Towards the adoption of credit scoring to predict the financial failure of private institutions: a practical study at the Algerian Popular credit (Guelma Agency)

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Abstract:

This study aims to find out to what extent the Credit Scoring method predicts the financial failure of private institutions; in this respect, a practical study was held at the Algerian Popular Credit (Guelma Agency). The study was implemented as follows: first, recognizing the different stages of applying the method of Credit Scoring at the agency so as to grant a mortgage to an individual, and then applying (Altman Z'-score model) to three private institutions belonging to different sectors to judge their ability to pay, and to decide whether or not to grant the loan.

The results of Z'-score were as follow:

1.The First institution: (2.99 > Z' >1.23) therefore the status of the institution is uncertain, in this case the loan will be accepted provided that there are real guarantees (mortgages) equal to the value of the loan.

2.The Second institution: (2.99 < Z'), so the institution has a good condition; thus, the loan is accepted.

3.The Third institution: The value (Z' <1.23), and therefore the institution is on its way to bankruptcy, so the loan is refused.

The results of the study confirmed the importance of the application of the Altman model in predicting financial failure for private institutions. The multiplicity of credit scoring models, depending on the sector or activity of the institution in which it is used, has increased the effectiveness of these models.

Keywords: Credit Scoring, financial failure, private institutions, Altman model, Algerian Popular Credit.

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I-   Introduction:

Banks are the backbone of the national economy, playing a crucial role in implementing the country's fiscal policy objectives, thanks to their active contribution in raising the pace of social and economic development by injecting the necessary funds to rotate production in various economic projects through credit grants.

Banks, in operation, have many departments and one of their most important departments is that of credit-risk management because this later makes profits by granting loans. The credit-risk management department needs to make decisions on whether or not it could give loans to their customers. This department normally operates on important procedures based on certain criteria that have been systematized, for example, the extent of customers' credit worthiness prior to getting loans.

Since the credit worthiness of customers relates to the extent of their ability to pay, this is difficult to be ascertained. The characteristics of an economic system is based on the market economy and its competitiveness, and the increase of private sector institutions, so it becomes compulsory for the Bank's analysis of loan applications (especially private institutions) to depend on modern statistical methods, in order to predict the likelihood of customers being exposed to Financial Failure. Despite the importance of the classical method (financial analysis) in the analysis of credit risk and forecasting the financial stumble of institutions, it is limited in efficiency as it leads to irrational decisions, especially when it comes to granting loans to private sector institutions. The degree of risk here is very high, and to avoid the shortcomings of the classical method, several alternatives have emerged based on statistical methods. In this regard this study sought to shed light on one of the most important modern methods in the world of business, Credit Scoring, that offers more objective and accurate study of loan applications.

the radical economic transformations that the Algerian economy has undergone since the beginning of the 1990s, as a result to the adoption of the market economy which lead to the spread of the phenomenon of Financial failure; it has become necessary for banks to adopt more effective criteria in granting loans, based on statistical methods that predict financial failure for private institutions. And the method of credit scoring is undoubtedly one of the most important methods that has different models of options which meet the needs of each institution.

If the financial failure of private institutions has a huge impact on credit risk management in banks:

How does the altman Z'-score model help the Algerian Popular Credit (Guelma) to predict financial failure for private institutions?

Research Questions

✓ Does the Credit Scoring method help the Algerian Popular Credit "Guelma" to predict the credit worthiness of customers?

✓ Does the use of Altman Z'-score model help the Algerian Popular Credit "Guelma" decide to grant credit to private institutions?

In order to answer the questions raised, the following hypotheses have been formulated:

✓The use of The Credit Scoring Method enables the Algerian Popular Credit "Guelma" To significantly predict the credit worthiness of customers.

✓The use of Altman Z'-score model identifies private institutions that are unable to pay, this later helps the bank decide to grant loans.

The Importance of The study are:

- Learning about the most important and up-to-date methods used by banks to predict financial failure for organizations.

- Draw attention to the multiple advantages of the drip loan method in reducing credit risk, which Algerian banks can experience as a result of the loan process.

- Demonstrate the effectiveness of Altman Z'-score model in predicting financial failure for private organizations.

The objectives of the study are:

✓ Learn about the Credit Scoring method, and the most important credit models that seek to predict financial failure for institutions.

✓ Highlighting the stages that CPA Bank « Guelma » go through to apply the Credit Scoring method.

✓ Identifying the role that altman Z'-score model plays in judging the ability of private institutions to pay back

Many studies have tackled the effectiveness of many models of predicting financial failure in several countries. Here are some examples; they are arranged in chronological order from the latest to the oldest, as follows:

Ghassen., Meriem(2020) "*the Use of The Altman model to predict the financial failure of industrial enterprises in Saudi Arabia*",this study was used to find out that companies belonging to this sector may be exposed to the risk of financial failure due to the economic crisis that hit the Saudi market, based on a sample of 75 industrial companies listed on the Saudi stock market from 2012 to 2018, the study found that altman is an important model that has the potential to predict the future status of companies.(2020 ،باجليدة و العوبثاني)

Izzat Hani Aboushehap(2018) "The Effectiveness of the Kida Model to Predict the Financial Failure in Public share Companies Listed in Amman Stock Exchange,"This study aimed to answer the following question: To which extent the Kida model is effective to predict the financial failure of companies listed on the Amman Stock Exchange? These models were applied to 10 companies that were referred to the liquidation or suspended companies and 10 ongoing companies (not referred to the liquidation).The study found that 9 out of 20 companies did not achieve results in line with the Kida model, It was noted that the Kida model tended to predict financial failure, while indicating any financial difficulties or changes faced by a company(2018 ،أبوشهاب ع.) **.**

Nasreddine Kara and NouriaKadri (2017) "Towards a model of Managing and estimating the risk of bank loans using the method of Credit Scoring. Case study: the Bank of Agriculture and Rural Development Mascar", this study sought to estimate the risk of loan default by building a loan model to predict the financial failure of institutions, through a practical study at the Bank of Agriculture and Rural Development Mascar agency. This study was conducted on a random sample of 50 borrower companies 8 of which were stumbled, in 2014. The study found that the Credit Scoring model contributes to the management and estimation of the risk of failure in the Bank of Agriculture and Rural Development in the state of Mascar for 96%(2017، قارة عشيرة و قادري) .

HawarAbdulkareem (2015)"The revised Altman Z'-score Model: Verifying its Validity as a Predictor of Corporate Failure in the Case of UK Private Companies.The primary objective of this research was to examine the accuracy and validity of the revised Altman Z'-score model in predicting corporate bankruptcy through analysing 24 private furniture manufacturing companies in the UK. These companies were divided into 12 failed and 12 active companies. Furthermore, in this study, the FAME database was used in order to obtain the data available in the financial reports of each active and inactive company. The results of this thesis illustrate that the accuracy of the revised Altman Z'-score model for inactive companies was 83.3% and 66.7% in years one and two before bankruptcy. However, the Z'-score accuracy for non-failed companies was 91.7% at one year prior to failure and 81.3% at two years prior to bankruptcy.It was also shown that the predictive ability of the revised Altman Z'-score model was accurate in predicting bankruptcy in the UK. Therefore, concerned authorities can use this model to take corrective or preventive action(Hawar, 2015).

SherifGhyat and AbdelmalekMehri (2015) "Analysis of the causes of the financial Failure of investments and predicting it using analysis and forecasting models" case study: some projects in the National Agency for the Support of Youth Employment in Algeria" this study aimed to show how to use (Altman, Kida and Sherrod) models in analyzing the causes of the financial performance of investments in order to avoid failure. In this respect, a case study was conducted on three different projects(food packaging, poultry breeding, and transporting and delivering goods). Results had shown that evaluation is a prerequisite for the project to be held providing that it relies on advanced scientific studies، غياط و مهري) . (2015

1. The theoretical framework of the study.

Credit scoring is a method of evaluating the credit risk of loan applications. Using historical data and statistical techniques, credit scoring tries to isolate the effects of various applicant characteristics on delinquencies and defaults. The method produces a "score" that a bank can use to rank its loan applicants or borrowers in terms of risk. To build a scoring model, or "scorecard," developers analyze historical data on the performance of previously made loans to determine which borrower characteristics are useful in predicting whether the loan will be performed well. A well-designed model should give a higher percentage of high scores to borrowers whose loans will perform well and a higher percentage of low scores to borrowers whose loans won't perform well. (Mester, 1997, p. 04)

The first appearance of the Credit Scoring method was the result of studies of Beaver and Altman (1968), who relied on statistical analysis, which later expanded all over European countries, particularly France(صفحة 11 ،2013 ، و بلجيلالي ، بنية ،عزي).

1.1. Definition of study variables.

- **Credit Scoring**.

According to Flaman(1997) credit scoring is defined as, "mechanism for providing a rank to a borrower in order to estimate the future performance of the loan.(Diallo, 2006, p. 04)

Kenton (2019) on the other hand defines it as follows:

Credit scoring is:" a statistical method used to predict the probability that a loan applicant, existing borrower, or counterparty will default or become delinquent. It provides an estimate of the probability of default or delinquency, which is widely used for consumer lending, and mortgage lending(Kenton, 2019, p. 01).

He also said that, "A credit score is a numerical value determined by a statistical model based upon past credit behaviors, which predicts the likelihood of future loan default". (The World Bank Group, 2019, p. 11)

Credit scoring :The Basics(Mac, 2013, p. 10)

- ✓ A credit score is a numerical rating used by lenders in the loan approval decision process.

- ✓ Credit scores are used – along with your credit report and other information from your loan or credit application – to determine your eligibility for a loan.

- ✓ Credit scores speed up the loan approval process.

- ✓ Just as with your credit and credit behavior, credit scores change over time.

- ✓ Credit scores do not include race, religion, national origin, gender or marital status as factors.

- ✓ By using credit scores, lenders and creditors treat each person objectively because the same standards apply to everyone.

- ✓ Credit scores may also be used to determine the interest rate you get on a loan.

- ✓ Credit Score statistically analyzes customer-related variables through a certain number of economic and financial ratios that give indicators on the status of enterprises for two or three years ahead in order to identify institutions with difficulties

- ✓ the variables (ratios) affecting the possibility of repayment or non-payment make the variables of the model in the a linear form called credit scoring, each of the selected variables is linked to a coefficient called the weighting coefficient, where this coefficient reflects the extent to which the associated variable indicates the solvency of the institution.(Azzouz, 2011, pp. 04-05)

The function can be placed as follows**:**

$$Z= \sum_{i=}^{n} \alpha i \times Ri + \beta$$

Z: (Score)

i:Weighting factor

Ri: Ratios included in the model

β: Constant

- Financial Failure.

The Failure of a company means that its available financial resources are unable to meet the requirements that guarantee its continuity. (Prasanna, A, & M, 2011, p. 216)

The term Financial failure is a broad and somewhat ambiguous term; there is no general agreement on its definition, some studies defined it as bankruptcy, Altman (1968). While others attributed it to the inability to pay commitments before dateline. Roselinking (1996); however,defined it as " Inability to meet debt suppalling with no means of repayment as insufficient assets to cover liabilities. (Arkan, 2015, p. 812)

(Zapounidis, 1995) said that a broad definition of qualitative variables should be given in the analysis of financial distress, taking into account qualitative variables as well as financial variables will provide a more rational and holistic analytical framework for predicting failure.(BenJabeur & Fahmi, 2014, p. 03)

In a nutshell, Financial failure is defined as the inability to pay commitments due to inadequate working capital. In other words, it is the case in which a company goes bankrupt as a consequence of not being able to fulfill its current liabilities. Firm that experiences financial failure can not meet its obligations or has difficulty in fulfilling its obligations in time.(Zeytanoglu & Akaram, 2013, p. 108)

The following table shows the distinction between a set of concepts similar to Financial failure.

Table (1) :Distinction between similar terms to Financial failure.

Characteristics	Terminology	
*The institution's inability to achieve an appropriate rate of return (Equal to or exceeds the cost of the capital invested in it), from operating and investing its assets. *or the inability of a company's revenues to cover all its costs.	Economic. Failure	Financial Failure
* A company's inability to pay obligations with accumulated losses ;thus, halting activity.	Financial Failure	
*The inability of the institution to meet its short-term obligations.	Technical Insolvency	Insolvency
*The institution's inability to pay its short and long term obligations. i.e. The total assets have less than the total liabilities, in addition to suffering from accumulated losses.	Real Insolvency	
*It refers to the state of bankruptcy of an institution as a result of its inablity to pay its debts.	Financial Bankruptcy	

The main objective of the scoring method is to distinguish between institutions with good financial status and those who are unable to pay, with the least errors possible. To achieve this goal many studies have been carried out starting from the American models since 1966, and then expanding to so many others. The most important models are mentioned in the table below.

Table (2) : Scoring models for predicting financial failure of firms.

Moyer	Argenti	Libby	Lev	Wilcox	Altman	Beavers	Researcher
1977	1976	1975	1971	1971	1968	1966	Year
Casey	Campisi	Booth	Taffler	Kida	Ohlson	Altman	Researcher
1986	1985	1983	1982	1981	1981	1977	Year
	Koh and Tan	Lennox	Ward and Foster	Hat	Koh	Sherrord	Researcher
	1999	1999	1997	1992	1990	1987	**Year**

المصدر: محمد مطر ،الاتجاهات الحديثة في التحليل المالي و الائتماني"، ، دار وائل ،ط 4 ، 2016، ص 363.

Note from the table the multiplicity of financial failure prediction models, and since we are studying the financial default of private economic institutions, we have adopted (Altman Z'-score model) to predict the ability of the institutions in question to repay the loan.

- Altman Z'-score model.

In 1968 Altman has applied multivariate discriminant analysis to derive a linear combination of ratios, which "best" discriminate between financially distressed and non-distressed firms. He has used a matched-pair sample of 33 bankrupt and 33 non-distressed companies from the same industry. Similar to Beaver, 22 ratios for analysis were selected based on their popularity in literature and potential relevance for study. These were grouped into five categories: profitability, liquidity, leverage, solvency and activity. After statistical analysis, Altman has identified 5 most important ratios and proposed the following discriminant function, known as "Altman's Z-Score": (Grushniene, 2016, p. 225)

$$Z = 1,2X1 + 1,4X2 + 3,3X3 + 0,6X4 + 0,999X5$$

X1 = working capital / total assets.

X2 = Retained earnings / total assets.

X3 = Earnings before interest and taxes / total assets.

X4 = market value of equity / book value of total liabilities**(debt)**

X5 = sales / total assets.

Altman's revised Z'-score (1983) model It is obvious that the original Altman Z-score (1968) model was utilized discriminant analysis as a first phase and depends upon on data for publicly held manufacturers companies. Subsequently, Z-score technique was extended by its author (Altman, 1983) to be used for other industrial sectors such as private manufacturing companies. Thus, revised Altman Z'-score (1983) was published as an exceptional model for those sectors. As a result of that, original Z-score formula was changed by Altman to replace book value of equity for market value in X4 in order to match them with different parameters. This leads to change in the classification standards and Z-score results. Finally, the revised Altman Z'-score formula is shown as follows:(Hawar , 2015, p. 15)

$$Z' = 0.717 X 1 + 0.847 X 2 + 3.107 X 3 + 0.420 X 4 + 0.998 X 5$$

X1= Working Capital/ Total Assets

X2 = Retained Earnings / Total Assets

X3 = Earnings Before Interest and Taxes / Total Assets.

X4 = Book Value of Equity / Total Liabilities .

X5 = Sales / Total Assets.

Z'**:** is the discriminatory point between good and default firms.(C:/Users/DELL/Desktop/Altman_Z-Score.pdf, pp. 02-03)

- Green Zone: if 2.99< Z' the firm is in a good condition.

- Red Zone: If (1.23> Z')   the model expects the enterprise to go bankrupt.

- Misty Zone: If (2.99 > Z' >1,23),   the firm's state is uncertain.

2. The experimental framework for the study.

2.1. Application of the scoring method of CPA bank agency "Guelma".

predicting the financial default of private institutions adopting the modified Altman model

- Definition of the Algerian Popular Credit Bank CPA.

"CPA" was established on December 29, 1966 by decree No. 36-66 with a capital of 15 million DA. It includes about 150 agencies: the Bank's Director expects to open 10 more agencies by the end of the year 2020.

The bank's primary function is to carry out banking operations, finance, deposit receipts, loan making.

- ✓ The functions of the Algerian Popular Credit bank can be summarized as follows:

- ✓ .Develop its resources and make good use of the potential of the financial market.

- ✓ . facilitate monitoring, and decision-making through the use of media (audiovisual equipment, seminars,publicity...)

- ✓ .Enhancing the workplace atmosphere through the use of modern technologies like credit cards.

- ✓ .Improving the level of training by giving priority to qualified competencies.

- ✓ .Improve the relationship with customers by examining the quality of transaction, addressing customer affairs, and taking into account customers' complaints and suggestions.

- ✓ Improve the management information system through the use of TIC.

The Agency of Guelma**(320)** is one of the Algerian Popular Credit bank agencies. It occupies an important position in the center of Guelma; it was established on May 14, 1967, it includes about 34 workers. The agency has known an increasing number of customers, due to the status of market economy.

- Stages of applying Credit ScoringCPA, Guelma(320).

In order to reduce the credit risk caused by customers' inability to pay, we will use the scoring method through tracking the different stages of applying it by CPA Guelma when giving a mortgage.

Before identifying the process of applying the scoring method, we should first highlight the scoring criteria set by the agency.

Scoring is given to each customer according to six elements in the rating card:

Table (3): Scoring method assessment

Scoring	Borrower Status	Scoring Criteria
40Pts	**108000,00 < P**	Borrower's salary Loan (P)
30 Pts	108000,00 >P > 72000,00	
20Pts	72000,00> P > 54000,00	
10 Pts	54000,00 >P > 36000,00	
0	P < 36000,00	
20 Pts	A stable economic sector	Borrower's occupation
15Pts	Stable contracts, liberal professions.	
10Pts	Unstable contracts and economic sector.	
5 Pts	Other occupations	
15 Pts	Savings	Source of Personal Contributions
10 Pts	Family aids	
5Pts	Loan	
10 Pts	%40≤	Personal Contribution
8Pts	% 30-39,99	
6Pts	% 10-29,99	
10 Pts	Grounds, house, stores	(Properties Loan guarantee Funds)
8 Pts	Shares	
6 Pts	Cars, furniture	
5 Pts	< 30	Age
4 Pts	40-30	
3 Pts	50-40	
2 Pts	70-50	

Source: Prepared by the researcher based on documents submitted by the Bank.

The above credit rating explains the criteria of scoring upon which the customer's status is judged, besides his ability to repay. Now, the process of scoring will be explained by examining the mortgage file of Ms. Salima.m.

Ms. Salima.M. Asked for a mortgage from CPA Guelma to buy an Apartment in the New City neighborhood. After being interviewed and submitting all the financial documents, the staff in charge took their time to investigate whether to grant her the loan or not. The process of applying the scoring went as follow:

✓ After opening the loan system in the computer, many icons show up on the screen, and "scoring" is the one to be selected.

✓ Choose house purchase among a set of data related to the purpose of the loan requested.

✓ The first scoring file then appears,

❖ Primary information:

- Name: Salima, M

- Date of Birth: …/…./1987

- Marital Status: Married

- Bank saver: No.

  ❖ Crucial Information:

- House cost: 8000.000,00 DA

- Salary: 65.000,00 DA

- The husband's salary: 50.000,00 DA

- Joint salary: 115.000.00DA

- Monthly payment: 40%

- Loan period: 30 years.

- Interest rate: 6.25%

- Contribution amount: 2.000.000,00 DA

- The required amount: 6.000.000,00 DA

- The grant amount: 6.000.000,00DA

The table below clearly illustrates the scoring process.

Table (4): Borrower Scoring.

Grading	Borrower's status	Scoring Criteria
40 Pts	**108000,00 < P**	Salary
20Pts	Economic Stability	Occupation: an employee at Social Security Guelma.
5 Pts	Loan	Personal Contribution
6Pts	10-29.99%	(2.000.000,00) Pesonal contribution
10 Pts	House, shops, grounds	Properties : House
4 Pts	30 and 40	Age : 33 years old.
85 points		Total

Source: Prepared by the researcher

Since the total is 85/100, i.e. greater than 50, this woman's funding scheme is as follows:**Financing Scheme = 2.000.000, 00 DA +6.000.000,00 DA = 8.000.000, 00 DA (house price)** .

That is, the financing scheme is equivalent to the price of the house to be purchased, so this woman will be granted a loan without any repayment risk. After that a document is issued accepting the mortgage grant, which is called a "notice of acceptance", together with the evaluation document of the previous six elements attached to this woman's file, which is called the "evaluation card".

2.2. Apply altman's amended model to judge the ability of private enterprises to pay

Based on the documents submitted by the institutions to the Bank, which is the accounting budget, and the table of results calculations; the status of a sample of three private institutions, which applied to the Bank in order to benefit from a loan, will be examined. That is to t determine the status of these institutions whether they are able to pay or not, by applying the modified Altman model.

The following table shows the results found:

Table (5): Ratio values adopted in the Altman model of the institutions in question

Firm 3. Mechanical Industries.	Firm 2. Food Industry	Firm1. Building Materials Industry	Percentage
X_1=40062976-/331175402 X_1=0,121-	X_1= 97263191.49 / 369995530.18 X_1=0,2629	$X1$= 112313666 / 762974494 $X1$=0,1472	X_1=Working Capital/ TotalAssets
X_2=0/331175402 X_2=0	X_2= 474262.50/ 369995530.18 X_2=0,00128	X_2= 3941144 /762974494 X_2=0,005	X_2 =Retained Earnings / Total Assets.
X_3=23314866/331175402 X_3=0,0704	X_3= 88293707.30 / 369995530.18 X_3=0,2386	X_3=168243206 /762974494 X_3=0,2205	X_3 = Earnings Before Interest and Taxes / Total Assets.
X_4=9129993/322250835 X_4=0,0283	X_4= 156118097.07 / 123202319 X_4= 1,2672	X_4=586030686/176943807 X_4=3,312	X_4 = Book Value of Equity / Total Liabilities.
X_5= 132273183/ 331175402 X_5=0,4	X_5= 617935964.70 / 369995530.18 X_5= 1,6701	X_5=342680816 /762974494 X_5=0,4491	X_5 = Sales / Total Assets
Z'-score=0,5430618	Z'-score=3,12989746	Z'-score=2,6341127	Z'-score

Source: Prepared by the researcher based on the accounting budget, and the table of results calculations for the institutions in question

Through the table we note:

❖ for Enterprise 1: The value of Z'-score=2,6341127 (2.99 > Z' >1,23), so the status of the organization is uncertain.

❖ for Enterprise 2: The value of Z'-score=3,12989746 (2.99 < Z'), and therefore the institution is in good condition, it is able to repay the loan (there is no credit risk), it does not suffer from the risk of financial default.

❖ for Enterprise 3: The value of Z'-score=0,5430618 (1.23> Z'), and therefore the institution is on its way to bankruptcy (incapacitated), and therefore there is a risk that the institution will be exposed to financial default, exposing the bank to credit risk

Based on the above results, decisions to grant loans are made as follows

- ✓ for Enterprise 1: Accepting the grant of the loan provided that there are real guarantees (mortgages) equal to the value of the loan.

- ✓ for Foundation 2: Accepting the grant of the loan because the institution is in a good financial position.

- ✓ for Foundation 3: The loan was denied because the institution is in a bad financial position and is expected to reach bankruptcy.

Conclusion

After Identifying the process of applying the scoring method in CPA Guelma, and through the results obtained, The effectiveness of this method is now quite apparent, it is easy to apply in a way that helps decision-makers to be more accurate; thus, avoiding the granting of credit to default institutions. Consequently, the chances of reaching a great profitability will be higher.

Results

- ➢ The process of credit scoringis very important for banks as they need tosegregate "good borrowers" from "bad borrowers".
- ➢ the scoring models (The Altman model) are cost- efficient because of the automation of the loan approval process, it reduces the need for the number of people who work on processing the loan.
- ➢ Credit scoring models(The Altman model) reduces thetime it takes for a decision, on whether to approve the loan or not.

❖ With regard to the first hypothesis, this study approved that the scoring method significantly contributes in predicting the credit worthiness of customers, which helps the bank to predict the ability of customers to pay, and this confirms the validity of the hypothesis.

❖ The Altman model helped the bank to distinguish between institutions with a good financial position and institutions that are expected to be unable to repay the loan, and therefore made decision making easier and more accurate, and this proves The validity of the second hypothesis.

Recommendation

This study recommends:

✓ The need of recruiting skilled and competent individuals, besides developing the spirit of responsibility among bank employees, especially those working on loan files, and the necessity of receiving training so as to be up to date with in the advanced technologies.

  ✓ The study recommends that the Altman failure prediction model should use the prevailing Economic conditions such as changes in the economy, markets and industries in the economy in order to predict a true picture of the company in the economy.
  ✓ Many other factors may have influenced the performance of firms, factors that cannot be measured or quantified e.g staff morale, boardroom wrangles, and occupational health etc. It would be interesting if a similar study was conducted in concomitance with this to ascertain the findings. This would expand the scope of the literature on firm performance.

✓The necessity of implementing an effective management information system.

✓ Making sure that Institutions seeking loans are providing accurate financial information for more than a year.

✓The need to rely on different models that suit a particular sector and customer to grant a loan.

✓ Algerian banks must use advanced methods instead of traditional ones to assess credit risks.

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