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Investigation Of Academic Thesis And Articles Produced In The Field Of Financial Distress By Bibliometric Analysis Method In The Contex Of Turkey

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Abstract: *Exposure to financial distress in businesses adversely affects the groups related to the business and the general economic structure. Financial distress, which is one of the most important research topics in the recent finance literature, has always been important in economies with high cyclical fluctuations such as Turkey and has turned into an area where intensive studies are carried out. Since the 1990s, many theses and articles have been written on this subject. In this study, it is aimed to classify 89 researches consisting of master-doctoral thesis, articles and proceedings papers written between 1999 and 2020 in the field of financial distress in Turkey by bibliometric analysis method. According to the findings of the study, the most researched period was 2018 and 2019. While the most used model to analyze distress is logistic regression, the most used analysis program is SPSS. Bankruptcy has been the most used distress criterion. In this study, in which it was determined that machine learning models made higher accurate classification than traditional statistical models, it was determined that the most analyzed machine learning model was artificial neural networks.*

Keywords: *Financial Distress Prediction, Academic Thesis, Proceedings Papers, Bibliometric Analysis*

I. Introductıon

At the presenet time firms operate in an intensely competitive environment with the globalizing economy and rapidly developing technology. Firms that cannot adapt to this new period cannot fulfill their commitments and may even experience a process that ends in bankruptcy. Financial bankruptcy prediction has become a very important issue for company managers, employees, creditors and suppliers. Early warning systems will enable firms to overcome the financial distress process with the least damage by giving them time to take precautions. The increase in firms that are not aware of the financial distress will negatively affect the general economic structure at the macro level.

Studies on financial distress prediction have become one of the priority topics in the recent accounting and finance literature, as they can play an important role in the prevention of bankruptcy. The subject of financial distress, which started to be studied intensively around the world after the 1960s, has started to be researched in Turkey in general since the 1990s, and academics have tried to contribute to the studies in this field with theses, articles and congresses. Our main purpose in this study is to analyze these works. It is seen that the analysis of such studies is done by bibliometric analysis in the literature. The term bibliometrics, coined by Alan Pritchard, is defined as the application of mathematics and statistics to researches. This science has an interdisciplinary leadership that is based on quantitative analysis and tries to look at scientific research from a broad perspective. It has become a very important tool in fields such as economics, computer, physics, chemistry, psychology and sociology that aim to progress (Lawani, 1981; Samiee & Chabowski, 2012; Martinez, Herrera & Herrera Viedma, 2015).

In this study, it is aimed to analyze the academic thesis, proceedings papers and articles written between 1999 and 2020 in Turkey in the field of financial distress with the bibliometric method. The analyzes were categorized according to 11 questions. With the answers to the questions, studies in this field will be evaluated in many aspects. With the study, it is aimed to contribute to the researches in this field in the future by revealing the developments and current situation in the field of financial distress between the specified dates.

II. Literature Revıew

It is seen that studies on financial distress prediction started in the 1930s. Patrick (1931), who made one of the first studies in this field, examined 19 distressed and non-distressed firms operating between 1920-1929 with 13 different financial ratios. In this study, which is not a statistical analysis, it has been determined that there are differences between ditress and non-distress firms, and it has been determined that non-distress firms have positive ratio tendencies and distress firms have negative ratio tendencies.

Ramser and Foster (1931), on the other hand, examined 173 firms using 11 financial ratios and concluded that financially distressed firms had lower ratios than non-distressed firms. Merwin (1942) also examined 900 companies in his study and stated that firms started to show signs of weakness four or five years before failure (Yadav, 1986).

One of the most important studies in the literature was carried out by Altman (1968). In this study, Altman examined a total of 66 firms, 33 of which were non-distress and 33 of which were distress, using the multiple discriminant analysis method. Altman stated that firms with a Z score greater than 2.99 are in a safe zone where there is no risk of financial distress. Firms with a Z score between 1.81 and 2.99 also stated that they are in the gray zone where the risk of financial distress is not very high. Finally, firms with a Z-score below 1.81 were identified as companies with a high risk of financial distress. Altman's study showed 95% accuracy performance for 1 year prior to distress and 72% accuracy performance for 2 years prior to distress.

Springate (1978) used multivariate discrimination analysis in his study. With this study, a model has been developed over 4 basic ratios to identify distress and non-distress firms. In the Springate model, a Z-value is calculated that considers businesses with a value less than 0.862 distressed. In this study, in which 40 firms were examined by random sampling, the accuracy of the model was calculated as 92.5% (Aydın, Başar, & Çokun, 2010).

Ergin (1999) compared multivariate decoupling analysis and artificial neural networks in predicting financial distress. The aim of the study is to identify firms one year prior to distress, with a sample of 106 firms, 53 distess and 53 non-distress, operating in Borsa Istanbul and subject to the SPK between 1983-1997. As a result of the study conducted with 15 variables, it was determined that the multivariate separation analysis classified the sample data with 83.33% accuracy, while the artificial neural networks had an accuracy of 94.44%.

Aktaş, Doğanay and Yıldız (2003) aimed to identify a total of 106 businesses, 53 successful and 53 unsuccessful, registered with the CMB or traded in Borsa Istanbul between 1983-1997 in Turkey, 1 year before they distressed financially. In the study in which Multiple Regression Analysis, Discriminant Analysis, Logit Analysis and Artificial Neural Networks were used, Multiple Regression and Logit models were found to be more successful than the Discriminant model. In this study, where multiple regression and Logit had a prediction of 78%, the most successful model was Artificial Neural Networks with an accuracy rate of 95.71% on training and 86.11% on the test group.

Torun (2007) examined 203 firms operating in Borsa Istanbul between 1992-2004 with the help of 26 financial ratios, and for this, used models Discriminant Analysis, Logistics regression and Artificial Neural Networks. In this study, which tries to find the most appropriate method to predict distress by comparing Artificial Neural Networks with traditional statistical methods, it has been determined that the method with the best performance 1 and 2 years before the distress is Artificial Neural Networks.

Salur (2015) aimed to measure the prediction accuracy of the model by developing a model for estimating the financial situations of companies traded in Borsa Istanbul using artificial neural networks. In the study, a total of 142 firms, 72 of which were distressed and 72 of which were non-distressed, operating in Borsa Istanbul between 2008-2013 were examined. It has been determined that the correct classification rate of the Artificial Neural Networks model is 95.83%.

Kiracı and Asker (2018) tried to determine the risks of financial distress by applying Altman Z Score, Springate S Skor model to the financial data of 17 airline companies that applied cost leadership strategy for the period 2012-2016. As a result of the study, it was determined that some airlines were successful in managing the risks of financial distress, while others were not successful enough.

Sevim and Paslı (2018) analyzed the factors causing financial distress by applying a questionnaire to the top 12 managers who work at 4 and 5 star hotels operating in the Eastern Black Sea region with the DEMATEL method. In this study, which was conducted with 7 factors, it was also concluded that management errors were the most important financial distress indicators, and the scale of the enterprise, the factors of decrease in sales and revenues were the most affected factors from the others.

Ceran and Bülbül (2019) analyzed the data of companies in the manufacturing industry sectors traded on Borsa Istanbul (BIST) between 2008 and 2016. 140 firms, 70 of which were distressed and 70 of which were non-distressed, were examined. By using artificial neural networks and support vector machines, distressed firms were tried to be detected from 1, 2 and 3 years prior to distress. As a result of the study, it was mentioned that both models gave successful results and the scarcity of analyzes made with the support vector machine was mentioned.

In this study, 89 academic research on financial distress prediction models in Turkey were examined (Söylemez, 2018: İçerli, 2005: Aksoy, 2018: Salur, 2015: Yakut, 2012: Ural, 2020: Güngör, 2019: Çelik, 2009: Torun, 2007: Ergin, 1999: Aktaş, Doğanay ve Yıldız, 2003: İçerli ve Akkaya, 2006: Dizgil, 2018: Ertan ve Ersan, 2019: Ağırman, 2018: Kul, 2012: Börüban, 2009: Uyar, 2019: Gökdemir, 2015: Şaşmaz, 2019: Paket, 2014: Şengören, 2019: Akdeniz, 2018: Aktümsek, 2018: Civan ve Dayı, 2014: Büyükarıkan ve Büyükarıkan, 2014: Akkaya, Demireli ve Yakut, 2009: Ceran ve Bülbül, 2019: Taşpınar Cengiz, Bağdatlı Kalkan, Turanlı ve Köse, 2015: Selçik, 2019: Hesarı, 2018: Ural, Gürerda ve Önemli, 2015: Karadeniz ve Öcek, 2019a: İslamoğlu ve Çankaya, 2018: Terzi, 2011: Turaboğlu, Yıkılmaz Erkol ve Topaloğlu, 2017: Kısakürek, Arslan ve Bircan, 2018: Yürük ve Ekşi, 2019: Geyikçi ve Karaa, 2016: Poyraz ve Uçma, 2006: Özdemir, 2014: Muzır ve Çağlar, 2009: Giray Yakut ve Bacaksız, 2020: Akyüz, 2020: Soba, Akyüz ve Uğurcan, 2016: Umut, 2020: Bağcı ve Sağlam, 2020: Güriş, Çağlayan Akay, Ün ve Kızılarslan, 2017: Kiracı ve Asker, 2018: Sezgin, 2016: Gör, 2016: Yazıcı, 2018: Büyükarıkan ve Büyükarıkan, 2018: Toraman ve Karaca, 2016: Akyüz, Yıldırım, Akyüz ve Tugay, 2017: Aksoy ve Boztosun, 2018: Türk ve Kurklu, 2017: Bulut ve Şimşek, 2018: Yakut ve Elmas, 2013: Aksoy ve Boztosun, 2019: Baş ve Çakmak, 2012: Güler Çalık ve Aytekin, 2018: Ege, Topaloğlu ve Yıkılmaz Erkol, 2017: Yakıcı Ayan ve Değirmenci, 2018: Kılıç ve Seyrek, 2012: Ece ve Oner, 2018: Akpınar ve Akpınar, 2017: Çavuş ve Başar, 2020: Vatansever ve Aydın, 2014: Selimoğlu ve Orhan, 2015: İloğlu, 2020: Çelik, M. S. 2020). Each work was transferred to Microsoft Excel program and subjected to bibliometric analysis.

III. Purpose, Method And Limitations

3.1. Purpose

In this study, it is aimed to classify all academic theses, proceedings papers and articles by bibliometric analysis method in the database of Turkish Higher Education Council National Thesis Center, Google Scholar and Journal Park , written between 1999 and 2020 in the field of financial distress in Turkey. For this purpose, answers to the following questions will be sought.

a- What are the types of Studies reviewed?
b- What are the classification models used for data analysis in studies?
c- What are the data sources and training test model rates used in the studies?
d- What are the programs used for data analysis in studies?
e- What are the distribution statistics of the studies according to the publication year?
f- What are the number of companies examined in the studies?
g- What are the financial ratio numbers used in the studies?
h- What are the successful and unsuccessful company codes used in the studies?
i- What are the failure criteria in the studies?
j- What are the traditional statistics and data mining accuracy rates in the studies?
k- Which programs were used to test the significance of the studies?

3.2. Method

Within the scope of the study, 37 academic theses, 4 proceedings papers and 48 academic articles were handled according to the bibliometric analysis method. The first phase of the research started with the search for keywords such as "financial failure", "financial failure prediction, "bankruptcy", "early warning systems", "financial failure" in the National Thesis Center of the Council of Higher Education, Journal park and Google academic databases. Thesis, proceedings papers and articles that met the required criteria were collected in a data pool and transferred to Microsoft Excel program. The following information is written in each column of this program one by one; type of research, university where the thesis was published, journal in which the article was published, classification models used in studies, data sources, training test-model ratios used in studies, programs used for data analysis, number of firms, number of ratios, firm codes, significance test, failure criteria, year of publication. In order to answer the 11 questions created after the information was categorized, the necessary data were drawn from the Excel program and tables were created.

3.3. Limitations

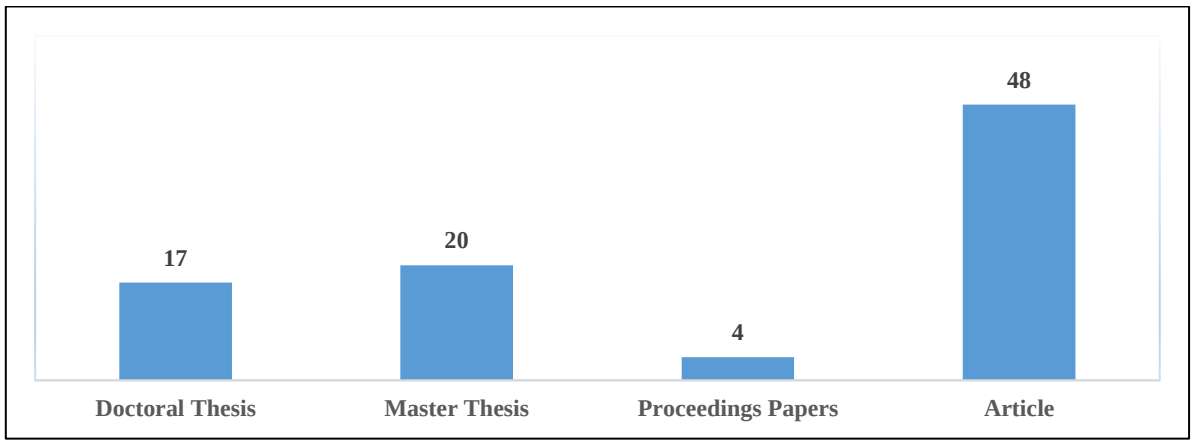
The first limitation of the study was that only the Turkish Higher Education Council National Thesis Center, Dergi Park and Google Scholar database were used. The second limitation is the use of keywords "financial distress", "financial failure prediction, "bankruptcy", "early warning systems", "financial failure" in thesis and article searches. Another limitation of the study is that only financial failure studies conducted in Turkey were examined, and studies conducted outside Turkey were excluded.

IV. Findings

4.1. Classification Of Types Of Researhes

17 doctoral and 20 master's theses were reached by using keywords from the website of the National Thesis Center for Higher Education. 4 proceedings papers and 48 articles were reached from Google academic and Dergi Park. In this study, 89 researches were examined in detail in terms of bibliography and arranged in the form of graphs and tables with the Excel program.

Table 1. Classification Of Types Of Researches



It is seen that the most academic thesis work in the field of financial distress is done by Marmara University. It is seen that this university is followed by Dokuz Eylül University, Süleyman Demirel University, Erciyes University and Dumlupınar University.

Tablo 2. Frequencies of Financial Distress Theses Published by Universities

	Count		Count
Marmara University	6	İstanbul University	1
Dokuz Eylül University	4	Gediz University	1
Süleyman Demirel University	2	Gaziosmanpaşa University	1
Erciyes University	2	Gazi University	1
Dumlupınar University	2	Cumhuriyet University	1
Ankara University	2	Başkent University	1
Yaşar University	2	Balıkesir University	1
Niğde Ömer Halisdemir University	1	Atatürk University	1
Muğla Sıtkı Kocaman University	1	19 Mayıs University	1
Kırıkkale University	1	İnönü University	1
Karadeniz Teknik University	1	Eskişehir Osmangazi University	1
Kadir Has University	1	TOBB University	1

Journal of the World of Accounting Science has been the journal that has published the most articles in the field of financial distress. This journal was followed by Anadolu University Journal of Social Sciences, Finance, Politics and Economic Reviews, Journal of Forestry and International Economic and Administrative Reviews.

Table 3. Journals of Articles Published

	Count
The World of Accounting Science	7
Anadolu University Journal of Social Sciences	2
Finance, Politics and Economic Reviews	2
Journal of Forestry	2
Marmara University Journal of Economics and Administrative Sciences	2
Journal of Finance Letters	2
Celal Bayar University Journal of Social Sciences	1
Çukurova University Journal of the Faculty of Economics and Administrative Sciences	1
Gümüşhane University Institute of Social Sciences Electronic Journal	1
Journal of the Human and Social Sciences Research	1
Istanbul University Faculty of Economics Journal of Econometrics and Statistics	1
Journal of Chemical Information and Modeling	1
Journal of Research in Economics	1
Journal of Afyon Kocatepe University Faculty of Economics and Administrative Sciences	1
Academic Perspective International Reviewed Journal Of Social Sciences	1
Ankara University Journal of Social Sciences	1
Ataturk University Journal of Economics and Administrative Sciences	1
Eurasian Journal of Social and Economic Research	1
Bilecik Şeyh Edebali University Journal of Social Sciences	1
Business and Economics Research Journal	1
Dumlupınar University Journal of Social Sciences	1
Ege Academic Review	1
Eskişehir Osmangazi University Journal of Social Sciences	1
Journal of Financial Researches and Studies	1
Hacettepe Journal of Health Administration	1
Journal of Hacettepe University Faculty of Economics and Administrative Sciences	1
Journal of Business Research Turk	1
Journal of Research in Economics	1
Journal of Tourism Theory and Research	1
Journal of Kahramanmaraş Sütçü İmam University Faculty of Economics and Administrative Sciences	1
Mukaddime	1
The Journal of Travel and Hotel Business	1
Social Sciences Research Journal	1
Uşak University Journal of Social Sciences	1

4.2. Classification Models

The logistic regression model is the most used model in the analysis. This model, which was used in 28 studies, was followed by the Discriminant model with 26 studies, Artificial Neural Networks with 25 studies, and Altman Z Score model with 23 studies. Springate and Decision Tree model were the other models that were analyzed the most, respectively.

Table 4. Models Used in Financial Distress Studies

Sıra	Yöntem	Adet	Sıra	Yöntem	Adet
1	Logistic Regression	28		Tobin's Q	2
2	Diskriminant Model	26		Black-Scholes-Merton Mod.	1
3	Artificial Neural Networks	25		CA Score Model	1
4	Altman Z Score	23		CHAID Algorithm	1
5	Springate	11		Cox Regression	1
6	Decision Tree	8		Multiple Regression Analysis	1
7	Factor Analysis	7		K-nearest neighbors	1
8	Support Vector Machines	6		KMV Model	1
9	Fulmer	6		Mann Whitney U test	1
10	Logit Model	3		Multivariate Probit Model	1
11	CART	2		Panel Data Analysis	1
12	Cox Model	2		Probit	1

13	Grey Relation Analysis	2	Random Forest	1
14	Ohlson	2		

4.3. Financial Distress Studies by Data Source and Training-Testing Classification

The data of approximately 87 percent of the studies originate from BIST. It is estimated that most of the researchers use BIST data since it is very difficult to access the data of non-public companies. Another review was on the classification of the collected data as testing and training. The majority of studies chose the 70 percent training and 30 percent testing method.

Table 5. Financial Distress Studies by Data Source and Training-Testing Classification

Data Source	Count	Rate of training-testing	Count
BİST	69	%50-50	1
Bank	5	%60-40	2
Airline	4	%70-30	11
İnsurance	1	%80-20	4

4.4. Financial Distress Studies by Analysis Program

It is seen that most of the analyzes were made with the Spss program. This program was followed by Matlab, R and Clementine programs, respectively.

Table 6. Financial Distress Studies by Analysis Program

The program used	Count	The program used	Count
Spss	17	Python	1
Matlab	5	Pasw	1
R	3	NeuralWorks Predict	1
Clementine	3	MedCalc	1
Stata	2	Eviews	1
Neuro Solution	2	Alyuda Neuro İntell.	1
Release	1	Thinkspro	1
Rapidminer	1		

4.5. Financial Distress Studies Based on the Year Investigated

The distribution of researches by years is shown in Table 7. The most reviewed years were 2018 and 2019. Due to the internal and external problems experienced in the Turkish economy, economic data (exchange rate, interest rates and inflation) started to deteriorate in this period. For this reason, it is seen that the number of studies conducted in the relevant period has increased.

Table 7. Financial Distress Studies Based on the Year Investigated

Research Period	Count	Research Period	Count
1999	1	2013	2
2003	1	2014	6
2005	1	2015	6
2006	2	2016	6
2007	2	2017	4
2009	4	2018	19
2010	3	2019	14
2011	3	2020	8
2012	4		

4.6. Financial Distress Studies by Number of Firms

In the studies, it is seen that different numbers of firms data are examined. FİNANCİAL DİSTRESS predictions of 100 companies were tried to be made in 4 studies. This was followed by studies examining 6, 25, 75, 106 and 140 firms with 3 studies each. When the data in Table 8 are examined, it has been determined that an average of 72.12 firms per research are examined.

Table 8. Financial Distress Studies by Number of Firms

Number of firms	Number of Research	Number of firms	Number of Research	Number of firms	Number of Research
100	4	11	1	97	1
6	3	14	1	124	1
25	3	16	1	126	1
75	3	20	1	136	1
106	3	24	1	143	1
140	3	28	1	144	1
22	2	30	1	160	1
35	2	34	1	166	1
80	2	37	1	176	1
86	2	38	1	178	1
120	2	40	1	203	1
137	2	46	1	206	1
156	2	52	1	208	1
175	2	58	1	228	1
8	1	70	1	355	1
9	1	84	1	489	1
10	1	90	1		

4.7. Financial Distress Studies by Number of Ratios Used

Table 9 shows how many financial ratios the reviewed studies used to determine financial distress. 5 studies used 25 financial ratios in their analyses, and 3 studies each used 26, 23 and 21 financial ratios. The average financial ratio used in all studies was determined as 16.46. A total of 616 financial ratios were used in a total of 37 studies.

Table 9. Financial Distress Studies by Number of Ratios Used

Number of ratios	Number of studies	Number of ratios	Number of studies
7	1	23	3
8	1	24	1
9	1	25	5
10	2	26	3
13	1	27	1
14	1	28	2
15	1	28	2
18	1	40	1
19	1	42	1
20	1	43	1
21	3	50	1
22	1	84	1

4.8. Financial Distress Studies Based on Coding Type

In the researches, it is seen that most of the distressed firms are coded with zero, while successful firms are coded with 1. While there is no non-distressed company study coded with 2, it is seen that distressed companies are coded with 2 in 3 studies.

Table 10. Financial Distress Studies Based on Coding Type

Non-distressed Firms		Distressed firms	
Kod	Number of studies	Kod	Number of studies
1	22	0	19
0	6	1	6
		2	3

4.9. Financial Distress Studies by Failure Criteria

One of the most important issues in financial distress prediction model studies is the determination of financial failure criteria or criteria. Failure criteria are very important for the results of the research to be healthy.

Table 11. Financial Distress Studies by Failure Criteria

Row	Criteria of distress	Number of studies
1	Bankruptcy	16
2	Loss for two consecutive years	15
3	Loss for three consecutive years	15
4	Altman Z Score	9
5	A decrease of at least 10% in the total assets	8
6	To stop activities	7
7	Transfer to the detention market	7
8	2/3 decrease in equity	7
9	Exit from BIST	6
10	Loss of previous years exceeding 10% of total assets	4
11	Having negative capital	4
12	Losing half of the capital	2
13	To go into default	2
14	Loss making firms	2
15	91 days late payment	2
16	Debt over assets	1
17	To be closed in the stock market	1
18	Low rating note	1
19	Fulmer	1
20	Make a gain or a loss	1
21	Rejection of a Loan Offer	1
22	Equity having a negative value	1

Bankruptcy, making a loss for three or two consecutive years, a decrease of at least 10% in the total assets and Altman Z score are among the failure criteria used in financial failure studies.

4.10. Financial Distress Studies by Method Groups

In the studies examined, 15 works were identified that used both machine learning and traditional statistical methods. When the accuracy of the models is examined, it is seen that machine learning methods yield more successful results by approximately 86 percent.

Table 12. Financial Distress Studies by Method Groups

Traditional statictic-Data mining	Count	Data mining Metods	Count
Machine learning	13	Artificial neural networks	11
Traditional statictic	2	CART	2

	Decision tree	3
	SVM	1

Machine learning methods were reanalyzed within themselves. It has been determined that artificial neural networks are the model that finds the most successful results with a rate of approximately 66 percent.

4.11. Financial Distress Studies by Significance Test

It is seen that Kolmogorov-Smirnov and Stepwise regression are mostly used as significance tests in financial distress studies. These were followed by the Mann-Whitney U test and the Shapiro wilks test, respectively.

Table 13. Financial Distress Studies by Significance Test

Significance test	Count	Significance test	Count
Kolmogorov-Smirnov	4	Least Squares Method	1
Stepwise	4	MDA Stepwise	1
Mann-Whitney U test	3	MSE	1
Shapiro Wilks	3	Omnibus test	1
Factor Analysis	2	RMSE	1
AIC (Akaike Knowledge Criterion)	1	Spearman Correlation	1
Discriminant	1		

V. Conclusıon

In this study, in which academic thesis, papers and articles between 1999 and 2020 in the field of financial failure in Turkey are examined with a bibliometric analysis, the type of data, classification models, data sources, training testing rates, publication years, number of companies examined, number of financial ratios used, failure criteria, successful and unsuccessful company codes, significance tests and data mining and traditional statistical distinctions are examined. The aim of the study is to contribute to the activities of providing and directing intellectual accumulation in the field of financial distress in the future.

As a result of the analysis, Marmara University is the institution with the most research in this field with 6 academic theses, and it is seen that 30 percent of the academic theses are made in this university. The World of Accounting Science was also the journal that published the most articles. Approximately 15 percent of the articles published in this field were published in this journal.

The selection of the model to be used in the prediction of failure is extremely important. Determining which model is suitable for the data has a direct effect on the results. When the studies are examined, it is seen that the most researched statistical model is logistic regression, discriminant analysis, artificial neural networks and Altmaz Z Score model. The number of studies with other models is very few. We believe that giving more space to other models in these studies, where the aim is to find the model that makes the highest correct classification, will be beneficial for the course of future studies.

In the studies examined, it is seen that approximately 87 percent of the data is obtained from companies listed on the BIST. This shows that the studies in this field are concentrated on large corporate or commercial companies. However, it is seen that the individual and SME sector, which constitutes approximately 60 percent of the economic sector in Turkey, cannot receive a sufficient share from these researches. Spss was the most used analysis program in analyzes. Another result is that in most of the studies, 70 percent of the data is allocated to training and 30 percent to the testing group. This shows that it is desired to get results on the test set by learning the training set better with more data.

It is seen that the most researched period is 2018 and 2019. We believe that the large number of concordat decisions issued by the competent courts in 2018 has directed all commercial organizations and researchers to this field. We believe that it would be more beneficial to spread financial distress studies over longer years instead of a certain period in economies with high cyclical fluctuations like our country. Because, although each period has its own conditions, it is thought that it would be more useful to compare the results of the research to be carried out in periods of different economic conditions.

The number of financial ratios to be used in research is also one of the critical issues. Because in the data analysis, the financial ratios that find the result with the highest accuracy are selected from these data, which are called independent variables, by the feature selection method, and the analyzes are continued. When

the studies were examined, 25 financial ratios were examined in 5 studies and 21, 23 and 26 financial ratios were examined in 3 studies. In other studies, it is seen that different numbers of financial ratios are included.

The selection of failure criteria is also extremely important for financial distress research. Because an error in the failure criterion will make the research results controversial. In the studies, it is seen that the most used criterion is bankruptcy. Loss for two and three years in a row was the second important criterion used. However, when the studies are examined, the names of 5-6 criteria are generally mentioned for the failure criterion and the business that has one of them is considered unsuccessful. The reason for this is that the data is mostly selected from BIST. Since there were not enough unsuccessful companies in the companies listed in the BIST, the number of unsuccessful companies was tried to be increased with additional criteria.

It is seen that non-distressed firms are mostly coded with "1", while distressed firms are coded with "0". Distressed firm coded with "2" were found. For the significance test, the most used models were Komogorov-Smirnov and Stepwise. The test of significance is a method used to select the important ones among the primary financial ratios and is often used in financial distress studies.

With this bibliometric study, it is aimed to look at the financial distress studies in Turkey from a broad perspective. A general profile of the examined works was made. In this way, it is thought that it will serve science by giving ideas for future research.

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