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# RELIANCE ON FINANCIAL RATIOS DERIVATIVE BY OPERATING CASH FLOW LIST IN PREDICTING FINANCIAL FAILURE DURING THE CORONAVIRUS (COVID-19) PANDEMIC

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*Abstract*

*Financial distress is a circumstance in which a company has financial distress; if these conditions are not remedied, the company may declare bankruptcy. This study examines the impact of liquidity ratios, profitability, financial leverage, and operating cash flows on Jordanian Stock Exchange businesses' financial distress during COVID-19. This study was conducted on companies listed on the Jordanian Stock Exchange that give annual financial report data for download on the Jordanian Stock Exchange's official website. This study used quantitative data from the Jordanian Stock Exchange, such as the financial accounts for 2019–2021. Secondary data sources are used in this investigation. As independent variables, liquidity ratios, profitability, financial leverage, and operating cash flows were used in this study, whereas financial distress was used as a dependent variable. A logistic regression analysis was performed in this investigation. The results of this study revealed that the liquidity ratio has a negative effect on the condition of corporate financial distress listed on the Jordanian Stock Exchange, based on the results of logistic regression analysis with a significance level of 1%. Furthermore, the findings demonstrated that profitability ratios had a detrimental impact on the situations of financially distressed companies listed on the Jordanian Stock Exchange. Furthermore, the financial leverage ratio positively affects the condition of Jordanian Stock Exchange-listed businesses in financial distress. Also, the operating cash flow ratio helps a company's financial situation on the Jordanian Stock Exchange. Therefore, this study recommended that the companies study the financial distress in light of the circumstances that Jordan went through before and after the Coronavirus (COVID-19)*

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*pandemic, which proved that Jordan came out of these crises stronger by avoiding financial distress or crisis.*
*Keywords: COVID-19 Pandemic, Financial Distress, Jordanian Stock Exchange, Logistic Regression Analysis.*

## 1. Introduction:

Stakeholders, including management, investors, lenders, financial analysts, and auditors, need more assurances than just the net profit can provide, and the income statement is the best place to look for them. Companies' true earnings are reflected in their cash flow statements, and the percentages produced from these statements are useful in evaluating the profitability and liquidity of a business. Whereas industrial firms across Jordan have felt the effects of government actions in response to the COVID-19 epidemic, evaluating those choices would have been prudent in 2020 and 2021. Also, the high unemployment rate and low salaries have had a lasting impact on these businesses, as has the increase in the cost of raw materials, shipping, customs, and gasoline. If a business is in financial distress, it is experiencing financial difficulties that, if not resolved, could lead to bankruptcy. Therefore, it is anticipated that efforts can be made to foresee events that lead to bankruptcy if the state of the company's financial distress is known from the onset. A company's level of financial distress can be gauged by looking at its financial statements. "Financial statements indicate the financial position of a company, and other information can be utilized to illustrate the company's financial success," as defined by Rahman and Masud (2021). With the help of financial statements, projections about the future of a company's finances can be made. For investors to prevent losing money, a model is required to detect the early warning signs of financial distress and, thus, bankruptcy. Predicting whether or not a company will be able to continue operating, known as its "going concerned," is a key part of analyzing its financial records. In today's highly competitive market, business failure and financial crisis are the status quo. Having distress meeting their financial obligations (Li, et al., 2021; JE, & Ofoegbu, 2022), keeping up with their high fixed-cost payments, and dealing with low liquidity and fluctuating revenue are all symptoms of financial distress (Karim, et al., 2021; Figlioli, & Lima, 2022). Whenever there isn't enough money to cover existing debts, a company experiences cash flow challenges, often known as a cash shortfall (Alqam, Mohammad, 2018). Low cash flow causes businesses to default on their debt to creditors (Kibii, 2021) and can cause them to lose a substantial portion of their market share (Nandi, & Dutta, 2021). As the company's financial situation worsens, it increases the likelihood that it may file for bankruptcy, negatively impacting its reputation. This is due to the fact that, in cases of impending financial difficulty,

shareholders may be more inclined to liquidate their holdings, and prospective investors may be put off by this (Li, et al., 2021). Researching ways to anticipate the onset of financial trouble remains a major topic in the field of finance. Due to the importance of a prediction that can capture the company's performance and its ability to continue existing in the market, the topic of corporate financial hardship and bankruptcy has been discussed by academics for a long time (Al Hayek, 2018; Ali, & Flayyih, 2021; Rahman, et al., 2021; Deng, et al., 2022). Investors, creditors, investment advisors, and other stakeholders in today's financial markets must provide early notice of companies experiencing financial distress in order to survive. Thus, the right instruments are needed to spot signs of financial difficulty within a corporation, allowing for mitigating any issues stemming from that state of affairs. Since ratio analysis can explain the connection between items on a financial statement, it has become a common tool for assessing a company's health and potential (Rahman, & Masud, 2021). Most research emphasizes the significance of conventional financial ratios in assessing business success (Narkunienė, & Ulbinaitė, 2018; Uddin, et al., 2022). However, other research has shown that a cash flow ratio is a reliable tool for predicting a company's financial distress (Setyawati, & Amelia, 2018; Finishtya, 2019; Günay, & Fatih, 2020) because it can supplement the traditional ratio by providing an additional piece of information that captures the firms' efficiency in financing their growth and also their ability to meet their financial commitments (Ali, & Flayyih, 2021; Rahman, et al., 2021). In addition to analyzing the balance sheet, financial statement users can also evaluate the firm's performance and future prognosis based on the information provided in the statement of cash flow (Ali, & Flayyih, 2021). The financial statements of a corporation contain the essential financial data that must be included in the report each year. Evidence of the company's strengths and shortcomings can be gleaned from the financial performance and condition data. As the assets on the balance sheet can only be measured at a single point in time, and the income statement comprises many non-cash items, it is crucial to evaluate the company's performance based on cash flow data. The only financial statement that truly matters is the cash flow statement, which details the company's cash to run its day-to-day business. While this may seem like a lot, consider that the chemical industry and pharmaceutical sector have attracted investments totaling over 3 billion Jordanian dinars. Chemical exports in 2021 climbed by 9.1%, while pharmaceutical exports totaled a billion dollars between 2020 and 2021. And as the President of the Jordanian Association of Pharmaceutical Manufacturers reported, during the height of the coronavirus (COVID-19) epidemic, exports of pharmaceutical medicines from Jordan grew to include new markets with which the country had never before dealt. As a result, we employed the ratios

prepared on a cash basis, which is dependent on the company's operational activity, to ensure the importance of finding the bright side in these industries and that there is fertile ground for investment in this industrial sector. This is why the head of Jordan's Chamber of Commerce and Industry, Mr. Jaghbir, was eager to highlight it: Jordan is a forerunner in the Middle Eastern medical area, particularly before the Coronavirus (COVID-19) pandemic when the region was less politically secure. Despite this, Jordan was impacted, probably because these businesses could avoid financial difficulties. However, financial and financial data show that Jordan has been durable and resistant in the face of the many crises before and after the COVID-19 pandemic.

## 2. Literature review

The study of Zebda (2021) tackled the service sector in predicting financial distress using financial ratios. It concluded that it is necessary to pay attention to the ratios of each activity, liquidity, and profitability because they reflect the company's actual status. The researcher suggested the need for the Palestine Stock Exchange to issue a decision assuring the use of the companies listed on its list's financial distress models to take corrective measures at the right time. The study by Al-Hasani, and Al-Zamili (2021), recommended the need to pay attention to predicting financial distress. In contrast, there are industrial companies in Iraq that suffer from financial distress due to the lack of interest and experience in using the financial distress models with the necessity of highlighting the causes of the financial distress related to administrative matters, production, marketing, or due to the changing legislation and policies followed with political instability. Also, the government is not interested in identifying the reasons for the distress or in supporting industrial companies to help build and develop the economy's infrastructure. The study also recommended the need to conduct studies and research to understand the reasons behind the failure of Iraqi industrial companies. However, Tijanieh and Al-Absi, (2021) suggested the need to pay attention to the financial ratios derived from the operating cash flows, as they contribute to providing the company with information about profitability and liquidity, as companies are making good profits but still suffering from financial flows aiming at meeting their needs to pay their obligations. Notably, it can be seen from the study sample, and it became clear to the researcher that companies maintain a margin of safety to cover their current liabilities from the existing assets. Whereas Karim, et al., (2021) found that long-term debt should be used in financing more than short-term debt, and this leads to an increase in liquidity ratios, as well as the process of predicting with the use of financial ratios is an effective tool that helps manage cash and

take appropriate decisions. They know that the study considered that paying attention to the company's efficiency and management is necessary to achieve profit and operate any business, which leads to improving the liquidity ratios and the company's financial position. Meanwhile, Baaqil, and Abdul Rahman (2020) recommended that the management of the Saudi Telecom Company, besides current and potential investors, should pay attention to the rate of return on assets of the cash flows also the adequacy of cash flows to assess the quality of profits with the need to identify the reasons behind the emergence of some negative cash flows that appeared in the sample under study. Also, the study found a direct relationship between the adequacy of cash flows and the quality of profits and an inverse relationship between the return on assets from operational cash flows and the quality of profits. Additionally, it led to more studies examining the causes of financial distress or crisis due to the emergence of negative operating cash flows. However, if it is not addressed correctly, then it is an indication of non-continuity. However, Al-Hasnawi, et al., (2018) carried out a study to pay attention to the cash flows list because it is less misleading than the rest of the lists, as it is prepared on a cash basis. More attention is paid to financial ratios derived from cash flows, giving a clearer picture of financial performance according to activities. The study also found that the higher the operating cash flow, the less the need to borrow, and companies are distant from financial distress. Also, Abu Saleem, (2017) studied the importance of financial derivatives from cash flows due to their significance and to enable users to benefit from their data in predicting financial distress and making appropriate investment and financing decisions. These ratios also reflect the quality of profits and liquidity and the extent of the company's continuity. Also, Al-Heliwi, and Ahmed, (2015) achieved the following results. The need to establish an information center to help the investors, researchers and lenders access data and information about companies from all sectors to make use of them in preparing accurate studies to help make the appropriate decisions at the right time, as well as the study, urged the need for professional bodies and organizations to pay attention to, predicting financial distress, in addition, to train and qualify those concerned to practice correctly in order to reach accurate data. Therefore, one of the study results is that financial ratios derived from cash flows distinguish between successful companies and unsuccessful companies that suffer from financial distress.

## 3. Research methodology

The population in this study was all companies listed on the Jordanian Stock Exchange in 2019–2021. The sampling technique in this research is sampling purpose with the government decisions during the

Coronavirus (COVID-19) pandemic that affected the industrial sector (chemical and pharmaceutical industries) which are as follows: issuance of defense orders No. 1, 2 and 3, according to which a complete and partial ban was imposed and all border crossings were closed, but some vital sectors were an exception; issuance of defense orders No. 6, and 9 which state; protecting the rights of workers in all financial sectors and supporting the financial protection of affected companies; issuance of defense orders No. 14 and, 15 of the Social Security Corporation, which has established programs to help and protect different categories of workers in the affected sectors by the Coronavirus (COVID-19) pandemic; the Central Bank of Jordan issued a circular to reduce interest rates by 100 basis points; the Central Bank issued a circular deferring installment for the affected sectors; the Central Bank has prepared a particular financing program for small and medium-sized companies, amounting to 500 million dinars. However, Financial distress (FD) is one of the exciting studies that continue to be studied in financial management and accounting. In this research, the dependent variable is financial distress. The dependent variable in this research represented the company's state in terms of distress, so the symbol (0) was used for the distressed financial companies. In contrast, the symbol (1) was used for companies without financial distress. However, financial distress has been defined as relying on the cash flow list from that year's operation. Accordingly, if the cash flow derived from the operation is positive, the company has no financial distress (i.e., Continuously operating company ). While if the cash flow derived from the operation is negative, this indicates that the company is in that year has financial distress. Meanwhile, Table 1 below describes the derived financial ratios for the research.

**Table 1** Descriptive of the Independent Variables

| | Variables | Proxies | Formulae |
|---|---|---|---|
| 1 | Liquidity | LQ | $\frac{Total\ Loan}{Total\ Deposit}$ |
| 2 | Financial Leverage | FL | $\frac{Total\ Debt}{EBITDA}$ |
| 3 | Profitability | PRF | $\frac{Earnings\ Before\ Interest\ and\ Tax}{Total\ Asset}$ |
| 4 | Cash Flow | CFL | $\frac{Operating\ Cash\ Flows}{Current\ Liabilities}$ |

Research also employed logistic regression to identify the most influential financial ratios and establish their ability to forecast if a company will experience financial distress. The logistic regression technique is used because the dependent variable is categorical (precise and inappropriate). In this investigation, we employed the following model of logistic regression equations:

$$ln\frac{\sigma}{1-\sigma} = \delta_1 + \delta_2 LQ_{it} + \delta_2 FL_{it} + \delta_3 PRF_{it} + \delta_4 CFL_{it} + \varepsilon_{it}$$

## 4. Results and Discussion

Research Based on Descriptive Statistics. Minimum, maximum, average, and standard deviation are some values described by descriptive statistics. Results from descriptive statistics are shown in Table 2 below. As can be seen in Table 2, the LQ values range from a low of 0.08 (or 8%) to a high of 0.92 (or 92%), with a mean of 0.30 (or 30%) and a standard deviation of 0.21. The range of FL is from 0.0002 or 0.02% up to 0.91 or 91%, with a mean of 0.20 or 20% and a standard deviation of 0.15. The range of CR is between 0.08 and 0.92, with an average of 0.30 and a standard deviation of 0.21. Maximum FL is 91%, minimum is 0.0002 or 0.02%, mean is 0.20 or 20%, and standard deviation is 0.15. The range of CR is between -18% and +41%, with an average of +1.6% and a standard deviation of - 10%. The range of PRF is between 0.03 and 0.59, or 3% and 59%, with a mean of 0.76, or 76%, and a standard deviation of 0.61. Average ROA equals 62%, median equals 48%, and standard deviation equals 27%. Minimum ROA equals 4%, and maximum ROA equals 12%. The range of CFL is from -0.09 to +0.52, which works out to an average of 0.15 and a standard deviation of 0.13. Also, as seen in Table 3, there is no indication of multicollinearity in the study based on the pairwise correlation results, as all of the values for the pairwise correlation are lower than 80%. The results of a goodness-of-fit test are displayed in Table 4. This verification is important for making sure the model's findings are solid. If the anticipated results match the observational data, you have a strong logistic regression model. According to the data in the table above, the logistic regression model adequately explains the data, and the model's value is indistinguishable from that of the observations. As a result, we can say that the model is accepted or can accurately forecast its observations' value. Table 5 also displayed the regression model's prediction accuracy (in this case, in predicting financial distress) at 94.9%. Using the regression model, we find that out of 110 companies sampled across the 2019-2021 research period, 96 (87.3%) do not require financial distress, while 14 (12.7%) do. As seen in Table 6 above, the model undergoes a modification in parameter estimation with a Log likelihood -2 value of 139.967 after adding four independent variables. Cox and Snell's R-squared is 0.338, or 33.8%, while Nagelkerke's is 0.592, or 59.2%. This means that LQ, FL, CR, PRF, ROA, and CFL can account for 59.2% of the variance in predicting financial distress, whereas the remaining 40.8% is influenced by factors outside the scope of this analysis.

**Table 2** Descriptive Statistics

| | Mean | Median | Maximum | Minimum | Std. Dev. |
|---|---|---|---|---|---|
| FD | 0.924812 | 1 | 1 | 0 | 0.264191 |
| LQ | 0.303814 | 0.259732 | 0.921051 | 0.007107 | 0.213088 |
| FL | 0.201211 | 0.176647 | 0.905635 | 0.000205 | 0.151024 |
| PRF | 0.7585 | 0.558693 | 0.592888 | 0.034622 | 0.619821 |
| CFL | 0.14956 | 0.114092 | 0.520821 | 0.086921 | 0.13308 |

**Table 3** Correlation Matrix

| | FD | LQ | FL | PRF | CFL |
|---|---|---|---|---|---|
| FD | **1.000** | | | | |
| LQ | -0.045 | **1.000** | | | |
| | (0.458) | | | | |
| FL | -0.020 | 0.559* | **1.000** | | |
| | (0.740) | (0.000) | | | |
| PRF | 0.001 | -0.386* | -0.271* | **1.000** | |
| | (0.983) | (0.000) | (0.000) | | |
| CFL | -0.069 | 0.400* | 0.062 | -0.353* | **1.000** |
| | (0.256) | (0.000) | (0.310) | (0.000) | |

**Table 4** Hosmer and Lemeshow Test

| | Chi-Square | | Sig. |
|---|---|---|---|
| H-L Statistic | 5.5285 | Prob. Chi-Sq(8) | 0.699 |

**Table 5** Accuracy of Predictions

| Observed | Financial Distress | | % |
|---|---|---|---|
| | Financially stable | Financial distress | |
| Financially stable | 96 | 2 | 87.30 |
| Financial distress | 14 | 6 | 12.70 |
| Total (%) | 110 | | 100 |

**Table 6** Model Summary

| -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|---|---|---|
| 139.967 | 0.338 | 0.592 |

**Table 7** Regression Analysis

| Variables | Coefficient | z-statistic | Prob. |
|---|---|---|---|
| LQ | -0.459 | 7.688 | 0.000 |
| FL | 0.366 | 4.529 | 0.000 |
| PRF | -0.502 | -6.153 | 0.000 |
| CFL | -0.698 | -8.256 | 0.000 |
| C | 4.173 | 3.778 | 0.000 |

Table 7 shows a statistically significant 0.0001 link between a lack of liquidity and financial stress. Therefore, the bigger the ratio of current assets to current liabilities, the less likely the company will run into financial distress. These findings provide credence to the hypothesis that, provided with sufficient liquid resources, a business will not go through a period of the financial crisis. As a result, the example firm in this analysis has adequate controls to ensure that its short-term assets cover its short-term obligations and that it does not go into insolvency. The study and discussion above lead us to conclude that a high liquidity ratio indicates a financially stable and valuable company that sends the appropriate message to the capital market. Consistent with the findings of Alqam, Mohammad (2018), who found that current ratios negatively affect financial distress with beta values of-0.459, this study found that current ratios are influential in predicting financial distress situations. Profitability as a Financial Crisis Mediator Table 7 of the data analysis shows that profitability has a statistically significant (p 0.000) negative effect on financial distress. In other words, the company's financial stability is directly proportional to the value of its profits. The findings corroborate the hypothesis that a company will not go bankrupt if its profitability is high enough. This means that if a business's profits are high, the company's value will rise, sending a positive signal to the capital market and reducing the likelihood of financial distress; if profits are low, the company's value will fall, resulting in financial distress. The research and explanation above lead to the conclusion that a firm's value and signal to the capital market will increase in proportion to the value of the profits it generates and the likelihood that the company will not encounter financial distress. The findings are in line with those of Al-Hassani, and Al-Zamili, (2021) research, which also concluded that profitability has a negative and significant influence on predicting financial distress in various industrial companies listed on the Indonesia Stock Exchange. The Role of the Financial Leverage Ratio in Financial Distress. Analysis findings are reported in table 7. Statistically significant (p= 0.0001) evidence suggests that financial leverage affects the occurrence of financial distress. That is to say, the more severe the financial distress situation the company faces, the higher its debt-to-equity ratio value. Therefore, the findings corroborate the hypothesis that a corporation will be in financial distress if its debt-to-equity ratio number is high.

This indicates that a firm's value will fall and send a negative signal to the capital market if its level of financial leverage is high, which could lead to financial distress for the company. If the company's financial leverage is reduced, the company's value will rise, sending encouraging signals to the capital market and avoiding financial difficulty. The analysis and explanation above lead us to conclude that a company's worth is reduced, and a negative signal is sent to the capital market if its financial leverage is significant. This study's findings align with those of Karim and Others (2021). Based on the findings of this research, financial leverage ratios, such as the total variable debt divided by total capital (DER), can be used to foretell a company's financial crisis. High financial leverage increases the probability that a company may go bankrupt. This variable's coefficient is positive, suggesting that the DER variable contributes to the financial suffering of businesses. How Operating Cash Flow Affects the Probability of Financial Default According to the data in table 7, operating cash flows have an impact (p=0.000) on financial distress. Therefore, operating cash flow will be utilized to assess the financial health of a corporation. The results of this study are the same as those of Abu Nassar, and Jum`a, (2020), who found that knowing the values of cash flows doesn't help predict times when money is tight.

## 5. CONCLUSION

The purpose of this research is to analyze how different financial ratios (such as liquidity, profitability, leverage, and operating cash flow) affect the condition of companies in difficulty on the Jordan Stock Exchange throughout the COVID-19 period (2016-2021). Three hundred and fifty people were randomly selected from the entire population. We can derive the following inferences from the data and the ensuing discussion: • Data research shows that the profitability ratio is the independent variable most valued by all information consumers. In cases where the ratio's coefficient Z-statistics value is larger and less significant than other variables, we say the ratio is significant. Companies' financial distress on the Jordan Stock Exchange in 2019-2021 is negatively correlated with the current ratio, a measure of liquidity. For this reason, a company's worth and confidence in the capital market will rise as its liquidity improves, reducing the likelihood of financial distress. A logistic regression study demonstrated that a negative profitability ratio significantly impacted the state of financial distress for corporations listed on the Jordan Stock Exchange between 2016 and 2021, with sig values indicating this effect was statistically significant at the.000 level. A company's worth rises and sends a good signal to the capital market when it generates profits, reducing the likelihood of financial distress. To a large extent, the financial leverage ratio will predict business financial difficulty on the Jordan Stock

Exchange from 2019–2021. As a result, high levels of financial leverage can cause a decline in a company's value, which sends a negative signal to the capital market. The company's financial difficulty on the Jordan Stock Exchange has been added to by an operating cash flow ratio of 0.000 between 2019 and 2021. In light of the preceding chapter's research, analysis, and discussion on the impact of financial ratios on the state of corporate financial distress in the Jordanian Stock Exchange in 2019–2021, it seems reasonable to expect that companies will be able to analyze financial distress conditions as early as possible through the analysis of their own financial ratios, thereby reducing the likelihood of incurring losses. Paying close attention to the financial leverage ratio, which has a negative minimum value below which the company will experience financial distress unless corrective action is taken, can greatly improve the accuracy with which you predict financial distress, profitability, and operating cash flow ratios. Therefore, it is hoped that future studies will employ a more nuanced set of ratios, rather than relying solely on financial ratios, in order to predict the company's financial distress on the Jordanian Stock Exchange. Other factors, such as inflation, interest rates, exchange rates, and economic growth, can also be used to make such predictions. The results of this research are also expected to help investors decide whether or not to make financial commitments to the company by illuminating the company's condition through financial ratios, most notably financial leverage in implementing corrective actions, where this ratio has a positive and significant effect in predicting financial distress, and profitability and cash flow ratios of operations, where a negative minimum value will cause the company to incur losses. Investors and potential investors will likely utilize this ratio to make decisions about investing in companies, especially in financial leverage in carrying out remedial actions, as it has been found to have a favorable and significant effect in anticipating financial distress circumstances.

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