Financial ratios and the prediction Financial Failures of Companies Listed in Amman Stock Exchange

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Abstract:

The predicting financial failure helps decision-making in an organization to mitigate the effects of failure and enable it to achieve continuity, and the financial ratios are the main pillar in this process by finding ratios that contribute to the interpretation of financial failure, and the formation or suggestion of models through which they reveal in advance the possibility of its occurrence, so This study aimed to identify the factors explaining the financial failure, starting from measuring the extent of financial ratios correlated with the occurrence of financial failure phenomenon at the level of a sample of 30 joint stock companies listed on the Amman Stock Exchange, using 33 financial ratios The study found that there is no correlation between the activity rates and the phenomenon of financial failure and its presence in terms of liquidity, debt, profitability and market ratios, which means that a change in the ratios of these groups is linked to the occurrence of financial failure phenomenon, and the latter contributes to predict financial failure.

Keywords: *financial failure, financial failure prediction, financial ratios, Pearson correlation coefficient.*

Jel Classification Codes : G33 ; C12

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1. Introduction

The financial failure of economic institutions is an important issue that has occupied many international bodies and organizations, because of its negative effects on the level of the institution and its surroundings of dealers, partners and interested, and the process of predicting financial failure helps in making decisions in the institution in order to mitigate and enable these effects From achieving the imposition of continuity, and as a result of the importance of the subject of predicting the financial failure of many categories related to the economic institution, and since the idea of failure does not occur suddenly, and that before the arrival of the economic institution to that situation must go through many situations and levels of behavior that distinguishes it from other institutions continuous Successfully in economic activity, researchers have been active since the 1960s, especially in the United States, conducting studies aimed at identifying indicators that can guide financial failure. Among these studies is research based on the need to rely on financial ratios in the formation of models to predict financial failure, and this view supports the fact that the predictive power of accounting data is one of the most important qualitative characteristics that should be characterized by these data in order to be considered appropriate data to make the appropriate decision, which is The main objective of the preparation of accounting data, therefore, we find that many of the business and forecast models were all based on the use of financial ratios recognized in the process of predicting the failure of companies, this led us to ask the following question:

How financial ratios relate to The phenomenon of financial failure at the level of joint stock companies listed on the Amman Stock Exchange?

1.1. The importance of the study

Its importance stems from the fact that it addresses an important variable is financial failure because of its negative effects on the level of the institution and its surroundings of dealers, partners and interested, and predictive process contributes to decision-making in the institution in order to mitigate these effects and enable them to achieve the imposition of continuity, and the fact that financial ratios are the main pillar in This process by finding ratios that contribute to the interpretation of financial failure.

1.2. Objectives of the study

The aim of this study is to determine the role of financial ratios in predicting financial failure by studying the extent of correlation between financial ratios classified into five main groups: Liquidity, activity, debt, profitability, market, and the phenomenon of financial failure, this means identifying the financial factors causing the studied phenomenon, which are expressed by indicators that contribute to building the prediction function of the phenomenon under study.

1.3. Study Approach

The descriptive method was used within the theoretical framework of the study, which will identify the phenomenon of financial failure, financial ratios and the most important quantitative models to predict, then the analytical approach in the applied side on a sample of 30 joint stock companies listed on the ASE.

2. The theoretical aspect of the study
2.1. The concept of financial failure

Many financial and accounting researchers disagreed about the definition of financial failure, and became there are many concepts and terminology associated with this concept, which made the views of those interested in determining the stages and types of failure, some of them believe that financial failure means the failure of the institution to pay its obligations at maturity, and others believe that it means the institution to stop paying its debts due to insufficient Liquid assets to cover their financial obligations.

The concept of failure has been associated with the economic researcher Beaver, who is the first to use this term to indicate the beginning of the institution to reach bankruptcy, where it is defined as "the inability of a firm to pay its financial obligations as they mature. Operationally a firm is said to have failed when any of the follM'ing events have occurred: bankruptcy, bond default, an overdrawn bank account or non-payment of a preferred stock dividend ".[1]

However The researcher Deakin sees the failed companies "only included those firms which experienced bankruptcy, insolvency, or which were otherwise liquidated for the benefit of creditors in his default analysis".[2]

Altman also briefly defined corporate failure as "a company that is legally bankrupt and placed in liquidation".[3]

Blum defines it as "events signifying an inability to pay debts as they come due, entrance into a bankruptcy proceeding, or an explicit agreement with creditors to reduce debts".[4]

Also it can be defined as "the condition of a firm when it is unable to meet its financial obligations to its creditors in full. it is deemed to be legally bankrupt and is usually forced into insolvency liquidate".[5]

Based on previous definitions of financial failure, a comprehensive definition consistent with the requirements of the study can be formulated as follows: Financial failure is a financial situation that does not occur suddenly but is the result of a set of accumulations and complications that start from a certain situation, and a certain degree of liquidity shortage, which develops in the absence of attention from a bad situation to a worse situation, to the point where available financial resources are unable to meet obligations owed to creditors, and usually the institution is forced to liquidate.

2.2. The concept of financial ratios

Financial ratios defined as the numerical value created from two or more values taken from a company's financial statements i.e. its balance sheet, income statement or statement of cash flow. Typically, financial ratios are presented as a quantified metric in the form of a percentage, multiple or a ratio which aims to evaluate the financial, operational performance and competitiveness of a company.[6]

Financial ratios are useful indicators of a firm's performance and financial situation, most of them can be calculated from information provided by the financial statements, and we can use

financial ratios to analyze trends and to compare the firm's financials to those of other firms, also in some cases, ratio analysis can predict future bankruptcy.[7]

Financial ratios are one of many tools stock analysts and inverstors use when analyzing a company or industry, it can give mixed signals about company's financial health, and can vary significantly among companies, industries and over time.[8]

Also it can be defined as The yardstick relating two pieces of financial data to each other. Analysis and interpretation of various ratios should give experienced, skilled analysts a better understanding of the financial condition and performance of the firm than they would obtain from analysis of the financial data alone.[9]

Many financial ratios are available to the financial analyst wich form performance groups that determine whether a company can fail or succeed, however, the most common divisions are five groups, and each group includes a number of financial ratios as follows:

- **Liquidity Ratios:** measured the ability of the company to satisfy its short-term obligations as they come due.
- **Activity ratios:** measure the speed with which various accounts are converted into sales or cash—inflows or outflows.
- **Debt ratio:** measures the proportion of total assets financed by the firm's creditors. The higher this ratio, the greater the amount of other people's money being used to generate profits
- **Market ratios:** relate the firm's market value, as measured by its current share price, to certain accounting values. These ratios give insight into how well investors in the marketplace feel the firm is doing in terms of risk and return.[10]
- **Profitability ratios:** are financial metrics used by analysts and investors to measure and evaluate the ability of a company to generate income (profit) relative to revenue, balance sheet assets, operating costs, and shareholder's equity during a specific period of time. They show how well a company utilizes its assets to produce profit and value to shareholders.[11]

2.3. Quantitative models used to predict financial failure

The issue of financial failure is of great importance to all parties involved in the company, and since financial failure takes a long way, as the company must pass before it reaches that state, in turbulent positions that set it apart from other successful companies in the market, and since the 1960s, researchers have conducted studies aimed at developing quantitative models to predict the probability of financial failure. The most prominent and most capable of predicting financial failures based on financial statements to assess the company's future financial position are: Altman 1968, Kida 1980, and Sherrod 1987.

2.3.1 Altman Model (1968)

Altman study is one of the important studies he conducted in the field of predicting the failure of companies in 1968, where it relied on many studies, and aimed at determining the predictability of financial failure of companies, and this through studying and analyzing of financial ratios and indicators for a group of companies under study, he Conducted a study on 33 non-bankrupt companies and 33 bankrupt companies during the period 1946-1965, and he used 22 financial ratios extracted from the financial statements of these companies and relied on a statistical model known as Multiple Discriminant Analysis (MDA) to analyze these ratios and construct a Z-score model, which distinguishes this study from its predecessor which used a single-variable model.

The researcher concluded that the following ratios are among the most important rates that can be predicted for bankruptcy of companies:

- retained earnings to total assets;
- working capital to total assets;
- Sales to total assets;
- EBITDA to total assets;
- Market value of shares to book value of total debt.

Finally, a multivariate model (Z-score) was developed:

$$Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$$

Where:

X_1: Working capital to total assets.

X_2: Retained earnings to total assets.

X_3: EBITDA to total assets.

X_4: the market value of shares to total debt.

X_5: Sales to total assets.

Z: represents the financial default index where:

Z>2.99: No bankruptcy is expected.

Z<1.88: Bankruptcy is expected.

1.88 <Z <2.99: The position of the company cannot be judged.

The model was able to predict the failure of companies before it happened and for five years accurately reached 95% in the first year before the failure, 72% in the second year, 48% in the third year, 29% in the fourth year, 36% in the fifth year before bankruptcy.[12]

2.3.2. Kida Model (1980)

The study aimed to determine the predictability of financial failure of companies through the construction of a prediction model, based on the method of discriminatory analysis step-by-step based on 20 financial ratios and a sample of 40 institutions, half of which are distressed and the other half non-defaulted. A short period of time spanned from 1974 to 1975, while the results of this study coincided with the results of the Altman study in ratios that have the ability to predict financial failure.

The study reached the formulation of the model consists of five financial ratios with great predictability, reaching 90%:

$$Z = - 1.042X_1 - 0.427X_2 - 0.461X_3 - 0.463X_4 + 0.271X_5$$

Where:

X_1: net profit to total assets.

X_2: Equity to total debt.

X_3: liquid assets to current liabilities.

X_4: Sales to total assets.

X_5: Cash to total assets.

Z: financial default index as the higher the index indicates the integrity of the financial position of the company and the lower it indicates the possibility of falling into the company.

The error rate in forecasting non-performing companies was 15%, which is greater than the non-performing non- performing companies' error rate of 9%. This means that the model has more effectiveness in predicting non-performing companies.[13]

2.3.3. Sherrod Model (1987)[14]

which is one of the most modern models in predicting financial failure, this model depends on the six independent financial indicators, in addition to the relative weights of the discrimination function coefficients given for these variables, according to the following formula:

$$Z = 17X_1 + 9X_2 + 3.5X_3 + 20X_4 + 1.2X_5 + 0.1X_6$$

where:

X_1: net operation capital/total assets,

X_2: current liquid assets/total assets,

X_3: total equity/total assets,

X_4: net income before income tax/total assets,

X_5: total assets/total liabilities,

X_6: total equity/total fixed assets.

Z: bankruptcy index (financial failure) where:

Category	Risk degree	Z
First	Company is not exposed to the risk of bankruptcy	$Z > 25$
Second	Little likelihood of exposure to the risk of bankruptcy	$25 \geq Z > 20$
Thrid	Difficult to predict the risk of bankruptcy	$20 \geq Z > 5$
Fourth	The Company is exposed significantly to the risk of bankruptcy	$5 \geq Z > -5$
Fifth	The Company is exposed to the risk of bankruptcy	$Z \leq 5 -$

2.3.4. Zmijewski Model (1984)

The study aimed to predict the financial failure of companies two years before it occurs by building a standard model, it was conducted on several different industries in which the researcher selected a sample consisting of 40 bankrupt companies, and 800 non-bankrupt companies in the period between 1972-1978, and applied a number of financial ratios analyzed from previous studies and relied on the study of Probit Analysis in analysis Financial Statements.

The study concluded to formulate the model consists of three financial ratios can be used to predict the failure of companies as follows:

$$Z = -4.336 - 4.513X_1 + 5.679X_2 + 0.004X_3$$

Where:

X_1: net profit to total assets.

X_2: total liabilities to total assets.

X_3: Current assets to current liabilities.

Z: financial default index as the higher the index indicates the likelihood of the company falling into financial failure.

The study came up with a new idea: relying on three ratios proved in previous studies that have the ability to predict financial failure, and also distinguished the researcher using a new method wich the Probet method, but the researcher relied on a heterogeneous sample in terms of the number of companies, the researcher neglected a group of ratios That can have good predictability.[15]

3. Methods and Materials

3.1. The study sample

The study population consists of all the public shareholding companies listed on the ASE. The number of companies in the study community reached 195 companies according to the ASE website in 2018 (https://www.exchange.jo/en).

The study sample was selected from the study population, where we divided the study sample into two groups, the first group was the failed companies and the second group was the non-

failed companies, whose financial data are available during the study period (2011, 2018).

Failure companies were selected from a total of ninety-five (195) companies in the study population, where the number of fifteen failed companies, this choice was in accordance with the criteria of failure in our study, which was in the companies stopped practicing the activity, which was liquidated, and was taken based on the site Securities Depository Center.

While fifteen non- failed companies were selected to meet the number of failed companies, this choice was according to companies that have not stopped their activities and have not been liquidated, which have achieved profits during the last three years, and was taken at random while trying to diversify sectors excluding the financial sector.

3.2. Study variables

3.2.1. Dependent variable

Is the financial failure, as it was expressed by both failed companies and non-failed companies, and they taken based on the SDC website https://www.sdc.com.jo/arabic/index.php?option=com_public&member_cat=900&member_sub_cat=4&members_status=old, and they were determined based on the following two criteria:

- Bankruptcy and liquidation of failed companies;
- Achieving successive profits for a period of three years during the study period for non-failed companies.

We assume that financial failure takes values 1 or 0 depending on the company's condition. If the company is a failure, it takes the value 0. If the company was successful, it takes the value 1.

3.2.2. Independent variables

These are the variables that we seek to know their relation to the dependent variable represented in the financial ratios of the sample companies classified into major groups: liquidity, indebtedness, activity, profitability, market, which are listed in Table (01) in the appendices.

3.3. Hypotheses of the study

- there is a significant correlation between liquidity ratios and financial failure at 5%;
- There is a significant correlation between activity ratios and financial failure at 5%;
- there is a significant correlation between the debt ratios and the occurrence of financial failure at a level of 5%;
- There is a significant correlation between profitability ratios and financial failure at 5%;
- there is a significant correlation between market ratios and financial failure at 5%.

3.4. Statistical methods used

In order to facilitate the process of data analysis, a statistical package for social sciences was used spss25. The Pearson binary correlation test was used to determine the quality and strength of the relationship, the coefficient signal indicates the direction or quality of the relationship, While his absolute value denotes the strength or size of the relationship, The choice of this coefficient is justified first to assume a linear relationship between variables, second, the quantitative nature of variables, finally, the hypothesis of interpreting data for normal distribution is achieved.

4. Results and discussion

We calculated 33 financial ratios for the sample companies and unloaded in the spss 25 program to test the validity of the hypotheses according to the following criterion:

- **Absence of relationship:** if the statistical significance level of all financial ratios in the core group is greater than 5%.
- **Existence of the relationship:** if the level of significance of at least one financial ratio in the core group is less than 5%.

The strength and direction of the relationship between financial ratios and financial failures distributed among the core groups is judged by the value of the Pearson correlation coefficient=

4.1. Test the first hypothesis

"There is a significant correlation between liquidity ratios and financial failure at 5%", Hypotheses has tested by entering a set of variables liquidity ratios (L1 – L9) to gain access to financial ratios associated with and related to the financial failure as follows:

Table (01): Results of the first hypothesis test

Test	Corrélations			
	Ratio	Y	Ratio	Y
Corrélation de Pearson	L1	0.061	L6	-0.178
Sig. (bilatérale)		0.750		0.346
Corrélation de Pearson	L2	-0.142	L7	-0.181
Sig. (bilatérale)		0.455		0.339
Corrélation de Pearson	L3	-0.177	L8	-0.180
Sig. (bilatérale)		0.350		0.341
Corrélation de Pearson	L4	0.156	L9	0.374*
Sig. (bilatérale)		0.411		0.042
Corrélation de Pearson	L5	0.199		
Sig. (bilatérale)		0.292		
*La corrélation est significative au niveau 0.05 (bilatéral).				

The source : spss results

According to the results of table (01), the first hypothesis for the existence of a significant correlation between liquidity ratios and the occurrence of financial failure is accepted because the statistical significance level of one of the group's ratios of cash to total assets (L9) is less than 5%, As for the strength and direction of the relationship, it is weak and positive because the correlation coefficient value is 0.375.

4.2. Test the second hypothesis

"There is a significant correlation between activity ratios and financial failure at 5%", Hypotheses has tested by entering a set of variables activity ratios (A1 – A6) to gain access to financial ratios associated with and related to the financial failure as follows:

Table (02): Results of the second hypothesis test

Test	Corrélations			
	Ratio	Y	Ratio	Y
Corrélation de Pearson	A1	0.275	L4	0.305
Sig. (bilatérale)		0.142		0.102
Corrélation de Pearson	A2	0.244	L5	0.303
Sig. (bilatérale)		0.194		0.104
Corrélation de Pearson	A3	-0.219	L6	0.502**
Sig. (bilatérale)		0.244		0.005
** La corrélation est significative au niveau 0.01 (bilatéral).				

The source : spss results

The results of table (02) indicate that the level of statistical significance of the percentages of the financial ratios of the activity is higher than 5%, this means that there is no relationship between the activity rates and the occurrence of financial failure; therefore, they do not contribute to its interpretation, explanation and prediction, here the second hypothesis is rejected.

4.3. Test the third hypothesis

"There is a significant correlation between the debt ratios and the occurrence of financial failure at a level of 5%", Hypotheses has tested by entering a set of variables debt ratios (D1 – D6) to gain access to financial ratios associated with and related to the financial failure as follows:

Table (03): Results of the third hypothesis test

Test	Corrélations			
	Ratio	Y	Ratio	Y
Corrélation de Pearson	D1	-0.217	D4	-0.311

Sig. (bilatérale)		0.250		0.96
Corrélation de Pearson	D2	0.144	D5	0.240
Sig. (bilatérale)		0.449		0.202
Corrélation de Pearson	D3	0.119	D6	0.435*
Sig. (bilatérale)		0.531		0.016
** ** La corrélation est significative au niveau 0.01 (bilatéral).**				

The source : spss results

Table (3) shows the acceptance of the third hypothesis for the existence of a positive medium correlation between indebtedness rates and financial failure, where we note that the ratio net profit before interest and taxes / interest (D6) contribute to the formation of a special function of financial failure prediction with a studied sample.

4.4. Test the fourth hypothesis

"There is a significant correlation between profitability ratios and financial failure at 5%", Hypotheses has tested by entering a set of variables profitability ratios (P1 – P8) to gain access to financial ratios associated with and related to the financial failure as follows:

Table (04): Results of the fourth hypothesis test

	Corrélations			
Test	**Ratio**	**Y**	**Ratio**	**Y**
Corrélation de Pearson	P1	0.608**	P5	0.413*
Sig. (bilatérale)		0.000		0.23
Corrélation de Pearson	P2	0.626**	P6	0.227
Sig. (bilatérale)		0.000		0.227
Corrélation de Pearson	P3	0.491**	P7	0.523**
Sig. (bilatérale)		0.006		0.003
Corrélation de Pearson	P4	0.518**	P8	0.490**
Sig. (bilatérale)		0.003		0.006
** La corrélation est significative au niveau 0.01 (bilatéral).				
*La corrélation est significative au niveau 0.05 (bilatéral).				

The source : spss results

Table (4) shows that there is a positive medium correlation between the ratio net profit / equity (P5) which is known as return on equity and financial failure, So the hypothesis is accepted that there is a significant correlation between profitability ratios and the occurrence of financial failure.

4.5. Test the fifth hypothesis

"There is a significant correlation between market ratios and financial failure at 5%", Hypotheses has tested by entering a set of variables market ratios (M1 – M4) to gain access to financial ratios associated with and related to the financial failure as follows:

Table (05): Results of the fifth hypothesis test

	Corrélations			
Test	**Ratio**	**Y**	**Ratio**	**Y**
Corrélation de Pearson	M1	0.666**	M3	0.740**
Sig. (bilatérale)		0.000		0.000
Corrélation de Pearson	M2	0.364*	M4	0.117
Sig. (bilatérale)		0.48		0.537
** La corrélation est significative au niveau 0.01 (bilatéral).				
*La corrélation est significative au niveau 0.05 (bilatéral).				

The source : spss results

From the table (05) of the results of the fifth hypothesis test we note a positive weak correlation between the ratio of the market value of the share / earnings per share (M2) and the occurrence of financial failure at a statistical significance level of 5%, So the hypothesis is accepted that there is a significant correlation between market ratios and the occurrence of financial failure. The following table summarizes the results of the hypothesis test as follows:

Table (06): Summary of the results of the study hypotheses test

Basic groups of financial ratios	Financial ratios related to financial failure of the studied sample	The nature and strength of the relationship
Liquidity	cash to total assets	positive weak correlation
Activity	/	Absence of correlation
Debt	net profit before interest and taxes / interest	positive medium correlation
Profitability	net profit / equity	positive medium correlation
Market	the market value of the share / earnings per share	positive weak correlation

The source: Prepared by the researcher based on the results of the hypothesis test

We will now try to work out the financial ratios explained for the occurrence of financial failure according to the method of discriminatory analysis, and this was done by many previous studies such as Altman study, Kida study, Sinkey study and other studies that were studying and analyzing the ratios and financial indicators of a group of companies in order to determine the most relevant, discriminatory and predicted failure of these companies. Initially, we obtain the discriminatory equation after specifying the proportions and the related factors by the spss program as shown in Appendix No. (02) as follows:

$$Z = 1.92 \times A1 - 0.04 \times A2 - 1.97 \times A3 - 1.10 \times A4 - 0.50 \times A5 - 0.29 \times A6 - 0.10 \times D1 - 0.24 \times D2 - 0.54 \times D3 + 0.16 \times D4 + 0.52 \times D6 + 0.09 \times L1 + 0.49 \times L4 + 0.52 \times L5 - 0.75 \times L7 - 1.12 \times L8 - 0.18 \times L9 + 0.34 \times M1 + 1.14 \times M2 + 1.35 \times M3 + 0.82 \times P1$$

After establishing the discriminatory function, we determine the percentage of the latter's interpretation of the phenomenon of financial failure, as we test its significance level, within the reading of the results of the following table:

Table (07) ; Table of eigenvalues and Wilks Lambda test for the discriminatory function

Lambda De Wilks test			Eigenvalues			
Level of statistical significance	Khi- square	Lambda De Wilks	Correlation canonical	Percentage of variance	eigenvalue	function
0.001	46.936	0.068	0.965	100	13.615	1

The source: Prepared by researcher based on SPSS results

A single discriminatory function has been created with an explanation of the contrast ratio of 100%. In the above table we focus on the value of the correlation coefficient "r" (Corrélation canonique) equal to 0.965. By its roots we find the coefficient of determination "R" which equals 0.9823, meaning that the variables of the discriminatory function explain a phenomenon Financial failure of 98.23%, the remaining percentage reflects the random error and other variables.

To test the significance of the model, the Lambda de Wilks test is based on the following two hypotheses:

➢ **Null hypothesis (H0):** the value of the level of significance SIG of the statistical Lambda de Wilks greater than 5% model was insignificant=

➢ **Alternative hypothesis (H1):** the value of the level of significance SIG of the statistical Lambda de Wilks less than 5% model was significant.

Table (07) shows that the statistic value of the Lambda de Wilks test is 0.068, follows the statistical distribution of Khi-square that equals 46.936 with a degree of freedom 21 and with a level of statistical significance SIG equal to 0.001, it is less than 5%, so the discriminatory function that was created is significant compared to the variables entered.

After determining the explanatory power of the discriminatory function and making sure of its significance, the discriminatory power is calculated for the ratios of the function and determining its order according to the following table:

Table (08): Discriminatory power and Ranking of Financial Ratios Composing the Discriminative Function

Ratios	coefficients	standard deviation	Discriminatory power	Percentage of discriminatory power	Ranking
A5	-0.5	189.09885	-94.55	62.94%	1
M2	1.139	59.63696	67.93	32.49%	2
D6	0.523	27.9687	14.63	1.51%	3
A6	-0.287	44.97142	-12.91	1.17%	4
L1	0.085	144.91647	12.32	1.07%	5
A4	-1.104	8.12424	-8.97	0.57%	6
A3	-1.956	1.98239	-3.88	0.11%	7
M3	1.352	2.7613	3.73	0.10%	8
L5	0.519	3.13122	1.63	0.02%	9
L4	0.489	4.20512	2.06	0.03%	10
A1	0	0.55801	0.00	0.00%	11
A2	-0.039	2.55978	-0.10	0.00%	12
D1	-0.104	4.15007	-0.43	0.00%	13
D2	-0.242	2.64201	-0.64	0.00%	14
3D	-0.054	1.19982	-0.06	0.00%	15
D4	0.164	0.72417	0.12	0.00%	16
D5	0	5.90692	0.00	0.00%	17
L2	0	145.02938	0.00	0.00%	18
L3	0	53.78131	0.00	0.00%	19
L6	0	53.7794	0.00	0.00%	20
L7	-0.751	0.33497	-0.25	0.00%	21
L8	-1.115	0.21748	-0.24	0.00%	22
L9	-0.178	0.08443	-0.02	0.00%	23
M1	0.343	0.29389	0.10	0.00%	24
M4	0	0.6738	0.00	0.00%	25
P1	0.816	0.42187	0.34	0.00%	26
P2	0	1.11431	0.00	0.00%	27
P3	0	2.02339	0.00	0.00%	28
P4	0	0.26256	0.00	0.00%	29
P5	0	0.34569	0.00	0.00%	30
P6	0	9.01615	0.00	0.00%	31
P7	0	0.26526	0.00	0.00%	32
P8	0	1.9946	0.00	0.00%	33

The source: Prepared by researcher based on SPSS results

The above table shows 21 financial percentages that contribute to distinguishing between the failed and non-failed Amman Stock Exchange joint-stock companies ,sales / fixed assets (turnover of fixed assets) (A5) of activity ratios, and Market value of the share / Earnings per share (Share price to its return) (M2) of market ratios, ranks first and second with Percentage of discriminatory 62.94% and 32%, respectively.

Financial ratios with a positive discriminatory coefficient for the most part belong to the performance evaluation groups represented in profitability, liquidity, and the market, which means that increasing the value of ratios leads to an increase in the value of the discriminatory function, so that the company is far from the possibility of it occurring in the area of failed companies, and this confirms the validity of the first, fourth and fifth hypothesis That is, there is a correlation and substantial impact of liquidity, profitability and market on the financial failure of joint stock companies listed on the Amman Stock Exchange═

Most financial ratios with a negative discriminatory coefficient belong to the performance evaluation groups represented in debt and activity, which means that the increase in indebtedness or activity such as the largest stock size (A2) or the asset turnover rate is high (A4, A5, A6), which appears with negative coefficient in the table, lead The lack of the value of the discriminatory function and the approach of classification of the company in the category of failed companies, which also confirms the validity of the second and third hypothesis,we also note from the table that the first four percentages have a discriminatory strength of 98%, which means that company with good activity and management, and their shares and market indicators are good, rarely fail.

Finally, it can be said that **indebtedness** is one of the factors explaining the occurrence of financial failure at the level of joint stock companies on the Amman Stock Exchange. The importance of debt coverage ratios (D6) also appears, as it appears by a positive coefficient, which helps the company to avoid failure ,as for **profitability**, whenever the company has achieved profits, it thereby avoids it from failing, and this is shown by the percentage of Gross profit / net sales (P1), as it appears by a positive coefficient, which leads to an increase in the value of the discriminatory function and the classification of the company from failure .Also, through this, it will increase the value of its market index, which makes the **market** ratios help to avoid classification of the company by failure, especially the following ratios: M1, M2 and M3, all of which appeared with positive coefficient, which will increase the value of the discriminatory function, For **liquidity**, the company is a failure as the general liquidity ratio (L8) and the quick liquidity ratio (L7) were very high, which means that there was a defect in the structure of the current assets, that is, the quick liquid assets are larger than the stock, and that the corporation obtain an appropriate liquidity level or the amount of current assets Sufficient to cover obligations or liabilities, does not prevent the imbalance or imbalance in the structure of the company's assets leading to financial failure. This is confirmed by the presence of these ratios by negative discriminatory coefficient, as for the **activity**, the more the company is able to manage well its own funds, its current assets and working capital and generate cash flows from it, the more likely it is to escape the risk of financial failure.

5. Conclusion:

The attention to the process of predicting financial failure wich based on a set of steps and determinants, and have several methods and methods, avoids the institutions and governments many material losses. The success of this process relates to the accuracy of indicators known as financial ratios that contribute to the formation of forecasting models, and to expect it in time. At the end of the study, we found that:

- Financial failure is a financial situation that does not occur suddenly, but is the result of a series of accumulations and complications that start from a certain situation, and a certain degree of liquidity shortage, which develops in the absence of attention from a bad situation to a worse situation to the stage of the deficit of financial resources Available for the fulfillment of obligations owed to creditors, the institution is usually forced to liquidate.

- Financial ratio is a relationship between two values focused on studying the value of the elements shown in the financial statements and accounting reports in order to derive information and indicators that can be used and be complementary to information.

- There is a correlation between the liquidity, debt, profitability and market ratios with the financial failure at the sample level, this means that it is a factor in the occurrence of financial failure and that the ratios mentioned in table (06) contribute to explain the financial failure and achieve predictability in advance, And the absence of correlation at the study sample level between activity rates and financial failure All according to the Pearson correlation coefficient.

- The quantitative models reached in previous studies, such as Altman study, Kida study, Sherrod study and others differ in terms of the type and number of ratios of the phenomenon of failure, However, they all outperform the importance of these financial ratios where we find most models consisting of ratios of liquidity, profitability, activity, debt and market ,this is evidence of the correlation of these percentages with financial failure and they are able to distinguish and explain this phenomenon, and this is what our study reached, where we found that the financial failure of Amman Stock Exchange joint-stock companies is due to financial factors expressed in financial ratios, which reflects the existence of correlations and effects of liquidity ratios, profitability, activity, debt And the market is on the financial failure of these companies

- This study relied on 33 financial ratios that were collected from various previous studies and calculated from the financial statements of the companies under study, as they were divided into five groups: liquidity, activity, debt, profitability and market. We have finally found that these ratios are closely related to financial failure and can be relied upon to explain this phenomenon and this is consistent with many studies, the most important of them are: Altman's study which reached four ratios that fall within the same groups explaining the phenomenon of financial failure and was able to devise a capable model To predict it.

- The contribution of the discriminatory analysis method to reaching a function or functions that are used to distinguish between groups with distinctive characteristics, and despite the progress of statistical analysis methods, discriminatory analysis remains an effective and very reliable statistical tool, and many studies have relied upon it and we have used it in our study to determine the discriminatory power of financial ratios Studied. We have found that liquidity, profitability, and market ratios have a relationship and impact on financial failure as they are able to spare companies the risk of failure, while debt and activity ratios are also explained by the phenomenon of financial failure and any increase in these ratios expresses the increased probability of the shareholding companies listed on the Amman Stock Exchange in Financial failure.

    Through the study we can call for consideration of the following recommendations:

- Adoption of transparency in the preparation of financial statements and making them available to those interested in studying them as they are the main source of financial ratios for financial failure prediction models;

- Attention to the analysis of financial ratios because of their importance in the development of important indicators on the status of companies and attract the attention of the operators of the feasibility of the analysis of financial ratios, as well as their importance in predicting financial failure

- Paying attention to the subject of predicting financial failure and giving it its share of studies and research in order to protect companies that are exposed to financial failure, and Conducting further studies and researches in this field and attempting to build a model to predict the failure of listed companies in the ASE=

    The joint stock companies listed on the ASE should be interested in identifying and predicting the factors of financial failure, and the need to incorporate non-financial indicators into financial failure prediction models due to the evolving concept of performance from a narrow financial perspective to a broad perspective that reflects the overall performance of companies.

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6. Appendices

Financial ratios distributed among the core performance groups.

Code	Description ratio	Performance Group
L1	current assets to total assets	Liquidity
L2	cash to sales	Liquidity
L3	cash flow to total liabilities	Liquidity
L4	working capital to sales	Liquidity
L5	working capital to total assets	Liquidity
L6	cash ratio	Liquidity
L7	Quick ratio	Liquidity
L8	Liquidity Ratio	Liquidity
L9	Cash to total assets	Liquidity
A1	Sales / receivables (receivables Turnover)	Activity
A2	Sales / Inventory (Inventory Turnover)	Activity
A3	Sales / net working capital (turnover of working capital)	Activity
A4	Sales / Current Assets (turnover of Current assets)	Activity
A5	Sales / fixed assets (turnover of fixed assets)	Activity
A6	Sales / total assets (asset turnover)	Activity
D1	Debt Ratio = Total Liabilities to Total Assets	Debt
D2	Total debt (short and long term) / net equity	Debt
D3	Current liabilities / equity	Debt
D4	Long Term Debt / Long Term Debt + Equity (Ordinary Shares + Premium)	Debt
D5	Shareholders' Equity / Net Fixed Assets	Debt
D6	Net profit before interest and taxes / interest (Interest rate coverage)	Debt
P1	Gross profit / net sales	Profitability
P2	Operating profit / net sales	Profitability
P3	Net profit / net sales	Profitability
P4	Net profit / total assets	Profitability
P5	Net profit / equity	Profitability
P6	retained earnings to total assets	Profitability
P7	net profit before interest and tax to total assets	Profitability
P8	profit before interest and tax to sales	Profitability
M1	(Profit after tax - Dividends) / Number of ordinary shares (Earnings per ordinary share)	Market
M2	Market value of the share/ Earnings per share (Share price to its return)	Market
M3	Share of dividends / market share price (Distribution revenue)	Market
M4	Market value per share / book value per share	Market

SPSS results for discriminatory analysis

Valeurs propres

Fonction	Valeur propre	% de la variance	% cumulé	Corrélation canonique
1	13,615[a]	100,0	100,0	,965

a. Les 1 premières fonctions discriminantes canoniques ont été utilisées pour l'analyse.

Lambda de Wilks

Test de la ou des fonctions	Lambda de Wilks	Khi-carré	ddl	Sig.
1	,068	46,936	21	,001

	Coefficients des fonctions discriminantes canoniques standardisées
	Fonction 1
A1	1,916
A2	-,039
A3	-1,956
A4	-1,104
A5	-,500
A6	-,287
D1	-,104
D2	-,242
D3	-,054
D4	,164
D6	,523
L1	,085
L4	,489
L5	,519
L7	-,751
L8	-1,115
L9	-,178
M1	,343
M2	1,139
M3	1,352
P1	,816