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# Using Sherrod Model Indicators to Predict Financial Failure: Applied Research in the National Company for Tourism Investment in Iraq for the Period (2016-2021)

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#### Abstract

The study aims to use the indicators of the Sherrod model to predict the failure of tourism companies in Iraq, in order to take preventive measures to avoid financial failure that the company may be exposed to during a certain period, to be able to get the appropriate alternatives to avoid its occurrence, the study model Sherrod was applied to the National Company for Tourism Investment in Iraq based on the financial statements of the company's financial statements for the period from 2016 to 2021, the results were satisfactory, as the study found that the company is not prone to financial failure during that period, due to the high value of the quality index Z from 25 this is evidence of its distance from the problems of financial failure.

Keywords: Financial Failure, Sherrod Model, National Tourism Investment Company.

#### Introduction

Forecasting the risk of financial failure is one of the most important tools for managing financial risks for companies, it helps to detect potential risks early and take action to avoid them, researchers in this field have been increasingly interested in the recent development of more effective warning methods and tools, one of the most famous of these methods is quantitative models, which use a set of financial indicators to assess the financial position of companies, these models have been applied in diverse business environments and over different time periods, resulting in the development of appropriate financial ratios for each environment, from this standpoint, we tried to apply the Sherrod model to the National Company for Tourism Investment in Iraq to assess the company's financial position for the period (2016-2021).

#### **Research Problem**

The problem with the study is how much indicators of the Sherrod model can assess the financial condition of the company and predict financial failure before it occurs?

#### **Research Importance**

The importance of the study is to come up with a model of quantitative models characterized by accurate results it can be relied upon to predict financial failure before it occurs, to protect the company from exposure to the risk of failure and bankruptcy.

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#### **Research Objective**

The study aims to reveal the role played by quantitative models in the process of predicting the financial failure of financial companies and to identify the extent to which the National Company for Tourism Investment in Iraq is exposed to financial failure and bankruptcy.

#### **Research Hypothesis**

The hypothesis of the study can be formulated as follows:

Sherrod model indicators have the ability to assess the financial situation and predict the extent of exposure of the National Company for Tourism Investment in Iraq to financial failure.

#### **Research Methodology**

In this study, the financial analysis of the data of the National Company for Tourism Investment published in the company's financial statements was relied upon, the study relied on the Sherrod model in data analysis, because of the ease of application of the model, and it has also demonstrated its results with accuracy in multiple environments.

1- The Concept of Financial Failure: The first to use the term financial failure is the scientist (Beaver in the year 1966) referred to it as the inability of companies to meet their obligations on time, as for the scientific side, he explained that the company fails when it is unable to pay debts or interest due, as well as non-payment of profits to shareholders and intentional payment of bank accounts, in other words, cessation of its activities and thus bankruptcy and failure (Ammari, :2015 (40).

It is the failure of the company to achieve its objectives, as a result of its wrong policies or as a result of inappropriate financial decisions, this leads to a loss of credibility and inability to pursue its activities and pay its obligations and thus causes the loss of its assets (Cihangir & Ergun, 2014: 98).

2- Sherrod Model and Indicators: Most financial failure prediction models have been based on published and unpublished financial ratios, although all models are built on the basis of financial ratios such as profitability, liquidity, leverage, dividend policies and others to evaluate or measure multiple aspects of the company's activity, however, they differed in terms of the relative weight assigned to each of the ratios according to the different environmental conditions of the companies (Whit, 2015: 13).

Sherrod model consists of six main financial ratios and each ratio has its own weight, where the dependent variables and the independent variables of the model, the mathematical formula of the Sherrod model is as follows (Al-Hamdani and Al-Qattan, 2013: 462):

$$Z = 17X1 + 9X2 + 3.5X3 + 20X4 + 1.2X5 + 0.1X6$$

Whereas:

Z = financial failure index (dependent variable).

(X1...... X6) represents the independent variables in the model and each has its relative weight as shown in the following table:

Indicator	<b>Financial ratios</b>	<b>Relative weights</b>	Indicator type
X1	Net Working Capital / Total Assets	17	Liquidity
X2	Cash Assets / Total Assets	9	Liquidity
X3	Net Equity / Total Assets	3.5	lift
X4	Net profit before tax / total Assets	20	Profitability
X5	Total Assets / Total Liabilities	1.2	lift
X6	Net Equity / Total Fixed Assets	0.1	lift

Table (1): The Indicators Used by the Sherrod Model and its Relative Weights.

Source: (Gharbi and Jabbar, 2022: 44).

According to Table (1), the largest indicator of the model is the liquidity index and its weight ratio17, this is because one of the objectives of the model is to measure the degree of risk when granting loans, i.e. to ensure the company's ability to repay the loan obligations, another main objective is to know the ability of companies to carry out their activities and thus measure the success or failure of companies (Raheesh and Shenouf, 2019: 562).

Based on the results of the Z value, the risk score of companies was divided and classified into five categories according to the degree of their exposure to the risk of financial failure as shown in the following table:

Table No. (2): The Degree of Risk or Vulnerability to Financial Failure According to the Sherrod Model.

Categories	Degree of risk	Z interval value	The company's position on financial failure
First	No risk	Less than 25	The company is not prone to financial failure
Second	Low risk	Between 20 and 25	There is little chance that the company will be
Second	LOW HSK		exposed to financial failure
Third	Medium Risk	Between 5 and 20	Difficulty predicting financial failure
Fourth	High Risk	Between -5 and 5	The company is at risk of financial failure
Fifth	Very high risk	Less than -5	The company is highly vulnerable to financial
111111			failure

Source: (Mohammed, 2016, 35-47).

Sherrod's model shows that the higher the value of the Z index and the higher the risk of financial failure, on the other hand, whenever the value of the index Z decreases, the risk score is high for financial failure, i.e. the index goes in the opposite direction with the degree of risk (Al-Hamdani, 2013: 465).

Each of those indicators that make up the model has a direct impact on interval Z value between the evaluation of success and failure, due to their importance, these indicators will be divided into groups and according to their nature and the details of each indicator for the Sherrod model will be presented as follows:

- A- Liquidity Indicators: Liquidity indicators are one of the main indicators of the Sherrod model, the results of applying the model are mainly based on liquidity ratios, liquidity is defined as the ability of companies to meet their short-term obligations on their 2022 maturity: 670 (Houas & Ibrahim).
- **B-** Leverage Indicators: The Sherrod model includes three indicators of financial leverage, which affect the results of the application of the model's equation and its work significantly, financial leverage is the extent to which a company relies on fixed-income sources of financing, such as preferred stocks, bonds or loans, to finance its activities provided that the company commits to pay its dues, which affects the amount of profits obtained by owners and the degree of their exposure to risk (Pierre, 2010: 785).

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The size of companies is also related to the risks they are exposed to as a result of borrowing, as large companies have a lower degree of risk than small-sized companies, as a result of having greater access to loans and interest rates, they also have a greater ability to diversify products (Yaseen, Mohammed, (2023: 6).

**C- Profitability Indicators**: profitability is the result of the application of various policies in the management of the company's affairs, it represents the relationship between the profits made by the company and the investments that participated in achieving these profits, profitability is one of the goals that companies seek to achieve because it is considered one of the main pillars that help them grow, prosper, and the survival and continuity of companies (Shahzad, et.al, 2015: 22).

Profitability is an important indicator for management, creditors, investors and stakeholders, on the part of management profitability measures the success of the various policies of management, as for lenders, profitability ratios give a safety indicator to profitable companies, and investors help them seize profitable opportunities (Yaseen, Alrefaee, 2022: 2).

**3- Research Sample**: The study population is represented by the total companies that belong to the tourism sector in Iraq, the study was the National Company for Tourism Investment in Iraq The company was established under the certificate of incorporation issued by the Companies Registration Department on 5/8/1978 with a capital of (40) million dinars and the company's capital currently reached (6253175025) dinars.

And the company's management place Iraq / Baghdad / swimming pool / near garage 2000 and the company branch in the province of Nineveh, part of it has been rehabilitated and work is still ongoing to rehabilitate the remaining part of the complex and the nature of the company's activity is the establishment, management and purchase of various tourist facilities (hotels, restaurants, camps, tourist resorts, rest houses, cinemas) and any other facilities that serve tourism purposes and contribute to all activities included in real estate investments, the company's main goal is to develop the tourism aspect.

**4- Application of the Sherrod Model:** The following table represents the values of the indicators of the Sherrod model which was extracted from the financial performance indicators of the National Company for Tourism Investment for the period from (2016) to (2021), which was adopted by the Sherrod model as basic variables.

Company for	I ourism Inve	stment.				
Variable	2016	2017	2018	2019	2020	2021
X1	0.769	0.685	0.635	0.619	0.643	0.697
X2	0.636	0.424	0.326	0.329	0.377	0.415
X3	0.942	0.962	0.947	0.955	0.955	0.966
X4	0.065	0.031	0.076	0.089	0.102	0.117
X5	17.103	26.359	18.825	22.178	22.141	29.324
X6	5.456	3.479	3.037	2.846	3.067	3.587

**Table (3):** Values of Variables (x1-x6) According to the Sherrod Model of the National Company for Tourism Investment.

**Source:** Prepared by the Researcher Based on the Financial Reports of the National Company for Tourism Investments.

From Table (3), the following was concluded:

• From the company's liquidity indicators were variable X1 was (0.769) in 2016) it represented the highest value of the variable and then its value decreased to (0.685) in the

year (2017), while in the years (2018, 2019, 2020) its value increased and was almost equal to those years it reached (0.635, 0.619, 0.643) respectively, and increased slightly in 2021 to reach (0.697), and these results reflect the good state of the company's liquidity index.

- Among the variables that also represent liquidity indicators is the value of the variable X2 was at its highest level in the year (2016) where its value reached (0.636) after that and in the following years it decreased from that value, the results were very similar in the years (2018) (2019) its value was (0.326) (0.329), which indicates the availability of sufficient liquidity to pay the company's obligations.
- The profitability index, represented by the ratio of net profit before interest and tax to total assets, reached the lowest value of the index (0.031) in the year (2017) the reason for this is due to the decrease in profits achieved by the company, as the value of profits reached (436,152,141), indicating the lowest level of profits compared to the rest of the years.
- In the year (2021), the value of the profitability index increased to (0.117) this result represents the highest value of the index during the study years and this explains the development of the company's financial performance and efficiency in investing its assets.
- The value of the leverage variable X5 which represents the ratio of total assets to total liabilities, the results were good during the period studied and the year (2016) recorded the lowest value of the variable (17.103) then its value increased to reach (18.825) in 2018 and then its value reached (22.178) (22.141) in the years (2019) (2020) respectively, in 2021, the highest value of the index was (29.324).
- Variable X6 of the leverage indices, which represents the ratio of net equity to total fixed assets, the value of the variable was the highest in the year (2016) where it reached (5.455) and the lowest value of this variable came in (2019) where it reached (2.846), but its value was almost equal and the difference between them was small during the years (2017, 2018, 2020, 2021).
- Based on the results presented for the values of the variables (x1-x6) of the National Company for Tourism Investment and analysis of the results according to the Sherrod model, to employ these results, the Sherrod model equation must be applied to reach the most important indicator to know the degree of risk to which the company is exposed, which is the quality index Z. Table (3) shows the results of the Z value of the National Tourism Investment Company.

Company for the Period 2016-2021.						
Year	2016	2017	2018	2019	2020	2021
Z-value	44.448	29.916	41.453	45.517	46.598	56.846

**Table (4):** Z Value Results According to Sherrod Model of National Tourism Investment Company for the Period 2016-2021.

**Source:** Prepared by the Researcher Based on the results of the Application of the Mathematical Equation of the Sherrod Model.

44.12967

Average Z-values

Table (4) shows the results of the quality index Z and according to these results can know the financial position of the company and interpret the results of its financial performance, the results of Z values for the period from ((2016 to 2021)) were greater than (25) and this indicates the good financial position of the company and that it is considered in the boom stage, the high value of the Z quality index indicates the strength of the financial position and the low value of the risks to which it is exposed.

The average Z values were (44.448), which means that the company falls within the classification of the first category, which indicates that the company is not exposed to the risks of financial failure and the extent of its ability to continue and survive, that is, we can say that it is in the stage of financial stability, based on the indicators of Z values, the results can be projected into a curve that shows the financial situation of the company, as shown in Figure 1 below.



Figure 1 The Regression Path of the Sherrod Model Equation on the National Company for Tourism Investment.

Source: Prepared by the researcher based on the data of Table (4).

Based on the results of the application of the Sherrod model on the National Company for Tourism Investment in Iraq, it becomes clear to us the validity of the hypothesis of the study, Sherrod's indicators have the ability to assess the financial situation and predict the vulnerability of the National Company for Tourism Investment in Iraq to financial failure.

# Conclusions

- 1. Financial failure is one of the risks that companies of all kinds are exposed to during their lifetime, which leads them to stop their activities.
- 2. It is possible to rely on many indicators that help companies evaluate their performance and how close or far they are to the risk of financial failure.
- 3. The Sherrod model is a good way to identify the ability of tourism companies to carry out their activities and survive.
- 4. Financial ratios are the main pillar in building the Sherrod model, which is related to mathematical relations with the items of the financial statements.
- 5. The results of the application of the Sherrod model in the current study showed that it is suitable for the Iraqi environment in the field of tourism and hotels, companies in this field can benefit from the model in estimating their future financial condition, the study also showed that the National Company for Tourism Investment is in a good financial position during the current study period, the quality index of the model was greater than (25), which gives a good picture of the future status of that company.

# Suggestions

1. Using financial failure prediction models for tourism companies to assess potential financial risks and take the necessary measures to avoid it.

- 2. Determine the appropriate financial indicators to assess the financial position of tourism companies periodically and regularly, using experts specialized in financial analysis.
- 3. Periodic auditing of the financial statements of tourism companies to ensure their accuracy and the integrity of their results, this is due to the importance of financial statements in assessing the financial position of companies.
- 4. The use of the Sherrod model by tourism companies, this is because the current study proved the ability of this model to predict financial failure before it occurs.
- 5. Work on following up studies and research that are concerned with developing models for predicting financial failure to reach models with high accuracy in results, it can be applied more easily than methods and models based on traditional methods.
- 6. Taking into account the development of an administrative unit in the company whose task is to manage risks and work to analyze and explore risk sites from a financial point of view and work to find ways to address them and reduce their future effects, it is necessary to work to detect cases of financial failures in its early stages, so that management can fix it before it reaches the final stages that are difficult to address and lead the company to financial failure.

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