-RESEARCH PAPER-

THE USE OF CASH FLOW STATEMENT IN PREDICTING BUSINESS FAILURE: EVIDENCE FROM AN EMERGING MARKET

Ahmet ÖZCAN[1]

Abstract

In the competitive economic environment, cash flow statement reveals prominent information about firms. The aim of the present study is to examine the usefulness of cash flow statement in the prediction of business failure by using a sample including 66 firms listed on Borsa Istanbul from 2010 to 2018. A total of 33 non-failed firms are matched with 33 failed firms based on size and industry. In the present study, logistic regression models are constructed for each of three years prior to business failure. The empirical findings of this study indicate that cash flow measures are strong predictors of business failure.

İŞLETME BAŞARISIZLIĞININ TAHMİN EDİLMESİNDE NAKİT AKIM TABLOSUNUN KULLANIMI: GELİŞMEKTE OLAN BİR PİYASADAN BULGULAR[2]

Öz

Rekabetçi ekonomik ortamda, nakit akım tablosu şirketler hakkında önemli bilgiler vermektedir. Bu çalışmanın amacı, 2010'dan 2018'e kadar Borsa İstanbul'da listelenen 66 firmaya ait verileri kullanarak, nakit akım tablosunun işletme başarısızlığının tahmin edilmesindeki etkisini incelemektir. Lojistik regresyon analizi kullanılan bu çalışmada, 33 başarısız firma, 33 başarılı firma ile büyüklük ve sektör bazında eşleştirilmiştir. Bu çalışmada, işletme başarısızlığını tahmin etmek için, nakit akım tablosundan elde edilen veriler kullanılarak lojistik regresyon modelleri oluşturulmuştur. Regresyon analizinin sonuçları, nakit akım tablosunun işletme başarısızlığının tahmin edilmesinde önemli yararları olabileceğini göstermektedir.

1-   Dr. Öğr. Üyesi, Adana Alparslan Türkeş Bilim ve Teknoloji Üniversitesi, İşletme Fakültesi, Yönetim Bilişim Sistemleri Bölümü, Adana /Türkiye, aozcan@atu.edu.tr, https://orcid.org/0000-0002-9021-6096
2-   Genişletilmiş Türkçe Özet, İngilizce makalenin aşağısında yer almaktadır.

1. INTRODUCTION

In the modern business environment, financial market participants demand more detailed accounting information to comprehensively analyze the financial position and performance of firms from various perspectives. When firms suffer from financial distress, cash position of firms grabs too much attention from investors and creditors. Cash is considered to be the highest quality asset owned by a firm. Cash flow management plays a prominent role in firms' survival.

On December 1992, IASB issued IAS 7 Statement of Cash Flows. According to IAS 7 Statement of Cash Flows, firms are required to prepare a statement of cash flows at the end of accounting period. Cash flows are divided into three parts; operating activities, investing activities and financing activities. Direct method and indirect method can be employed by firms in the preparation of cash flow statement. IAS 7 states that direct method for operating cash flows is much more appropriate than indirect method. This is because direct method enables financial market participants to more accurately forecast future cash flows.

For many years, IASB has attempted to enhance the effectiveness of cash flow statement. The comparability of firms' balance sheet and profit and loss statement cannot be achieved because of high flexibility in the selection of accounting policies. On the other hand, there is a low flexibility in the selection of accounting policies in the preparation of cash flow statement. For this reason, a higher level of comparability between firms' cash flow statement can be achieved.

Profit and loss statement and balance sheet yield limited information to the financial market participants. Unlike balance sheet and profit and loss statement, cash flow statement is cash-based. Past economic turmoils erode the investors' trust in accrual-based accounting numbers.

Financial market participants should use cash flow statements together with other financial statements in order to make more rational and accurate investment decisions. The level of economic stability, cash management policy and industry in which the firm operates have huge impacts on the structure of cash flow statement.

Cash flow statement is used by financial market participants to evaluate how well a firm generates cash inflows. Rujoub et al. (1995) stated that cash flow statement is the lifeblood of a firm and very important for its existence. Cash flow statement can also inform about the possible risks that may threat the viability. The problems in cash flow management lead business failure or even bankruptcy. Effective cash flow management enables firms to get utmost benefits from their economic resources. Jooeste (2006) asserted that the information provided by cash flow statement reflects financial performance better than traditional earnings. Moreover, Krishnan and Largay (2000) stated that cash flow statement has a huge impact on the valuation analysis of a firm.

In the emerging economies, the link between cash flow statement and business failures has not been well documented. In the present study, four hypotheses are formulated to test the usefulness of cash flow statement in the prediction of business failure. The present paper aims to contribute the limited literature on the link between cash flow statement and business failures in the emerging economies by using a multivariate model. The results of this study are expected to provide important implications for regulatory bodies, investors and creditors.

The rest of the paper is structured as follows. The first section explains literature review and hypothesis development. The research design is presented in the second section. Third section discusses the results of empirical analysis. In the last section of the study, conclusion and recommendation for future studies are presented.

1.1. Literature Review and Hypothesis Development

In this section of the paper, literature review and hypothesis development are presented. Following numerous business failures, a large number of models that aim to predict business failure have been introduced. Most of these models use regression analysis. However, in the recent years, machine learning models such as artificial neural networks, decision trees and bayesian networks are increasingly used to predict business failures. These models primarily aim to provide early warning signals for investors, creditors and firm management.

Charitou et al. (2004) examined the usefulness of operating cash flow in the prediction of financial distress. Using the financial statement data of 51 failed and 51 non-failed firms operating in the United Kingdom, they found that operating cash flow significantly boosts the discriminatory power of failure prediction models. Gentry et al. (1987) claimed that cash flow based ratios are strong alternative to accrual based ratios when analyzing the financial position of firms.

Mazouz and Gambrel (2013) employed neural network models to analyze the discriminatory power of cash flow measures in the business failure prediction. They concluded that cash flow based model has superior performance than accrual based model. Foster and Ward (1997) used the financial statement data of 317 firms to develop an empirical model that can accurately predict business failure. They claim that failed firms suffered from a tremendous decrease in cash flows from operating activities before the business failure.

Wagner (2003) used cash flow ratios to predict bankrupt firms. Using a multivariate model, the study found that operating cash flow is a useful indicator of bankruptcy. The model correctly classified 67 percent of bankrupt firms. Gupta et al. (2014) analyzed the usefulness of cash flow measures in the prediction of business failures by using a sample that contains 2666 failed firms over the period between 2000 and 2009. They found that the ratio of cash flow from operation to current liabilities significantly enhances the prediction power of business the failure model.

Ooghe and Prijcker (2008) reported that firms with low cash flow are likely to face liquidity problems and a high leverage ratio inevitably causes financial distress. Muller et al. (2009) established a business failure model including cash flow measures by using the financial statement data of firms listed on Johannesburg Stock Exchange. The model

succeeded in accurately classifying 77 percent of sample firms.

Bhandari and Iyer (2013) analyzed the usefulness of measures based on cash flow statement in the prediction of business failure by using a sample consisting of 50 failed and 50 non-failed firms during the period between 2008 and 2010. The empirical model they constructed correctly classifies 79.5% of sample firms. Barua and Saha (2015) compared the usefulness of cash flow measures and traditional measures in the prediction of financial strength of firms listed on Dhaka Stock Exchange. Fifteen cash flow measures are used in the empirical analysis. They concluded that cash flow measures are better indicators of financial strength than traditional measures.

Almamy et al. (2016) employed a discriminant model to analyze the financial health of firms operating in the United Kingdom. By analyzing the data of ninety failed firms, they found that Z-score modified by adding cash flow measures provides better results for financial market participants. Shamsudin and Kamaluddin (2015) analyzed the cash flow patterns of sixty-two failed firms and sixty-two non-failed firms operating in Malaysia. They found that firms suffering from unstable cash flow pattern are more likely to go bankrupt.

Rujoub et al. (1995) examined the structure of cash flow statement of 33 failed and 33 non-failed firms. They claimed that cash flow measures outperform accrual based measures in the prediction of business failures and the predictive power of accrual based measures significantly increases when cash flow measures are added. Stice et al. (2017) claimed that many profitable firms went bankrupt due to cash flow problems. They suggested that firms should effectively analyze the structure of cash flow statement to succeed their strategic objectives.

Raja et al. (1980) employed a discriminant model to examine financial statement data of 15 non-failed firms and 21 failed firms during the period between 1972 and 1978. According to the results of discriminant analysis, the ratio of cash flow to total debt is the most significant variable. Kieso et al. (2013) support the assertion that cash flow statement reveals critical information regarding firms' liquidity, financial flexibility and solvency.

Güriş et al. (2017) examined the factors affecting the business failures of firms listed on Borsa Istanbul. They analyzed financial statement data of 175 firms operating in manufacturing industry through a multivariate probit model. The results of empirical analysis revealed that current ratio, current liabilities and equity can be used in predicting business failures.

Ural et al. (2015) employed a logistic regression model to predict financial failures of firms operating in food, beverage and tobacco industry. Three different logistic regression model are used and the predictive power of these models ranges between 74.5% and 91%. They concluded that the developed logistic regression model is a useful tool for the prediction of financial failures.

Zeytinoğlu et al. (2013) used twenty financial ratios to predict financial failures of firms listed on Borsa Istanbul over the period between 2009 and 2011. They employed discriminant analysis to construct a reliable model that can effectively predict business failures. The results of discriminant analysis indicate that the ratio of net working capital

to total assets and capital adequacy are statistically significant in all models. On the other hand, Casey and Bartczak (1985) used financial statement data of 60 failed firms and 230 non-failed firms in the empirical analysis and concluded that cash flow measures fail to enhance the power of accrual-based models.

Seven financial measures are derived from cash flow statement in this study. Liquidity problem is one of the major reasons for the business failure. A firm should have strong liquidity position to survive in the competitive business environment. To measure the level of liquidity, the ratio of cash flow from operations to current liabilities is used in the empirical model. This ratio enables us to compare actual cash flow from operations with short-term debts. Generally speaking, the higher ratio of cash flow from operations to current liabilities, the stronger liquidity position. This discussion leads to the following hypothesis.

H1: There is a statistical significant relationship between the ratio of cash flow from operations to current liabilities and business failure.

Cash flow margin is used to analyze the ability of a firm to convert sales transaction into cash. Cash flow margin is the ratio of cash flow from operations to net income. This ratio provides a comparison of accrual net income and cash inflow from operations (Rujoub et al., 1995). Bhandari and Iyer (2013) claim that cash flow margin ratio is much more useful measure than accrual based measures such as net profit margin. Investors and creditors can use cash flow margin to evaluate the quality of corporate earnings. Quality of earnings has massive impacts on the firm survival. Firms should have high quality earnings to ensure sustainable growth in the long-run. Therefore, second hypothesis is formulated as follows;

H2: There is a statistical significant relationship between cash flow margin and business failure.

The ratio of cash flow from operations to total assets is used in the empirical model to analyze the productivity of total assets of a firm. This ratio informs financial market participants about cash generating ability of total assets (Barua and Saha, 2015). Firms that effectively use assets in generating cash are less likely to suffer from business failures. Higher ratio of cash flow from operations to total assets significantly enhances the financial flexibility of a firm (Rujoub et al., 1995). Moreover, the ratio of cash flow from operations to total assets enables the firm management to eliminate ineffective assets. Therefore, the third hypothesis is formulated as follows;

H3: There is a statistical significant relationship between the ratio of cash flow from operations to total assets and business failure.

Firms operating in emerging markets rely more on debt financing than equity financing. For these firms, it is highly critical to pay off interest obligations. If a firm fails to make interest payments, it may face bankruptcy. Cash interest coverage, proxied by the ratio of cash flow from financing to interest expense, is used in the empirical model to assess the ability of a firm to service interest payments. Firms with low cash interest coverage are more likely to default on interest payments. In other words, cash interest coverage can be viewed as a solvency ratio. Therefore, the following hypothesis is formulated as follows;

H4: There is a statistical significant relationship between cash interest coverage and business failure.

2. METHOD

2.1. Variables

In this section of the study, data and variables employed in the logistic regression model are provided. In the selection of research variables, this paper follows Jantadej (2006), Bhandari and Iyer (2013), Rujoub et al. (1995) and Shamsudin and Kamaluddin (2015). A total of 1386 firm-year observations over the period between 2010 and 2018 are collected from the financial statements and annual reports of sample firms. Each of failed firms is matched to a non-failed firm based on industry and asset size. Financial firms are excluded from the sample due to vastly different balance sheet structures.

In the empirical model, business failure is the one single dependent variable. In the literature, business failure has been expressed in various ways. Cultrera and Brédart (2016) view business failure as bankruptcy. On the other hand, Celli (2015) defined business failure as discountenance of ownership, bankruptcy and delisting from stock exchange. In the present paper, business failure is defined as delisting from stock exchange, experiencing bankruptcy and liquidation. A wide definition of business failure is followed. Table 1 shows the definition of dependent and independent variables.

Table 1. Definition of Research Variables

Dependent Variable	Definition
BF	Business failure, a dummy variable that takes value of 1 when a firm does not fail, otherwise 0.
Independent Variables	
OCF/CL	The ratio of cash flow from operations to current liabilities
OCF/NI	The ratio of cash flow from operations to net income
OCF/TA	The ratio of cash flow from operations to total assets
FCF/INT	The ratio of cash flow from financing to interest expense
CF1	A dummy variable that takes value of 1 if the sample firm generates positive operating cash flow, otherwise 0
CF2	A dummy variable that takes value of 1 if the sample firm generates positive investing cash flow, otherwise 0
CF3	A dummy variable that takes value of 1 if the sample firm generates positive financing cash flow, otherwise 0

Table 2 presents the industry classifications of sample firms. According to table 2, the dataset covers 66 firms operating in five different industry; metal products, food, beverage and tobacco, textile, construction, agriculture. The majority of business failures occur in metal products (39%) and food, beverage and tobacco industry (30%). On the other hand, six percent of sample firms are involved in agriculture industry.

Table 2. Industry Classifications of Sample Firms

	Failed firms		Non-failed firms	
Industry	**Number**	**Percentage**	**Number**	**Percentage**
Metal Products	13	0.39	13	0.39
Food, Beverage and Tobacco	10	0.30	10	0.30
Textile	5	0.15	5	0.15
Construction	3	0.09	3	0.09
Agriculture	2	0.06	2	0.06
Total	33	100	33	100

2.2. Empirical Model

The following logit model is established to examine the usefulness of cash flow statement in the prediction of business failures. The success of empirical models that aim to forecast failed firms strongly depends on the choice of independent variables. To test the research hypotheses, seven different independent variables are used in the empirical model. In this study, empirical models are constructed for each of three years prior to business failure. Three different logistic regression analysis are run.

$$BF_i = \beta_0 + \beta_1 (OCF/CL)_{it} + \beta_2 (OCF/NI)_{it} + \beta_3 (OCF/TA)_{it} + \beta_4 (FCF/INT)_{it} + \beta_5 (CF1)_{it} + \beta_6 (CF2)_{it} + \beta_7 (CF3)_{it}$$

3. RESULTS

3.1. Descriptive Statistics

The means, standard deviations, minimum and maximum values for research variables used in the prediction models during one, two and three years before business failure are reported in table 3, panels A through D. Panel A shows the descriptive statistics of 1386 firm-year observations from 2010 to 2018 for 33 failed and 33 non-failed firms listed on Borsa Istanbul. Table 3 indicates that OCF/CL, OCF/NI, OCF/TA and FCF/INT ratios are largely different for failed and non-failed firms. In the full sample, the average OCF/CL, OCF/NI, OCF/TA and FCF/INT ratios of non-failed firms is considerably higher than those of failed firms, implying that failed firms are unable to effectively generate cash inflows from operating and financing activities.

Failed firms in the full sample, on average, have: (1) the positive OCF/CL, (2) the negative OCF/NI, (3) the positive OCF/TA, (4) the positive FCF/INT, (5) the positive CF1, (6) the positive CF2 and (7) the positive CF3. Panel B, C and D enable us to analyze the fluctuations of cash flow pattern of failed firms. As the year of business failure approaches, there has been substantial deterioration in cash flows of failed firms.

The mean of failed firms' cash flows from operating activities (CF1) is 0.727, indicating that 72.7% of failed firms generated positive cash flows from operating activities in the three years before business failure, however, only 48.5% of failed firms generated positive cash inflows from operating activities in the one year before business failure.

Table 3. Descriptive Statistics

Panel A. Descriptive Statistics for the Full Sample

Failed Firms				
Variable	**Mean**	**Std. Dev.**	**Min**	**Max**
OCF/CL	0.174	2.199	-7.362	4.236
OCF/NI	-0.055	6.231	-22.368	18.224
OCF/TA	0.142	0.550	-0.294	2.648
FCF/INT	0.551	3.449	-5.029	10.561
CF1	0.596	0.493	0	1
CF2	0.323	0.470	0	1
CF3	0.354	0.481	0	1
Non-Failed Firms				
Variable	**Mean**	**Std. Dev.**	**Min**	**Max**
OCF/CL	1.410	1.276	-0.472	4.670
OCF/NI	3.973	5.403	-5.49	18.554
OCF/TA	0.396	0.789	-0.089	2.750
FCF/INT	3.146	3.043	-3.35	10.967
CF1	0.859	0.350	0	1
CF2	0.384	0.489	0	1
CF3	0.232	0.424	0	1

Panel B. Three Years before Business Failure

Variable	**Mean**	**Std. Dev.**	**Min**	**Max**
OCF/CL	0.826	2.200	-6.378	5.647
OCF/NI	1.225	6.624	-22.368	18.224
OCF/TA	0.342	0.759	-0.119	2.483
FCF/INT	1.754	3.488	-3.47	10.561
CF1	0.727	0.452	0	1
CF2	0.394	0.496	0	1
CF3	0.303	0.467	0	1

Panel C. Two Years before Business Failure

Variable	**Mean**	**Std. Dev.**	**Min**	**Max**
OCF/CL	0.372	2.045	-7.063	4.236
OCF/NI	0.613	6.891	-21.96	18.109
OCF/TA	0.120	0.521	-0.294	2.648
FCF/INT	0.745	3.728	-3.35	10.443
CF1	0.576	0.502	0	1
CF2	0.333	0.479	0	1
CF3	0.333	0.479	0	1

Panel D. One Year before Business Failure

Variable	Mean	Std. Dev.	Min	Max
OCF/CL	-0.674	2.138	-7.362	2.508
OCF/NI	-2.002	4.635	-21.357	5.348
OCF/TA	-0.036	0.083	-0.257	0.089
FCF/INT	-0.847	2.611	-5.029	3.354
CF1	0.485	0.508	0	1
CF2	0.242	0.435	0	1
CF3	0.424	0.502	0	1

Notes: Where OCF/CL is the ratio of cash flow from operations to current liabilities; OCF/NI is the ratio of cash flow from operations to net income; OCF/TA is the ratio of cash flow from operations to total assets; FCF/INT is the ratio of cash flow from financing to interest expense; CF1 is a dummy variable that takes value of 1 if the sample firm generates positive operating cash flow, otherwise 0; CF2 is a dummy variable that takes value of 1 if the sample firm generates positive investing cash flow, otherwise 0; CF3 is a dummy variable that takes value of 1 if the sample firm generates positive financing cash flow, otherwise 0.

3.2. The Results of Logistic Regression Analysis

In this section of the study, the results of logit analysis for three prediction models are presented in table 4, 5 and 6. According to the estimated logistic regression model for the three years prior to business failure, OCF/CL is the only variable that is statistically significant at the 0.05 level, while OCF/TA, FCF/INT and CF1 are statistically significant at the 0.10 level. The results of logistic regression model for the three years prior to business failure indicate that the hypothesis 1 that there is a statistical significant relationship between the ratio of cash flow from operations to current liabilities and business failure and hypothesis 3 that there is a statistical significant relationship between the ratio of cash flow from operations to total assets and business failure are accepted. The overall classification accuracy of the estimated logistic regression model for the three years prior to business failure is 68%. It is also worth mentioning that the overall model is statistically significant at the level of 0.05 (Prob > chi2=0.0109).

Table 4. Three Years Prior To Business Failure

Independent Variables	Coefficient	z-value
OCF/CL	0.528	2.09**
OCF/NI	0.067	1.35
OCF/TA	-1.094	-1.69*
FCF/INT	0.253	1.77*
CF1	2.418	2.34*
CF2	-0.803	-1.22
CF3	0.876	1.15
Constant	-3.159	-2.6
Prob > chi2	0.0109	
Number of observation	462	
Overall classification accuracy	68%	

Notes: See table 1 for the definitions of variables. *, ** and *** denote the significance level of 0.10, 0.05 and 0.01, respectively.

In the estimated logistic regression model for the two years prior to business failure, FCF/INT and CF1 are the only statistically significant indicators of business failure at the 0.10 and 0.05 level, respectively. According to table 5, the hypothesis 4 that there is a statistical significant relationship between cash interest coverage and business failure is accepted. The results suggest that firms with the low ratio of cash flow from financing to interest expense and negative operating cash flows are more likely to be classified as failed firms. The estimated logistic regression model for the two years prior to business failure is able to correctly classify sample firms with an accuracy rate of 74%. Additionally, the overall model is statistically significant since p-value is less than 0.01.

Table 5. Two Years Prior to Business Failure

Independent Variables	Coefficient	z-value
OCF/CL	0.298	1.12
OCF/NI	0.102	1.51
OCF/TA	-1.458	-1.58
FCF/INT	0.353	1.88*
CF1	2.778	2.45**
CF2	-1.186	-1.38
CF3	0.658	0.8
Constant	-2.843	-2.52
Prob > chi2	0.0019	
Number of observation	462	
Overall classification accuracy	74%	

Notes: See table 1 for the definitions of variables. *, ** and *** denote the significance level of 0.10, 0.05 and 0.01, respectively.

According to the estimated logistic regression model for the one year prior to business failure, the coefficients on OCF/CL, OCF/NI and CF1 are 0.901, 0.654 and 15.459 respectively, (significant at the 0.10 level). The estimated logistic regression model for the one year prior to business failure correctly classifies 87 percent of sample firms, outperforming the other models. For all logistic regression models, CF1 is the only statistically significant variable in all logit models. Empirical evidence reveals that firms are more likely to experience business failures if they fail to generate positive operating cash flow. According to the results of the estimated logistic regression model for the one year prior to business failure, the hypothesis 2 that there is a statistical significant relationship between cash flow margin and business failure is accepted.

Table 6. One Year Prior To Business Failure

Independent Variables	Coefficient	z-value
OCF/CL	0.901	1.8*
OCF/NI	0.654	1.81*
OCF/TA	23.586	0.82
FCF/INT	1.197	1.53
CF1	15.459	1.77*
CF2	-8.183	-1.42
CF3	2.915	1.34
Constant	-12.693	-1.86
Prob > chi2	0.000	
Number of observation	462	
Overall classification accuracy	87%	

Notes: See table 1 for the definitions of variables. *, ** and *** denote the significance level of 0.10, 0.05 and 0.01, respectively.

4. DISCUSSION

In the present paper, three logit models are used to investigate the usefulness of cash flow measures in the prediction of business failures. The originality of the present study lies on employing measures derived from cash flow statement for the prediction of business failures. The ultimate goal of the present paper is to build a model based on cash flow measures that can accurately forecast business failures employing a logistic regression model.

The logistic regression results suggest that cash flow measures can be used to effectively discriminate between failed and non-failed firms. Logistic regression analysis is applied to paired sample of 33 failed-firms and 33 non-failed firms. Taken together, the results of all logistic regression models provide empirical evidence that OCF/CL, OCF/NI, OCF/TA, FCF/INT, CF1, CF2 and CF3 are predictive of business failure. As the year of business failure approaches, failed firms cannot generate sufficient cash inflows from operating and investing activities. The empirical results of the present paper strongly suggest that the management of firms operating in Turkey should pay close attention to the cash flow ratios.

CONCLUSION

In the emerging economies, cash flow management is one of the most debated issues. The high level of informativeness of cash flow statement significantly boosts the quality of investment decisions. Firms that fail to adopt an effective strategy for cash flow management are likely to suffer from business failures in the competitive economic environment. Many promising firms could not survive due to serious cash flow problems. Poor cash flow management can cost billions of dollars. Past experiences indicated that cash flow statement helps financial market participants to assess a firm's financial strength.

In the competitive business environment, firms should take measures to mitigate cash flow volatility. High cash flow volatility can seriously threaten the firm survival. Cash flow volatility is inversely related with the value of firms. When cash flow ratios of a firm worsen, they give early warning signals to the firm management.

Cash flow statement is an inevitable part of business failure analysis. In the competitive economic environment, firms should focus on higher-value added operations that can generate a high volume of cash inflows to survive in the long-term. It is worth noting that cash flow management is a vital key to the sustainable business success. Future studies can employ multivariate models that include accrual based measures in the prediction of business failures.

İŞLETME BAŞARISIZLIĞININ TAHMİN EDİLMESİNDE NAKİT AKIM TABLOSUNUN KULLANIMI: GELİŞMEKTE OLAN BİR PİYASADAN BULGULAR

1. GİRİŞ

Küreselleşen ekonomide, yatırımcılar ve kreditörler firmaların finansal pozisyonunu ve performansını çeşitli açılardan kapsamlı bir şekilde analiz etmek için daha ayrıntılı muhasebe bilgileri talep etmektedir. Firmaların nakit pozisyonu, işletmelerin sürekliliği hakkında önemli bilgiler vermektedir. Nakit, bir firmanın sahip olduğu yüksek kaliteli bir varlık olarak kabul edilmektedir. Etkin bir nakit akışı yönetimi, firmaların hayatta kalabilmesinde önemli bir rol oynamaktadır. Finansal piyasa katılımcıları, daha rasyonel yatırım kararları almak için nakit akış tablolarını diğer finansal tablolarla birlikte kullanmalıdır. Nakit yönetim politikası ve firmanın faaliyet gösterdiği sektörün, nakit akış tablosunun yapısı üzerinde önemli etkileri bulunmaktadır. Nakit akış tablosu, işletmelerin sürekliliğini tehdit edebilecek nitelikteki riskler hakkında önemli bilgiler vermektedir. Nakit akışı yönetimindeki sorunlar, işletme başarısızlığına ve hatta iflasa neden olmaktadır. Etkin nakit akışı yönetimi, firmaların ekonomik kaynaklarından azami faydalanmalarını sağlamaktadır.

1.1. Literatür Özeti

Gelişmiş olan ülkelerde nakit akış tablosu ile işletme başarısızlıkları arasındaki bağlantı ayrıntılı olarak incelenmişken, gelişmekte olan ekonomilerde, nakit akış tablosu ile işletme başarısızlıkları arasındaki bağlantı yeterince irdelenmemiştir. Krishnan ve Largay (2000) nakit akış tablosunun bir şirketin değerleme analizinde önemli bir rol oynadığını belirtmiştir. Gentry vd. (1987) nakit akış tablosuna dayalı oranların, firmaların finansal durumlarını analiz ederken tahakkuk esaslı oranlara güçlü bir alternatif olduğunu iddia etmiştir. Stice vd. (2017) birçok karlı firmanın nakit akış sorunları yüzünden iflas ettiğini iddia etmiştir. Firmaların, stratejik hedeflerini başarmak için nakit akış tablosunun yapısını etkili bir şekilde analiz etmelerini önermektedirler. Foster ve Ward (1997) 317 firmanın finansal tablo verilerini, işletme başarısızlığını doğru bir şekilde tahmin edebilecek bir model geliştirmek için kullandı. Analiz sonuçlarına göre, başarısız olan firmaların işletme başarısızlığından önce işletme faaliyetlerinden kaynaklanan nakit akışlarında büyük bir düşüş yaşadığı görülmektedir.

2. YÖNTEM

Bu çalışmada, nakit akış tablosunun, işletme başarısızlıklarının öngörülmesindeki yararını incelemek için lojistik regresyon modeli oluşturulmuştur. Araştırma hipotezlerini test etmek için oluşturulan modelde yedi farklı bağımsız değişken kullanılmıştır. Finansal sektörde faaliyet gösteren firmalar farklı bilanço yapıları nedeniyle örneklemin dışında tutulmuştur.

3. BULGULAR

Lojistik regresyon analizinin sonuçlarına göre, işletme faaliyetlerinden elde edilen nakit akışlarının negatif olması durumunda firmaların başarısızlık yaşama ihtimalinin daha yüksek olduğu ortaya çıkmıştır. İşletme başarısızlığının 3 yıl öncesine dayalı modelin sınıflandırma başarısı 68% iken, işletme başarısızlığının 1 yıl öncesine dayalı modelin sınıflandırma başarısı 87% olarak gerçekleşmiştir. İşletme başarısızlığının 1 yıl öncesine dayalı modelde, işletme faaliyetlerinden nakit akışının cari borçlara oranı ve işletme faaliyetlerinden nakit akışının net kara oranı istatistiksel olarak anlamlı bulunmuştur.

4. TARTIŞMA VE SONUÇ

Gelişmekte olan ekonomilerde nakit akışı yönetimi en çok tartışılan konulardan biridir. Nakit akışı yönetimi için etkili bir strateji benimsemeyen firmaların rekabetçi ekonomik ortamda finansal sıkıntı yaşaması muhtemeldir. Gelecek vaat eden birçok firma, ciddi nakit akışı problemleri nedeniyle faaliyetlerini sonlandırmak zorunda kalmaktadır. Bu çalışmanın temel amacı, işletme başarısızlığını doğru bir şekilde tahmin edebilecek nakit akış tablosundan elde edilmiş olan verilere dayalı bir model oluşturmaktır. Lojistik regresyon analizinin sonuçları, nakit akış tablosundan elde edilmiş olan verilerin işletme başarısızlığını etkin bir şekilde tahmin etmek için kullanılabileceğini göstermektedir. Firmaların gelecekte karşılaşabileceği muhtemel finansal sıkıntıları doğru bir şekilde tahmin eden modeller büyük önem taşımaktadır. Bu modeller, firmaların etkin bir nakit akışı yönetimine sahip olmasına yardımcı olmaktadır. Rekabetçi ekonomik ortamda, şirketlerin faaliyetlerinin sürekliliği için yüksek miktarda nakit girişi yaratabilecek katma değerli operasyonlara odaklanması gerekmektedir. Bu çalışmada oluşturulan modelin yatırımcılara, kreditörlere ve firma yönetimine önemli yararları olacağı söylenebilir.

REFERENCES

Almamy, J., Aston, J., & Ngwa, L. N. (2016). An evaluation of Altman's Z-score using cash flow ratio to predict corporate failure amid the recent financial crisis: Evidence from the UK. *Journal of Corporate Finance*, *36*, 278-285.

Barua, S., & Saha, A. K. (2015). Traditional Ratios vs. Cash Flow based Ratios: Which One is Better Performance Indicator?. *Advances in Economics and Business*, *3*(6), 232-251.

Bhandari, S. B., & Iyer, R. (2013). Predicting business failure using cash flow statement based measures. *Managerial Finance*, *39*(7), 667-676.

Casey, C., & Bartczak, N. (1985). Using operating cash flow data to predict financial distress: Some extensions. *Journal of Accounting Research*, 23(1), 384-401.

Celli, M. (2015). Can Z-Score Model Predict Listed Companies' Failures in Italy? An Empirical Test. *International Journal of Business and Management*, 10(3), 57.

Charitou, A., Neophytou, E., & Charalambous, C. (2004). Predicting corporate failure: empirical evidence for the UK. *European Accounting Review*, *13*(3), 465-497.

Cultrera, L., & Brédart, X. (2016). Bankruptcy prediction: the case of Belgian SMEs. *Review of Accounting and Finance*, *15*(1), 101-119.

Gentry, J. A., Newbold, P., & Whitford, D. T. (1985). Classifying bankrupt firms with funds flow components. *Journal of Accounting Research*, 23(1), 146-160.

Gupta, J., Wilson, N., Gregoriou, A., & Healy, J. (2014). The value of operating cash flow in modelling credit risk for SMEs. *Applied Financial Economics*, *24*(9), 649-660.

Güriş, S., Akay, E. Ç., Ün, T., & Kızılarslan, Ş. (2017). Multivariate Probit Modeli ile Finansal Başarısızlığın Yeniden İncelenmesi: Borsa İstanbul Örneği. *Sosyal Bilimler Araştırma Dergisi*, *6*(3), 199-210.

Jantadej, P. (2006). *Using the combinations of cash flow components to predict financial distress*. Unpublished PhD Thesis, The University of Nebraska-Lincoln.

Jooste, L. (2006). Cash flow ratios as a yardstick for evaluating financial performance in African businesses. *Managerial Finance*, *32*(7), 569-576.

Krishnan, G. V., & Largay III, J. A. (2000). The predictive ability of direct method cash flow information. *Journal of Business Finance & Accounting*, 27(1-2), 215-245.

Mazouz, A., & Gambrel, P. A. (2013). The impact of cash flow on business failure analysis and prediction, *International Journal of Social Sciences and Entrepreneurship,* 1(3), 14-29.

Muller, G. H., Steyn-Bruwer, B. W., & Hamman, W. D. (2009). Predicting financial distress of companies listed on the JSE-A comparison of techniques. *South African Journal of Business Management*, *40*(1), 21-32.

Ooghe, H., & De Prijcker, S. (2008). Failure processes and causes of company bankruptcy: a typology. *Management Decision*, *46*(2), 223-242.

Rujoub, M. A., Cook, D. M., & Hay, L. E. (1995). Using cash flow ratios to predict business failures. *Journal of Managerial Issues*, 7(1), 75-90.

Kieso, D. E., Weygandt, J. J., Warfield, T. D., Young, N. M., Wiecek, I. M., & McConomy, B. J. (2013). *Intermediate Accounting, Volume 2*. Wiley Global Education.

Raja, A., M. Nosworthy, and D. Goureia. (1980) "Diagnosis of Financial Health by Cash Flow Analysis." Working Paper, London Business School.

Shamsudin, A., & Kamaluddin, A. (2015). Impending Bankruptcy: Examining cash flow pattern of distress and healthy firms. *Procedia Economics and Finance*, *31*, 766-774.

Stice, D., Stice, E., & Stice, J. (2017). Cash Flow Problems Can Kill Profitable Companies. *International Journal of Business Administration, 8*(6), 46-54.

Ural K., Gürarda, Ş., & Önemli, M. B. (2015). Lojistik Regresyon Modeli ile Finansal Başarısızlık Tahminlemesi: Borsa İstanbul'da Faaliyet Gösteren Gıda, İçki ve Tütün Şirketlerinde Uygulama, *Muhasebe ve Finansman Dergisi,* 67, 85-100.

Wagner Ricci, C. (2003). Bankruptcy prediction: the case of The CLECS. *American Journal of Business*, *18*(1), 71-82.

Ward, T. J., & Foster, B. P. (1997). A note on selecting a response measure for financial distress. *Journal of Business Finance & Accounting*, *24*(6), 869-879.

Zeytinoğlu, E., & Akarım, Y. D. (2013). Financial failure prediction using financial ratios: An empirical application on Istanbul Stock Exchange. *Journal of Applied Finance and Banking*, *3*(3), 107-116.