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A NEW METHODOLOGY FOR CREDIT EVALUATION PROCESS OF TURK EXIMBANK*

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Abstract

Turk Eximbank is a strategic institute that promotes Turkey's multinationalism. The most important aim of Turkish Eximbank is to support Turkish exports. The credit evaluation process is very important and troublesome for Turk Eximbank. In this paper we aim to propose a credit evaluation methodology for Turk Eximbank. In this study we propose a credit evaluation methodology based on a Promsort method, in which companies are categorized in to groups according to their performances. The companies are grouped considering their sectorial divisions, their contributions to export and their financial performances. To this end Turk Eximbank can manage its credit allocation process more easily. By means of a real-case example, we demonstrate that our proposed method is useful for assessing credit allocation process. Credit evaluation process is a vital issue for all financial institutions. Unlike other financial institutions Turk Eximbank has to consider different criteria during credit allocation process. This article proposes a methodology that takes into consideration different criteria such as import/export ratio of companies rather than methods based solely on financial criteria. In addition the companies are categorized into groups that enables the credit evaluation process of Turk Eximbank.

Keywords: Turk Eximbank, performance evaluation, credit application, International Trade, Promsort.

TÜRK EXİMBANK'IN KREDİ DEĞERLENDİRME SÜRECİ İÇİN YENİ BİR METODOLOJİ

Özet

Türk Eximbank Türkiye'nin uluslararasılaşmasında finans desteği sağlayan stratejik önemde bir kamu kuruluşudur. Türk Eximbank'ın en önemli amacı Türk ihracatını desteklemektir. Türk Eximbank için kredi değerlendirme süreci son derece önemli ve zordur. Bu çalışmada, şirketlerin performanslarına göre gruplara ayrılarak kategorize edildiği Promsort yöntemine dayalı bir kredi değerlendirme metodolojisi önerilmektedir. Şirketler sektörlerine, ihracata olan katkılarına ve finansal performanslarına göre sınıflandırılmıştır. Böylelikle, Türk Eximbank kredi dağıtım süreciyle daha kolay başa çıkabilmektedir. Gerçek bir örnek olay yoluyla, önerilen metodun kredi dağıtım sürecinin değerlendirilmesinde faydalı olduğu gösterilmektedir. Kredi değerlendirme süreci bütün finansal kurumlar için hayati önem taşıyan bir konudur. Diğer finansal kurumlardan farklı olarak Türk Eximbank kredi değerlendirme sürecinde farklı kriterleri göz önünde bulundurmak zorundadır. Bu çalışma sadece finansal kriterlere dayalı yöntemlerden ziyade şirketlerin ithalat/ihracat oranları gibi farklı kriterleri dikkate alan bir metodolojiyi önermektedir. Ve şirketler Türk Eximbank'ın kredi değerlendirme sürecini mümkün kılan kategorilere ayrılmaktadır.

Anahtar Kelimeler: Turk Eximbank, kredi başvuru, performans değerlendirme, Uluslararası Ticaret, Promsort

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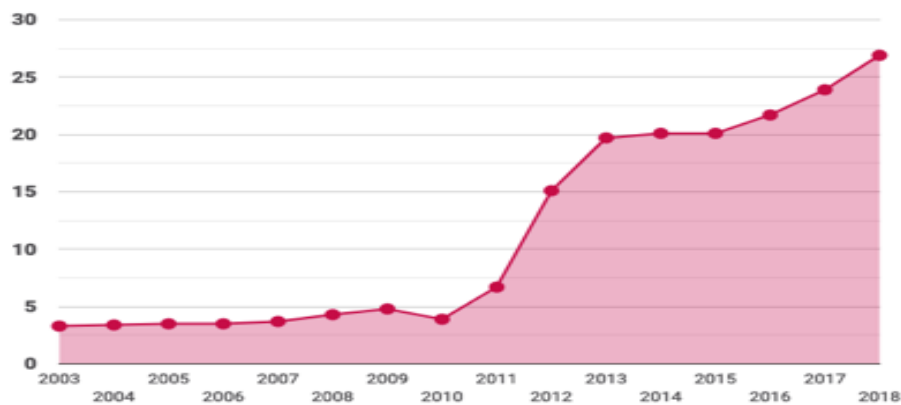
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1.Introduction

The exporting is generally regarded to be the most frequently used foreign market entrance method, this is more relatively valid for small firms. Nevertheless, the small firms do not often succeed in realizing actual exporting at all, which can be associated with the fact that these firms cannot easily find the necessary funds for export (Abor et al., 2014). The expenses such as the cost of production, shipping, insurance and delivery increases the fund requirements of the companies in the export process. Therefore, especially the small companies have a serious problem in financing exportation which requires a great deal of money. Most of the small companies find solution in searching for credits, insurance or guarantee from substantial institutions such as Eximbank in Turkey (Agarwal and Wang, 2018).

Turkey endorsed a strategy based on export beginning with 1980s and as a result of the foreign expansion, there occurred the need of financial support for the Turkish companies who were now obliged to compete with the global companies. For this reason a restructuring was realized in the Government Investment Bank and in the Turkey Export and Import Bank A.S which was to be titled as the Turk Eximbank beginning with 21 August 1987 (Eximbank, 2019). The fundamental aim of Turk Eximbank provides loans and insurances for exporter to compensate their export costs. Turk Eximbank provide three main types of credits which are the short, medium, and long term export loans.

Figure 1: Credit Amounts By Years (2003-2018)



Source: Türk Eximbank, 2019

As it can be seen in figure 1, while the total short, medium and long-term export credit was 3,3 Billion US Dollar in 2003, in 2018 it has increased more than 8 times and became 26,9 Billion US Dollar in 2018. Turk Eximbank increases its support for companies with every passing day.

As demonstrated in Table I, it is possible to observe an increase of %12 in the total credit amount and %15 increase in the total number of companies using credit during 2018 compared to 2017.

Table 1: Credit Amounts And Percentage of Change

	2017	2018	CHANGE
TOTAL NUMBER OF FIRMS USING CREDIT	8.218	9.462	%15
TOTAL CREDIT AMOUNT (\$)	23.9 Billion	26.9 Billion	%12

Source: Türk Eximbank, 2019

Turkey's total export amount has been calculated as 168 billion US Dollar in 2018. %26,3 of total export has been financed by Turk Eximbank, which corresponds to 44,2 billion

dollars. This constitutes of 27,3 billion US dollars credit support and 16,9 billion dollars of insurance support. Turk Eximbank is one of the most significant institutions that financially supports the exporters in 2018 by providing %53 of the export credits in the banking sector. Based on the reports of Turk Eximbank, they are in the first rank in the banking sector in terms of the ratio of credit/assets and occupies the position of 8th biggest bank of the system in terms of credit amount.

As mentioned above Turk Eximbank has a significant place in export financing by in terms of both supplying credits and by its insurance and guarantee programs (Aydemir and Gerni, 2011). While the Turk Eximbank is financing the companies' projects, it encounters the default risk. Therefore, the evaluation of the credit applications to choose the best companies to support the internationalization of the Turkish companies is very important.

What this study targets is to provide an appropriate methodology for Eximbank which would ease the evaluation process of the credit applications via Promsort method, a multi-criteria decision making method handling both the non-financial and the financial performance criteria which are sectorial divisions, their contributions to export and their financial performances.

The study is organized as follows. In the next section literature review is given. Third part gives information about the application part. The analysis part of the study describes the aim of the study, the promsort method and the proposed methodology for credit evaluation. In the last part of the analysis part the findings are provided to companies and Turk Eximbank by giving the comparisons of the companies in different groups. The fifth part is the conclusion part in which the overall evaluations, future research ideas and the study limitations are given.

2.Literature

In our daily life, people face lots of problems. To solve those problems, lots of criteria should be taken into consideration. It becomes harder to solve them when the criteria and alternatives increases. Multi-criteria decision making methods are used to solve these problems. In evaluation of credit applications process, deciding to which companies the credits should be given to is a significant problem since it requires the notification of many criteria. In the literature part, studies about the multi-criteria decision making methods are analysed and information concerning some of them have been included in this part.

Ic and Yurdakul (2000) developed a credit evaluation model, which is directed towards banks, by using the Analytic Hierarchy Process method with the criteria such as operating in the sector and credit guarantee of the companies.

In their studies, Altan et al (2004) analysed the situation of acceptance or denial of the credit demands of the banks via AHP. They have taken an important step in terms of the determination of the credit demands by scrutinizing the financial situation of individuals and companies, guarantees, work situation and personal information. Atan and Maden (2005) measured the evaluation process of banks in credit demands by defining 7 main and 20 sub-criteria by using the AHP method.

Ilter (2006) defined 8 key criterions and 27 minor criterions for credit analyses of the companies operating at different sectors and performed an application with Analytic Network Process. As a result, they found cash cycle time, current ratio, liquidity rate, structure of the sector, company's role at the sector and profitability of the sales are the dwelt-on subjects.

Girginer (2008) deals with the evaluation of credit application problem by using Analytic Hierarchy Process (AHP) method. As a result of the study, the most important main criterion on evaluating credit applications was found as financial structure for public banks, however, managerial structure and intelligence are the most important criteria for the private banks.

Akkaya and Demireli (2010) identified 5 categories and 24 financial ratio criteria and presented a credit rating model by using AHP. At the end of the analysis, researchers found that at the process of credit giving of creditor institutions activity ratios are the most considered criteria while the financial structure ratios are the least considered criteria.

Kök and Aksu (2013) has improved a customer credit evaluation model by Analytic Network Process (ANP), for the company registered in Stock Market Istanbul (BIST). With this developed model, evaluation of the customers in an optimum way is planned and they may have some benefits.

Büyükçelebi and Coşkun (2015), on the other hand, have made an analysis by defining 4 main and 4 sub-criteria. They used AHP method in order to define the criteria that the participation banks and deposit banks take into account in their process evaluation of loans. According to the results of this analysis, both the participation banks and the deposits banks' most frequently considered criteria has been the data of companies' intelligence.

When the literature is reviewed, (İç and Yurdakul, 2000; Atan et al, 2004; Atan and Maden, 2005; İltter, 2006; Girginer, 2008; Akkaya and Demireli, 2010; Kök and Aksu, 2013; Büyükçelebi and Coşkun, 2015) it can be concluded that although there have been studies trying to define the criteria and priorities of the deposit and participation banks or private and public banks; no study concerning the credit evaluation process of the Eximbank loans has been encountered. This has been the motivating factor in the inauguration of this study. In this respect, the study embodies an original value. Beside of that, this study propose a methodology that categorize the companies in to groups according to their performances by taking criteria different from financial based traditional criteria that enable the credit evaluation process of Turk Eximbank.

3. Analysis Part

3.1. The Aim of The Study

The aim of this study is to propose a methodology that helps the credit evaluation process of Turk Eximbank. During the credit evaluation process the companies are ranked and assigned to the groups (The groups represents the credit allocation amount to companies). This method takes into consideration both financial and non-financial criteria. The criteria that are used in the study are financial ratios, sectorial division and management structure.

3.2. The Method

In the study Promsort is used for the credit evaluation process. Promsort method is multicriteria sorting method based on Promethee methodology. Promsort is first developed by Araz and Ozkarahan in 2007 (Araz, C. and Özkarahan, I. 2007).

Promsort assigns the alternatives to groups with the help of predetermined profile limits. The steps of Promsort are as follows;

Step1: Firstly decision matrix is defined. Decision matrix consists of criteria, the alternatives, performance values of alternatives for each criteria. The weights and preference function are also selected in this step. In our example the main criteria are financial criteria, managerial structure and export-import structure. The alternatives in our study are the companies that are going to apply to Turk Eximbank credits

Step2: second step consists of defining the profile limits. In promsort, in order to sort the alternative in t groups, t-1 profiles have to be defined. In our example we want to group the companies in 3 groups so we define 2 profile limits. Profile limits is very important in promsort method because profile limits are the ones that distinguishes group 1 from group 2 and the other groups.

Step 3: Ranking all alternative including profile limits by using Promethee I by using the Equation (1), Equation (2) and Equation (3).

$$\pi(a, b) = \sum W_j P_j(a, b) \quad (1)$$

$$\Phi^- = \sum \pi(a, b) \quad (2)$$

$$\Phi^+ = \sum \pi(b, a) \quad (3)$$

Step 4: In the fourth step final ranking of all companies and the profile limits are obtained with the help of Promethee II by calculating net flow. The formula of net flow is shown below;

$$\Phi(a) = \Phi^+ - \Phi^- \quad (4)$$

Step 5: The alternatives and the profile limits are assigned to groups according to the preference relations between the alternatives and the profile limits. Each alternative will be compared one by one with those of profile limits.

Promsort is a flexible sorting method that gives the point of view of both pessimistic and optimistic decision makers. Also promsort is an easy method for example compared to ELECTRE TRI.

3.3. Proposed Methodology for credit evaluation

Turk Eximbank gives cost-effective credits to exporters in order to promote exports in Turkey. Allocation of the credit to right companies is very important to accelerate the exports.

In this study a strategic credit application evaluation methodology is proposed. Previously different proposition were examined about credit evaluations of commercial banks or participation banks. To the best of our knowledge there is no study about concerning credit evaluations of Turk Eximbank.

Turk Eximbank is one of the investment and development bank in Turkey concerning the promoting of Turkish exports. So there are different criteria such as import/export rate of the companies that affect the credit application evaluations of Turk Eximbank. In the study it is aimed to propose a methodology to evaluate the credit applications in Turk Eximbank. In the analysis part in order to test the validity our methodology real life example is used. The sample of the study are 16 exporters which are working in İzmir. The semi-structured questions are asked to sample companies.

The criteria that are important in the evaluation process of credit applications and the weights of the criteria are selected by the help of the executives working in Turk Eximbank.

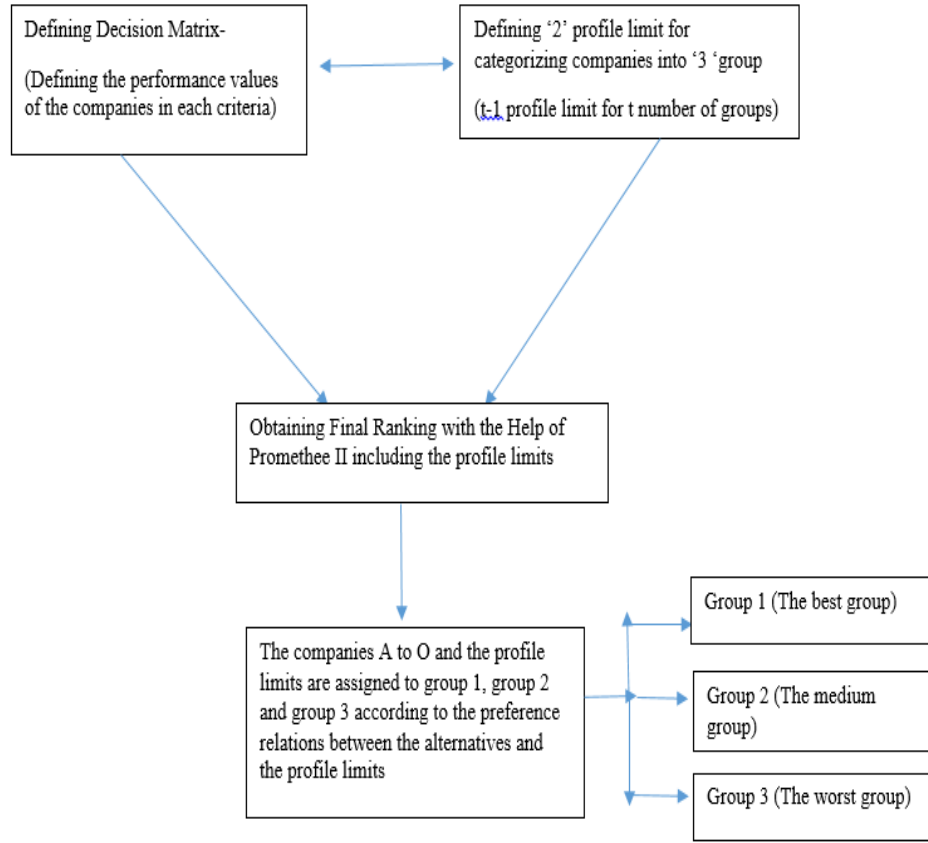
The companies are assigned to pre-determined groups based on selected criteria with the help of Promsort method. Figure 2 shows how the proposed methodology works in credit evaluation process by concerning the real-life example of the study.

In study 13 criteria are selected to evaluate the companies' performance. Financial criteria, export-import structure and managerial structure are 3 main criteria of the study. In table 2, selected criteria, their weights and preference function can be seen.

In Promethee method, 6 different preference function can be used which are Gaussian, V-shape, usual, U-shape, V-shape with indifference and level criterion. In the study the usual preference function is selected. Because in the study criteria are normalized by taking logarithm or the criteria are the proportion. So a little difference is important in evaluation of criteria.

Some criteria such as defaults in paying and reliability cannot be included in the proposed method. Because the companies do not answer such kind of questions. Not including some criteria in the model is the limitation of this study.

Figure 2: Visualization of The Proposed Methodology



The problem of the study is solved by using Visual PROMETHEE program. Preference functions and all parameters are determined by the decision maker.

Table 2. Criteria and Their Weights

Main Criteria And Subcriteria	Preferences	Weight	Preference Function
Financial Criteria		0.5	
Operating Income/Total Sales	Maksimum(maks)	0.17	Usual
Log Of Total Sales	Maks	0.065	Usual
Total Loans/Total Equity	Minimum(min)	0.13	Usual
Log Of Total Assets	Maks	0.03	Usual
Current Ratio	Maks	0.105	Usual
Export-Import Structure		0.33	Usual
Log Of Total Export	Maks	0.165	Usual
Total Import/Total Export	Min	0.165	Usual
Managerial Structure		0.17	Usual
Existence Of Export Department	Maks	0.085	Usual
How Many Years The Company Has Been Operating	Maks	0.085	Usual

In the last step each company is assigned to groups according to their ranks compared to profile limit. In our study company L, company O, company P, company J, company H, company A, company F, company I, company E and company M are assigned to group 1 (best

performers) . Company K, company D, company B, company N and company C are assigned to group 2 (moderate performers). Company G is assigned to group 3 (worst performers).

In questionnaire it is promised to companies that we would not declare their names. Therefore, the company names are kept confidential and we named the companies from A to O. The net flow values of all alternatives including the profile limits can be seen in table 3. The companies and profiles limits are ranked from best to worst. The best company is Company L as it can be seen in table 3.

Table 3. Promsort Assignments

	Ranking according to Net flow	Net Flow	Groups
Company L	1	0,4879	Group1
Company O	2	0,4479	Group1
Company P	3	0,3956	Group1
Company J	4	0,2524	Group1
Company H	5	0,2471	Group1
Company A	6	0,1482	Group1
Company F	7	0,03	Group1
Company I	8	0,0241	Group1
Company E	9	0,0082	Group1
Company M	10	-0,0103	Group1
Profile limit1	11	-0,0215	
Company K	12	-0,0215	Group 2
Company D	13	-0,0782	Group 2
Company B	14	-0,2521	Group 2
Company N	15	-0,2615	Group 2
Company C	16	-0,3324	Group 2
Profile limit 2	17	-0,4797	
Company G	18	-0,5826	Group 3

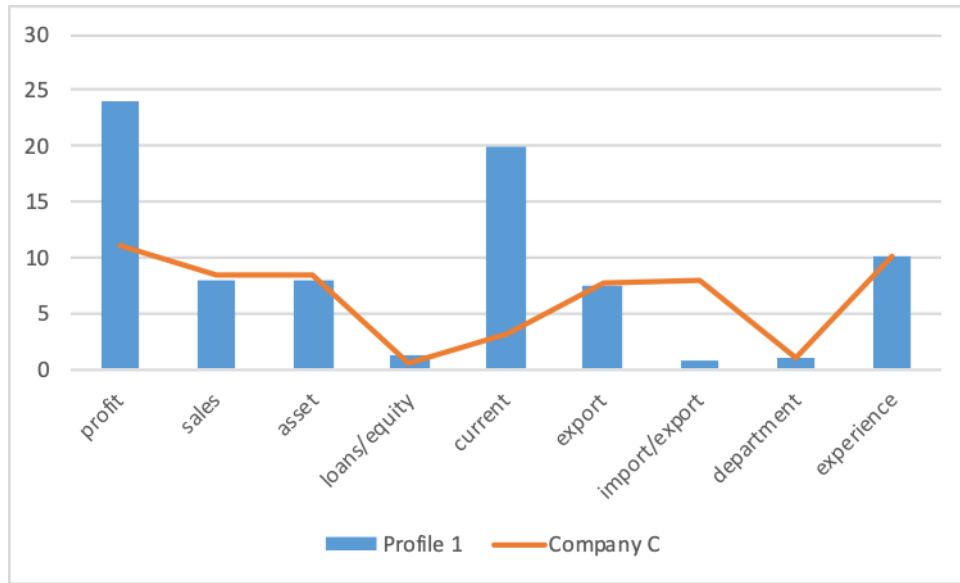
Three groups are determined by the help of profile limits. First group is the group in which %70 of credit are given, second group is the group in which %30 of credits are given. Third group is the one in which credit demands will be rejected.

3.4. Feedbacks by Making Comparison of the Companies in Different Groups

The method also handles to give feedbacks to the companies about their performance. The companies can get information about in which criteria they have to improve and in which criteria they are in a good position. By that way they can improve their performance in order to get more credit portion from Turk Eximbank.

For example company C is in group 2 in which only %30 percentage of credit will be allocated. If the company wants to take more credit limit from Turk Eximbank, the company must improve in some criteria.

Figure 3 shows the comparison of the performances of Company C and profile limit 1. Profile limit 1 has the values that distinguishes group 1 from group 2.

Figure 3: Comparison of The performances of Company C and Profile Limit 1

As it can be observed from figure 3, Company C is especially worse in profit and current ratio than profile limit 1. If the company C improves its performance in these criteria, the company C will upgrade its group from 2 to 1.

A similar analysis can be made for other companies that are in Group 2 and Group 3. As it is seen from this analysis, the proposed methodology have the ability to give feedbacks to companies or the executives in Turk Eximbank.

Conclusion

Turk Eximbank is one of the most important investment and development bank in Turkey that promotes exports in Turkey. They provide cash credits and non-cash credits such as insurances and guarantees to exporters. Credit evaluation process is getting more and more important now for all financial institutions. Therefore efficient methodologies that have the ability to evaluate the exporter's performance to select right exporters to be supported, is essential for Turk Eximbank.

In this paper we proposed a new methodology in which exporters are sorted and compared according to their performances based on their financial and non-financial criteria. The proposed methodology considers different criteria such as export potential of the corporations rather than other deposit banks' credit evaluation criteria.

Promsort is used in sorting the exporters based on their financial and non-financial performances that helps in management of credit allocation process. The companies are assigned to the groups that determine which companies will receive what portion of the credit limit or which companies' credit application will be rejected. The companies that want to apply to Eximbank credits, should try to improve their both financial and non-financial performance to receive a good portion of credit limit.

The proposed methodology considers both financial and nonfinancial criteria rather than traditional financial based criteria. The proposed methodology is utilized in the evaluation process of Turk Eximbank credits. As a result of the application part, it is found that the proposed methodology has the ability to evaluate the credit applications of Turk Eximbank.

On the other hand, it should be noted that in the proposed methodology all parameters such as profile limits, preference functions are highly dependent on decision makers. So it is very important to find right set of parameters.

In further research a new criteria may be included in the proposed methodology. This study just include the criteria that can be gathered from the companies. But Turk Eximbank can

gather any information from companies so the proposed methodology can be enriched by adding new criteria. Another further study will be based on grouping companies in more than 3 groups by increasing profile limits.

References:

- Abor, J.Y., Abgloyor, E.K. & Kuipo, R. (2014). “Bank Finance and Export Activities of Small and Medium Enterprises”. *Review of Development Finance*, 4, 97-103.
- Agarwal, N. & Wang, Z. (2018). “Does the US EXIM Bank Really Promote US Exports?”. *The World Economy*, Wiley The World Economy, 41 (2018), 1378-1414.
- Akkaya, G.C. & Demireli, E. (2010). “Analitik Hiyerarşi Süreci İle Kredi Derecelendirme Analizi Üzerine Bir Model Önerisi”. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 19(1), 319-335.
- Araz, C., & Ozkarahan, I., (2007). “Supplier Evaluation and Management Systeem for Strategic Sourcing Based on a New Multicriteria Sorting Procedure”. *International Journal of Production Economics*, 108, 585-606
- Atan, M., Maden, U. & Akyildiz, E. (2004). “Analitik Hiyerarşi Süreci (AHS) Kullanımı İle Bir Bankada Kredi Taleplerinin Değerlendirilmesi”. 8. Ulusal Finans Sempozyumu, 26-28 Ekim, İstanbul Teknik Üniversitesi, İTÜ Maçka Kampüsü İşletme Fakültesi.
- Atan, M., & Maden, U. (2005). “Bireysel ve Kurumsal Kredibilitenin Analitik Hiyerarşi Süreci İle Çözümlemesi”. 4. İstatistik Kongresi, 8-12 Mayıs, Belek, Antalya.
- Aydemir, A.D. & Gerni, C. (2011). “Measuring Service Quality of Export Credit Agency in Turkey by Using Servqual”. *Procedia Social and Behavioral Sciences* 24 (2011) 1663-1670.
- Büyükçelebi, B. & Coşkun, M. (2015). “Ticari Kredi Taleplerinin Değerlendirilmesi Açısından Mevduat Bankaları ile Katılım Bankalarının Karşılaştırılması”. *Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 8(21), 1004-1024.
- Eximbank, (2019). “Bankamız Hakkında”. Erişim Tarihi: 01.04.2019 <https://www.eximbank.gov.tr/tr/hakkimizda/kurumsal/bankamiz-hakkinda>
- Eximbank, (2019). “Kredi Kullandırım Tutarları”. Erişim Tarihi: 01.04.2019 <https://www.eximbank.gov.tr/tr/rakamlarla-biz#krediler>, (23.03.2019).
- Girginer, N. (2008). “Ticari Kredi Taleplerinin Değerlendirilmesine Çok Kriterli Yaklaşım: Özel ve Devlet Bankası Karşılaştırılması”. *Muhasebe ve Finansman Dergisi*, 37, Ocak/2008, 132-142.
- İç, Y.T. & Yurdakul, M. (2000). “Analitik Hiyerarşi Süreci Yöntemini Kullanan Bir Kredi Değerlendirme Sistemi”. *Gazi Üniversitesi Mühendislik Mimarlık Fakültesi Dergisi*, 15(1), 1-14.
- Kök, D. & Aksu, G. (2013). “Müşteri Kredi Değerliliğinin Belirlenmesinde Analitik Ağ Süreci Kullanımı: Bir Model Önerisi”. *Muhasebe ve Finansman Dergisi*, Temmuz/2013, 167-186.
- İlter, O.C. (2006). “Analitik Ağ Süreci İle Ticari Kredi Taleplerinin Değerlendirilmesi”. *Yayımlanmamış Yüksek Lisans Tezi*, Hacettepe Üniversitesi, Fen Bilimleri Enstitüsü, Ankara.