Darshan - The International Journal of Commerce and Management ISSN: 2583-1682 (online) Volume - 4, Issue – I, June-2024
Bi-Annual double-blind peer-reviewed International Journal
Paper Submission Date: 1st April 2024 Paper sent back for Revision: 1st April 2024 Paper Acceptance Date: 19th April 2024

Prediction Model for Financial Distress: Using Proposed Data Mining

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Abstract: *The issue with financial distress in current research is that banks don't understand the risks of financial failure and how it will affect the continuation of their operations in the future. This is because traditional methods used to predict financial failure through financial analysis based on financial ratios produce inaccurate results and cannot be trusted to determine whether banks' operations will continue. Which calls for the development of cutting-edge methods that can detect failure and a loss of continuity in advance. The study attempts to use data mining technology to forecast bank financial failure and examine how it can offer data that can be used to assess how long banks will continue to function. This attempt recommended creating a predictor system using an artificial neural network with established back propagation. The proposed module was tested using banks from the Free Iraq Stock Exchange dataset. The investigative results show a useful way to identify failing banks with a high rate of discovery and a low rate of false alarms.*

Key Words: *Financial, Manufacturing, Iraq Stock Exchange*

INTRODUCTION:

According to the continuity presumption in accounting theory, the accounting unit has been a continuous and continuous unit of activity since its creation, regardless of the owners' actual ages. In other words, the main goal of enforcing continuity (intuitive continuity) is to distinguish between the age of the economic unit and the age of the owners as separate individuals who have their own goals and intentions. In addition, that the natural view of economic unity is the long-term continuation of its activity without separation from previous periods and later, until the liquidation of the actual. Since the imposition of continuity was considered one of the fundamental assumptions in accounting theory because it is one of the cornerstones of the foundations and rules of accounting measurement, which left its impact on professional practices in terms of avoiding unity and some potential losses, the imposition of continuity. When all that remains of the economic unit is money after an infinite amount of time, it is continuous. This period is adequate to accomplish its goals. When presenting the assets and liabilities in the statement of financial condition, this presumption is used as reason for disregarding the current liquidation values.

MATERIALS:

Cases of imposing continuity: The current reality frequently witnessed the disappearance of economic units, whether businesses or organizations and solutions economic units in place, demonstrating that the imposition of continuity is the imposition of the present rather than the future, i.e., economic units will operate for an indefinite period of time until the achievement of its objectives and economic plans. Three cases can distinguish the imposition of continuity, which are as follows:

NORMAL (NATURAL) CONDITION:

This case indicates that it is expected that the economic unit will continue to operate for a long period of time in order to be able to pay its obligations and benefit from its resources, i.e the establishment is able to continue the activity without providing a specific and specific information at present, and that the imposition of continuity relates to past and present activity And is not inconsistent with activity for future periods. Thus, this assumption is based on a logical interpretation that at any point or time in a given time the enterprise can continue its work.

The state of the mind or the limited duration: Is the case where the age of the economic unit is predetermined, such as the grant of a government concession to invest a particular facility for a period of time for a period of time and the follow-up of the investment of this facility after the end of the period to the government or to the donor of the right of freedom. This case shows that the economic unit lasts for a known period at present and is called the case of the concession or duration of the concession. In such cases, continuity is explained by the useful life of the asset or the duration of the concession, In light of this, accounting measurement and financial statements are prepared as the

economic life of the unit approaches. In this case, it is necessary to exclude the imposition of continuity and the adoption of a method that takes into account the remaining period and the nature of the liquidation process to determine whether the liquidation is gradual or forced. In the case of liquidation, the accounting measure is adopted according to the expected net value.

The existence of indicators at the present time allowing the presumption of Discontinuity

Is an abnormal condition that clarifies and identifies indicators of discontinuity in terms of probability of liquidation or actual liquidation status. It is a predictive state that represents a constraint on the normal state of continuity, ie, it is similar to the forecasting process, may be correct or absent. In this case, Report on the validity and fairness of the financial statements.

THE SYSTEM OF PROPOSALS:

The major goal of this work is to develop an effective data mining system that can identify the risk associated with loans and borrowers and detect financial failure in banks while lowering false positive alerts and computational expense. The suggested data mining technique is capable of differentiating between banks that will be spared and continuity banks. Cluster and classifier modules are employed in the multi-level system's detection process to distinguish between normal and abnormal continuity banks and to determine the type of failure. System for multi-level data mining: The suggested system has four steps, and each step is Data standardization is the first step, feature selection is the second, training is the third, and testing is the fourth, as shown in figure (1).

Standardization of Data

1. Data gathering (using a dataset made up of banks obtained from the Iraqi Stock Exchange).
2. Preprocessing is done by removing a number of early warning control standards that are used to gauge the soundness of financial presentation. These principles are used as measuring tools to gauge how sets are presented, classify them, and identify any economic imbalances that may be present so that failure-causing rainy financial troubles are avoided. The system of rating banks based on the outcomes of a field examination procedure known as CAMELS is the most significant of these factors, and it was taken into account when choosing ratios on a number of criteria, including: For (A) to have any significance. (B) Make its interpretation easier. (C) Its components are simple to access.

THE SUGGESTED SYSTEM'S SECOND LEVEL

- According to the type of failure and using CAMELS criteria, isolate the failed bank in explicit failure clusters.
- Depending on your preferences, prepare the weightiness vectors from effort elements to hidden components and from hidden elements to production elements.
- Determine desired production from the named failure banks for each failure cluster.
- Before transmitting to each neuron in the hidden coating, every component in the failure cluster bank incorporates contribution element X.
- Determine the production of each component in the hidden coatings. Z from Hidden

RESULT:

The suggested algorithm was applied to the dataset from the Free Iraq Stock Exchange to evaluate banks. In order to agree on standard banks as failing banks and too, the projected approach educated using 23 banks that were carefully selected since the dataset contains period from 2015 to 2017 as examples. Notice the category of banks. Three-estimation standards castoff to measure the projected element. To checker the competence of the projected module two trials Lead, in the first trials the procedure examination through (26) banks contain financial statements. The effects acquire display the great discovery rate of the model equal to (0.92) and little wrong terror rate (0.04). The additional trials behavior with (30) registers separately also include failure banks. The outcomes of the trials raining in identical variety and exposed in table (2), and table and table (1) describe the evaluation measures used in the proposed system. The topology of network shown in table (3).

Tables:

Table (1): The evaluation measures in the proposed system	
Name of measure	**value**
Correct Negative (TN)	Specify the correct prediction of continue banks.
Correct positive (TP)	Specify the correct predication of failure banks.
incorrect positive (FP)	Specify the wrong predication of continue behavior as failure.
incorrect negative (FN)	Specify mistake predication of failure behavior as continue banks.
Accurateness (ACC)	$\frac{TP+TN}{TN+FP+FN}$
Discovery rate (DR)	$DR = \frac{TP}{TP+FN}$
Incorrect alarm rate (FAR):	$FAR = \frac{FP}{TN + FP}$

Table (2): Trial result of the proposed algorithm				
Number of trial	**Numberof samples (banks from 2015-2017)**	**DR**	**Accuracy**	**FAR**
Trial 1	26	0.92	0.97	0.03
Trial 2	30	0.90	0.98	**0.04**

Table (3): Constraints of Back Propagation Algorithm	
Constraints name	**Value parameters**
No. of layer	**3**
basis	**1**
Learning rate	**0.5**
Number of components in contribution layer	**30**
Number of components in concealed layer	**25**
Number of components in production layer	**5**
Malicious square error	**0.0001**
Maximum amount of repetition	**25**

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