{j=1}^{n} d_{ij}, \quad i = \overline{1, m}; \quad j = \overline{1, n},$$
 (12)

Stage 3: The sums of weighted normalized indexes. The sums of weighted normalized indexes representing the jth version are calculated in this stage. The versions are described through minimizing indexes S_{-j} and maximizing indexes S_{+j} . The lower the value of minimizing indexes, e.g. the price of a building's refurbishment, the better the attainment of targets. The greater the value of maximizing indexes, e.g. comfort and aesthetics, the better attainment of targets.

Sums are calculated in accordance with the following formula:

$$S_{+j} = \sum_{i=1}^{m} d_{+ij}; \quad S_{-j} = \sum_{i=1}^{m} d_{-ij}, \quad i = \overline{1,m}; \quad j = \overline{1,n}$$
 (13)

Stage 4: Calculation of the relative weight belonging to each alternative. The relative significance Q_j of each alternative is designated according to positive S_{+j} and negative S_{-j} as well as it is calculated through the use of the formula (14) (Antucheviciene *et al.*, 2011:322).

$$Q_{j} = S_{+j} + \frac{S_{-min} \sum_{j=1}^{n} S_{-j}}{S_{-j} \sum_{j=1}^{n} \frac{S_{-min}}{S_{-j}}}, \quad j = \overline{1, n},$$
(14)

Stage 5: Defining the priority order of alternatives. Q_j is ordered from big towards small. The bigger the q_J , the higher is the efficiency of the alternative. The higher the value of the generalizing criterion Q_j , the more effective is the alternative.

Stage 6: Calculation of the utility degree belonging to each alternative. In order for visually assessing alternative efficiency, the utility degree N_j shall be figured out. The degree of utility is identified through the comparison of the alternative evaluated with the most efficient alternative. In this case, all of the utility degree values in relation to the alternative that is evaluated will be classified from 0% to 100%. The formula that is used for the calculation of alternative a_i utility degree is given as it follows:

$$N_j = \left(\frac{Q_j}{Q_{max}}\right) x 100\% \tag{15}$$

5. Findings and results

Within the scope of this study, ordering of 7 factoring companies is performed in accordance with 12 criteria depending on the financial statements belonging to 2010 – 2016. Criteria were determined through a literature scan and their weights are defined as equal. While criteria such as Non-performed Receivables, Factoring Debts and Other Debts constituted the financial direction, other criteria are determined in the direction of utility. Preference order of the criteria was performed with ARAS and COPRAS methods. Criteria, their weights and directions are given in Table 2.

Criterion	Symbol	Kind
Factoring Income	C1	+
Factoring Receivables	C2	+
Other Receivables	C3	+
Non-performed Receivables	C4	-
Fixed Assets	C5	+
Intangible Fixed Assets	C6	+
Total Assets	C7	+
Accepted Credits	C8	+
Factoring Debts	C9	-
Other Debts	C10	-
Equity	C11	+
Not Profit /Loss	C12	

Table 2. Criterion

5.1. ARAS method

Rating created in consequence of 2013 – 2016 periodical evaluation of companies in accordance with ARAS method is given in Table 3.

Table 3. Ranking of factoring Companies with ARAS method

YIL	BSRFK	CRDFA	GARFA	HUZFA	LIDFA	SMRFT	YKFKT
2013	0,056	0,257	0,396	0,285	0,362	0,120	0,433
2013	7	5	2	4	3	6	1
2014	0,081	0,226	0,455	0,248	0,498	0,058	0,397
2014	6	5	2	4	1	7	3
2015	0,180	0,273	0,543	0,305	0,370	0,181	0,369
2015	7	5	1	4	2	6	3
2016	0,142	0,185	0,450	0,261	0,463	0,158	0,417

	7	_	2	4	1	6	2
	/)		4		U) 3

When Table 3 and Figure 1 are evaluated jointly, YKFKT was ranked as the 1., GAFRA was ranked as the 2., and LIDFA was ranked as the 3. Company in 2013 while the ranking of the companies was as YKFKT>GARFA>LIDFA>HUZFA>CRDFA>SMRFT>BSRFK. In 2014, LIDFA that was ranked in 3. place, SMRFT which was ranked as 6. and BSRFK that was the 7. Changed their places and the ranking was as LIDFA>GARFA>YKFKT>HUZFA>CRDFA>BSRFK>SMRFT. By 2015, the order was changed as GARFA>LIDFA>YKFKT>HUZFA>CRDFA>BSRFK>SMRFT and only LIDFA and GAFRA companies changed their places where they used to be 1. and 2. in the previous year. In 2016, ranking was quite similar to the previous year, and only GARFA and LIDFA companies changed their places where they used be ranked as 1. and 2. in 2015. The order was actualized as LIDFA>GARFA>YKFKT>HUZFA>CRDFA>BSRFK>SMRFT.

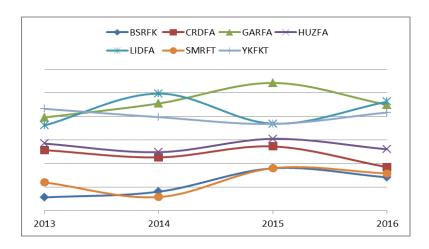


Figure 1. Ranking of Factoring Companies according to years with ARAS method

In each year, moreover, HUZFA was ranked as 4. and CRDFA was ranked as 5. When 2014 is not considered, places of SMRFT and BSRFK companies did not perform any change and SMRFT was in 6. place while BSRFK was ranked as 7 which was the last row. Only in the year of 2014, those companies changed their places with each other and BSRFK took 6. place while SMRFT was ranked in the last place. When Figure 1 and Figure 2 are evaluated jointly, it is observed that the most consistent company of all years is GAFRA. Despite the fact that it has a fluctuated course, GAFRA is followed by LIDFA. It is seen that third place is taken by YKFKT which can also be considered as stable. It was determined that SMRFT and BSRFK companies, moreover, take 6. and 7. places. While HUZFA is ranked as 4. for all years, CRDFA is placed in the 5. row. Consequently, ranking is formed as GARFA>LIDFA>YKFKT>HUZFA>CRDFA>SMRFT>BSRFK.

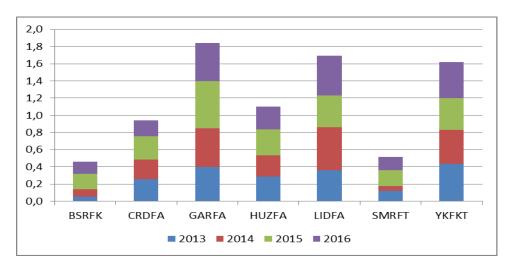


Figure 2. Cumulative Column Chart of Factoring Companies according to ARAS method

It is quite obvious that the tendencies of HUZFA, CRDFA, SMRFT and BSRFK companies, which were ranked by the 4. place for all years, are similar to each other's. Significant up-and-down development was performed by LIDFA Company.

5.2. COPRAS method

In consequence of COPRAS method, the ranking of factoring companies depending on their financial information is given in Table 4. When Table 4 and Figure 3 are evaluated jointly, it is seen that the ranking of the companies showed great similarities according to aforementioned years.

YIL	BSRFK	CRDFA	GARFA	HUZFA	LIDFA	SMRFT	YKFKT
2013	0,042	0,151	0,209	0,056	0,157	0,161	0,223
2013	7	5	2	6	4	3	1
2014	0,053	0,115	0,238	0,119	0,249	0,037	0,189
2014	6	5	2	4	1	7	3
2015	0,067	0,123	0,247	0,147	0,157	0,099	0,160
2015	7	5	1	4	3	6	2
2016	0,093	0,094	0,210	0,117	0,221	0,076	0,189
2016	6	5	2	4	1	7	3

Table 4. Ranking of Factoring Companies with COPRAS method

It is seen that 1. place was taken by YKFKT in 2013, by GAFRA in 2015, and by LIDFA in 2014 and 2016. While 2. place was taken by YKFKT in 2015, it is determined that GAFRA took this place in other years. 3. place was held by SMRFT in 2013, by LIDFA in 2015 and by YKFKT company in other years. While LIDFA company took 4. place in 2013, it was taken by HUZFA company in other years. By means of all years, 5. place was held by CRDFA company. BSRFT and SMRFT, which took 6. and 7. places according to ARAS method, took 6. and 7. places alternately according to COPRAS method.

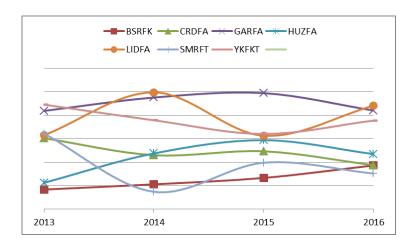


Figure 3. Ranking of Factoring Companies according to years with COPRAS Method

YKFKT Company shows a downward trend until 2015, and it is seen that this trend goes up after 2015. Despite the fact that LIDFA is at the top, it is understood that it shows an up-and-down course. While GAFRA Although CRDFA generally has a downward trend, it is observed that it keeps its 5. place for all years. Despite BSRFK company generally keeps 6. and 7. places, it is acknowledged that it performs a little upward trend. While HUZFA company was in 6. place in 2013, it is determined that it goes up to 4. place in 2016. It is found that SMRFT company, moreover, keeps a continuous downward course for all years.

GAFRA is designated as the most consistent company by taking the first place for all years. LIDFA and YKFKT companies followed the place GAFRA. BSRFK company, moreover, is observed as taking the last place. When ARAS and COPRAS method findings are compared by considering all years, it is obvious that GAFRA is ranked as 1., LIDFA is ranked as 2., and YKFKT is ranked as the 3. according to both methods.

Ranking of SMRFT and BSRFK that are ranked in the last places do not change according to both methods. Only the companies of HUZFA and CRDFA that were respectively ranked as 4. and 5. change their places according to COPRAS method.

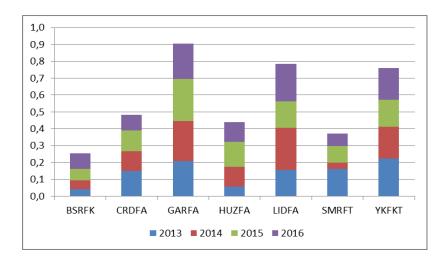


Figure 4. Cumulative Column Chart of Factoring Companies according to COPRAS method

6. Conclusions

Factoring transactions are financial instruments that gain importance progressively. While factoring transactions contribute to national economy, they also provide advantages for firms. In this sector which is ever-growing, it is important for managements that intend to work with factoring companies that are active within the scope of BIST and are an important part of this process to determine the ranking of those companies.

Within the scope of this study, ranking of 7 factoring companies that are active in BIST by being evaluated according to 12 criteria that were designated in consequence of literature scanning. Criteria weights are acknowledged as equal. Later, financial values of companies are evaluated in accordance with the designated criteria. Findings perform great similarities by means of both methods. Top three companies do not change according to both methods for all years. First place is taken by GAFRA, second place is taken by LIDFA and third place is taken by YKFKT. Again, according to both methods and for all years, SMRFT and BSRFT companies take the last two places. HUZFA, which was in the fourth place according to ARAS method leaves its place to CRDFA company within the scope of CAPRAS method. It is seen that the most consistent company according to both methods is GAFRA. It is also stated that LIDFA company follows an up-and-down course.

In the future studies, factoring companies may be evaluated through certain MCDM methods such as PROMETHEE, TOPSIS, MOORA, WASPAS, etc. according to the same or re-determined criteria, and results may be compared and contrasted. Additionally, fuzzy implementations of methods that are used or suggested may also be considered when uncertainty cases are taken into consideration.

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