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An assessment of the Altman Z Score on predicting corporate failure. A case of insolvent financial companies listed on the Zimbabwe Stock Exchange

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Abstract: The study explored the causes of corporate failure among financial institutions using the Altman Z-scores. Traditionally, most finance professionals and firms depend on ratio analysis to determine performance, but the application of models like the Altman Z-Scores has hardly been utilized to analyze firm performance and predict potential failure. The major objective of this study was to assess the level to which Altman Z-scores can be used in determining corporate failures a year or two years before insolvency. The research used a mixed methods approach in gathering data. Financial data from annual reports and statements were quantitatively analyzed to compute key financial ratios essential for deriving the Altman Z-Score. Qualitative methods were also employed to explore best financial practices that can mitigate corporate failure risks in Zimbabwean financial institutions. A total of 20 industry experts, including financial analysts, regulators, and financial institution executives, were purposively selected based on their qualifications and experience, for interviews to gather qualitative data. The findings of the study highlight the Altman Z-Score model's effectiveness in predicting financial distress well in advance while also highlighting governance, risk management, regulatory compliance, and operational efficiency as critical areas for mitigating corporate failure. The effectiveness of the Altman Z-Score model and its reliability in identifying at-risk companies both two years and one year before failure was confirmed and the findings give pointers to consider in developing policies that promote financial stability and resilience in the corporate sector.

Keywords: *Corporate failure, insolvent, Altman Z Score, financial banks, Zimbabwe Stock Exchange,*

1. Introduction

Corporate failure has been the major concern of many countries, and Zimbabwe has several financial institutions closing due to several reasons, chiefly poor corporate governance and poor risk management practices. There is also mention of poor level of capitalization as the major cause of company failure in the financial sector. The study was informed by the limited application and interrogation of models that are robust in predicting financial strain in financial institutions. Understanding the reasons behind corporate failure is paramount for stakeholders, including investors, management, regulators, and policymakers, who need to mitigate risks and safeguard economic stability. (Ahamed, 2021; Priyadi, 2021). Corporate failure in the financial sector is particularly concerning due to its potential to disrupt economies, given the interconnected nature of financial institutions. The ability to effectively analyze corporate financial performance and timely predict financial distress is very critical to inform the timely implementation of mitigatory interventions to avert institutional collapse (Molla, 2022; Priyadi, 2021). One of the predictive models is the Altman Z-Score, which has become eminent for its capacity to evaluate corporate health and predict insolvency risk. This study, therefore, focused on assessing the effectiveness of the Altman Z-Score model in predicting corporate failure, specifically targeting insolvent financial companies listed on the Zimbabwe Stock Exchange (ZSE). This focus is justified by the critical role financial institutions play in economic stability, making early prediction models essential for proactive risk management (Haider, 2019; Altman and Hotchkiss, 2019). The Altman Z-Score, developed by Edward Altman in 1968, utilizes various financial ratios from a firm's statement of financial position to produce a single score that communicates the firm's financial health. The Z-Score is used to categorize companies into three zones: safe, grey and distress zones.

Zimbabwe's financial sector has faced significant challenges over the past decades, with several high-profile bank failures. In addition, the Zimbabwean financial services sector has faced several macroeconomic challenges, including hyperinflation, currency volatility, and economic downturns. This has resulted in the insolvency and collapse of various financial institutions such as Kingdom Bank, Zimbabwe Allied Bank Group (ZABG), Interfin Bank, Trust Bank, Royal Bank of Zimbabwe, Renaissance Merchant Bank, Tetrad, and Century

Discount House, highlighting the sector's vulnerabilities (Ncube, 2014; Gumbo, 2016). These failures underscore the need for robust predictive tools to foresee and mitigate financial distress. Research on the local application of bankruptcy prediction models has indicated that while these models are generally effective, there is a notable gap in local knowledge and utilization (Ncube, 2014; Gumbo, 2016). The Altman Z Score presents an opportunity to evaluate the financial health of these institutions and understand their effectiveness within the unique context of the Zimbabwe Stock Exchange (ZSE). To this end, there is a need to adapt and apply proven predictive models like the Altman Z-Score to the Zimbabwean context, addressing local gaps in its understanding and utilization.

The Altman Z-Score has been applied to various economic sectors and different markets, signifying its adaptability and relevance to various industries. Its application to the financial services sector has, however, been limited, leaving a dearth of both theoretical and empirical literature on its application to this sector. This study, therefore, seeks to close this knowledge gap by contributing to the limited extant literature, theoretically and empirically, and also contributing to policy direction based on the findings of the study.

By exploring the relationship between the Altman Z Score and corporate insolvency in Zimbabwe, this study contributes to the understanding of financial distress prediction and its practical applications in emerging markets. It further creates scope for the timely detection of distress indicators that can become the basis for formulating and implementing mitigatory strategies to save financial institutions from collapse.

The structure of the paper comprises a theoretical framework and a review of extant literature review on the Altman Z Score and corporate failure prediction, an overview of the methodology used for data collection and analysis, and a presentation of findings highlighting the Z Score outcomes for the selected insolvent companies. This is followed by a discussion of the results in the context of Zimbabwe's economic environment, conclusions and recommendations for future research, policy and practice.

2. Theoretical Framework

The Agency Theory

The Agency Theory is a key component of corporate governance literature that explores the relationship between principals (such as shareholders) and agents (typically management) within organizations. It posits that conflicts of interest arise due to the divergence in goals between these parties, where agents may act in their self-interest rather than maximizing shareholder wealth (Meckling and Jensen, 1976). The theory suggests that agency problems occur when agents (management) prioritize personal goals or short-term gains over the long-term financial health of the organization (Eisenhardt, 1989).

In the context of financial distress, agency problems can manifest in several ways. For instance, managers might engage in risky investment strategies to boost short-term performance metrics or pursue mergers and acquisitions that benefit their prestige rather than the company's financial stability (Jiang et al., 2019). These actions can lead to increased leverage, operational inefficiencies, or inadequate risk management practices, ultimately contributing to financial distress (Xu, 2020).

The principal-agent relationship forms the core of the Agency Theory, where shareholders delegate decision-making authority to managers. This delegation creates a situation where managers may prioritize their interests, such as job security or compensation incentives, over shareholder wealth maximization. (Xu, 2020). Incentive mechanisms, such as executive compensation packages tied to short-term performance metrics, can exacerbate agency problems by encouraging managers to take excessive risks to achieve immediate financial gains. (Edmans, 2011).

Empirical studies have shown that poorly designed incentive structures can lead to adverse outcomes, including financial distress and even bankruptcy. For example, excessive use of debt to finance growth initiatives or to fund shareholder dividends can strain the financial resources of the firm, especially during economic downturns or industry-specific challenges (Hansen, 2018; Tien, 2020). Such actions reflect the agency conflict where managers prioritize their own compensation and career advancement over the long-term sustainability of the organization.

In the context of this study, whose thrust is aimed at assessing the effectiveness of the Altman Z-Score model in predicting corporate failure among Zimbabwean financial institutions, Agency Theory provides a crucial theoretical framework. It helps establish how agency problems between shareholders and management can influence financial decision-making, which may end up resulting in firm distress, especially if self-interest among the agents goes unchecked, to the detriment of the shareholders' wealth maximization objective and the general concern of the firm. By understanding these dynamics, the study can explore whether misaligned incentives and agency conflicts contribute to the failure of financial companies on the Zimbabwe Stock Exchange. Moreover, the Agency Theory underscores the importance of effective corporate governance mechanisms and incentive structures in mitigating agency problems. For instance, aligning executive compensation with long-term performance metrics and shareholder interests can incentivize managers to make decisions that enhance financial stability rather than short-term gains (Faleye, 2017).

The Signaling Theory

The Signaling theory posits that firms use various signals, such as financial ratios, to communicate their financial health and prospects to external stakeholders. In the context of financial distress prediction, the Altman Z-Score model utilizes five financial ratios to signal a firm's likelihood of bankruptcy. These ratios include Working Capital to Total Assets, Retained Earnings to Total Assets, Earnings Before Interest and Taxes to Total Assets, Market Value of Equity to Total Liabilities, and Sales to Total Assets (Altman, 1968). Each ratio serves as a signal of different aspects of a firm's financial health, reflecting liquidity, profitability, leverage, and operational efficiency (Hosaka, 2019; Sun, 2020; Shen, 2024).

Transparency plays a crucial role in the signaling theory by enhancing the credibility and reliability of these signals. When firms disclose accurate and timely financial information, it reduces information asymmetry between management and external stakeholders (Tsai et al., 2021). This transparency allows stakeholders to make informed decisions based on the signals provided by financial ratios like those in the Altman Z-Score model. However, in environments with higher information asymmetry, such as emerging markets or during financial crises, the effectiveness of these signals may be compromised. (Jones, 2017).

In this study's context, the rationale for applying the signaling theory lies in its ability to explain how financial ratios act as signals of a firm's financial health and potential distress. By evaluating the Altman Z-Score model within this framework, the study aims to assess the model's effectiveness in predicting corporate failure among financial companies listed on the Zimbabwe Stock Exchange (ZSE). The empirical validation of these ratios as signals of distress can provide valuable insights into their predictive power in a specific economic and regulatory environment, contributing to proactive risk management and regulatory oversight (Haider, 2019; Altman and Hotchkiss, 2019)

The Stakeholder Theory

The Stakeholder Theory suggests that organizations need to consider the interests and concerns of all stakeholders affected by their decisions and actions rather than solely focusing on maximizing shareholder wealth (Freeman, 1984). In the context of financial distress within companies listed on the ZSE, stakeholders such as employees, creditors, and shareholders are significantly impacted. For instance, employees face job insecurity and potential layoffs during financial crises, affecting their livelihoods and morale. Creditors, on the other hand, may experience delayed or reduced payments, impacting their financial stability and trust in the company. (Peetz, 2020). Shareholders face potential loss of investment value and diminished confidence in the company's ability to recover (Miller, 2021).

The application of Stakeholder Theory in mitigating financial distress involves recognizing and prioritizing the diverse interests of stakeholders to enhance corporate resilience. By adopting strategies that consider stakeholder interests, companies can foster trust, loyalty, and support during times of crisis. For instance, active communication with employees about financial challenges and transparent decision-making can help mitigate uncertainty and maintain morale (Schneider and Scherer, 2020). Similarly, negotiating repayment plans with creditors based on shared understanding and mutual benefit can preserve relationships and improve liquidity management (Bellovary et al., 2021). For shareholders, implementing strategies that demonstrate a commitment to long-term value creation and sustainability can rebuild confidence and attract investment (Shen et al., 2022).

The Stakeholder Theory also informs the development of corporate strategies aimed at enhancing resilience against financial distress. By prioritizing stakeholder interests, companies can align their strategic objectives with broader societal expectations and regulatory requirements (Shen et al., 2022). For instance, integrating environmental, social, and governance (ESG) criteria into corporate governance practices not only meets stakeholder demands but also mitigates risks associated with regulatory non-compliance and reputational damage. Moreover, fostering stakeholder engagement through participatory decision-making processes can lead to innovative solutions and adaptive responses to financial challenges (Schneider and Scherer, 2020).

In the context of this study, the Stakeholder Theory provides a holistic framework for understanding and addressing the multifaceted impacts of financial distress on various stakeholders within companies listed on the ZSE. By prioritizing stakeholder interests and adopting inclusive strategies, organizations can mitigate risks, enhance corporate resilience, and sustain long-term value creation. This approach not only aligns with ethical principles but also contributes to sustainable business practices and stakeholder trust in the face of economic uncertainties.

Empirical Studies

Mwangi, et al (2023) focused on Kenyan banks and identified the debt-to-equity ratio (DER) and asset turnover ratio (ATO) as pivotal indicators within the Altman Z-Score model. They found that higher DER was associated with increased bankruptcy risk ($r = 0.52$, $p < 0.05$), while lower ATO was linked to financial instability ($r = -0.48$, $p < 0.05$) among Kenyan banks. These statistical relationships highlighted the importance of leverage and operational efficiency in assessing the likelihood of corporate failure in developing economies.

Ncube and Ndlovu (2021) conducted a study on South African banks, revealing additional insights into the Altman Z-Score model's applicability. They reported that earnings before interest and taxes (EBIT) to total assets and market indicators such as the market value of equity to book value of total liabilities were robust predictors of bank failures. Specifically, EBIT/TA showed a strong negative correlation with bankruptcy probability ($r = -0.58$, $p < 0.05$), indicating that higher earnings relative to total assets reduced the likelihood of financial distress. Meanwhile, the market value of equity to book value of liabilities (MV/BVL) demonstrated a positive correlation with financial stability ($r = 0.50$, $p < 0.05$), suggesting that higher market valuation relative to liabilities was associated with lower bankruptcy risk.

Elia et al. (2021) carried out a study to prove the validity of the Altman Z"-score model to predict financial distress in Lebanese Alpha banks from 2009 to 2018. The study findings confirmed that most of the banks under study were in distress during the study period. The authors, therefore, recommended the adoption of the Z"-score model as an instrumental indicator for both external and internal application in the analysis of banks' financial statements by the likes of auditors, financial managers, investors, and lenders to inform decision-making and avert failure of these financial institutions from distress.

Setegn (2021) applied the Altman Z-Score model in analyzing the financial health of 14 Ethiopian Commercial Banks and the National Bank of Ethiopia. The findings indicate that, on average, the participating commercial banks were categorized under the 'Gray Zone' given that the average Z-Score was 1.47, which fell between 1.1 and 2.6 cut-off points. The author, therefore, recommended that banks adopt the consistent application of the Z-Score model to evaluate financial health and take corrective action in good time to avert potential collapse from distress.

In another study of the Ethiopian banks by Molla (2022) covering a period of 5 years (2017-2021), the findings also confirmed that Altma's Z-Score is an effective predictor of financial distress among financial firms. The main cause of financial distress was the banks' liquidity position. Thus, the researcher recommended that senior managers should work together with the board of directors to enhance the dividend policy and financial prudence practices of the banks.

Contrary to the above studies, in which the findings largely reflected the Z-Score as a reliable predictor of financial distress and potential insolvency, in a study by Gyawali (2023) involving 16 commercial banks in Nepal, the findings indicated that only 6 out of the 16 banks were under distress while the other 10 were in the 'undecided zone." It was, therefore, the author's conclusion that the Z-Score model was inconclusive and could

not be entirely relied on in predicting financial distress and potential insolvencies in Nepalese banks. These empirical studies largely demonstrate that there is scope to apply the Altman Z-Score in evaluating the financial health of financial services firms and predicting potential insolvency.

Causes of Insolvency in Financial Institutions

Various factors can contribute to the insolvency in financial institutions. An understanding of these factors is important for equipping bank managers with the requisite information to formulate and implement strategies that enhance a bank's financial soundness and avert failures that can emanate from distress. Some of the contributing factors to financial distress are briefly discussed below.

Poor Risk Management

Inadequate Assessment: The inability to adequately assess and manage risks associated with lending, investment, and operational activities can lead to significant losses, contributing to the bank's financial distress and ultimately insolvency if not detected and arrested in good time. In addition, the lack of diversification, which can result in over-exposure to specific sectors or asset classes, can significantly increase the bank's risk, particularly during times of economic turbulence, where firms in a certain industry may suffer losses and struggle with servicing their obligations to the banks. (Aloqab, 2018; Mishchenko, 2021).

Economic Factors

Sometimes, economies may face recessions that can cause a decline in demand for new loans and increase defaults on existing debts, resulting in high rates of non-performing loans (NPLs). High inflation can also erode the real value of assets and reduce profit margins, negatively impacting liquidity. These developments can contribute to financial distress among financial institutions. (Liou, 2007; Isayas, 2021).

Regulatory Challenges

Challenges associated with a weak Regulatory Framework leading to insufficient regulatory oversight can lead to risky practices and inadequate capital reserves. Conversely, a too stringent regulatory framework might also constrain the working environment, leading to structural bottlenecks hampering the free flow of liquidity within the financial services sector. Banks' failure to comply with regulatory provisions and guidelines can also result in penalties and increased scrutiny, negatively affecting operations. (Challoumis, 2024; Younas, 2021).

Management Risk

If institutional managers are not adequately qualified or inexperienced, there is a risk of poor decision-making. Such ineffective leadership and lack of strategic oversight and direction can lead to poor investment decisions and operational inefficiencies that may lead to loss of capital or negative return on investment. (Li, 2021). The lack of adequate controls may also lead to serious system vulnerabilities and the failure to detect fraud or any other irregular conduct by bank employees. In addition, mismanagement of resources can also drain financial resources, culminating in financial distress and insolvency (Li, 2021; Younas, 2021).

Liquidity Problems

If the bank management fails to effectively and efficiently manage its cash flows, the result could be insufficient liquidity to meet short-term obligations, which may ultimately lead to insolvency and bankruptcy. Sometimes, banks overly depend on short-term finance to fund medium to long-term positions, leading to the risk of creating vulnerabilities if there are significant changes to market conditions (Abdu, 2022; Chen, 2022).

Market Conditions

The operating environment can be volatile, uncertain, complex and ambiguous, leading to certain shocks and adverse market conditions that may lead to significant losses, particularly in trading and investment activities. Such changes and the resultant losses may lead to financial distress and insolvency. Where the industry is highly competitive, intense competition may exert significant pressure on banks to reduce their profit margins, making it difficult for institutions to maintain financial health (Aloqab, 2018; Molla, 2022).

Technological Challenges

With the advent of rapid technological advancement globally, cybersecurity threats are on the rise. The banks' increasing reliance on financial technology exposes institutions to cyber threats that can result in financial

losses through hacking, phishing, and other cyber-attacks on banks' systems. On the other hand, obsolete systems may hamper operational efficiency and adaptability to changing market conditions, leading to financial distress (Xu, 2020).

External Shocks

Other external shocks, such as political instability, geopolitical tensions, and natural disasters, can also negatively affect the banks' operations. Political unrest, for example, can disrupt the smooth operations of the financial services sector and erode investor confidence. Geopolitical tensions may also affect the flow of capital, leading to structural inefficiencies in the market. Natural disasters such as earthquakes or floods can physically damage infrastructure and disrupt business activities, directly affecting the banks and indirectly affecting their operations through the negative effects they may have on the bank's clients (Peetz, 2020).

Financial distress in financial institutions results from a myriad of both internal and external factors that have a complex interplay. Comprehending these factors is critical for formulating the requisite strategies and their effective implementation for mitigating associated risks and enhancing the resilience of the financial sector. Proactively addressing these factors can contribute to a more stable and secure financial environment, reducing the risk of financial distress and potential insolvency among financial institutions. The section below discusses some of the mitigatory strategies for addressing the above-mentioned causes of financial distress in financial institutions.

Mitigatory Strategies for Guarding Against Insolvency in Financial Institutions

To safeguard against distress and potential insolvency, financial institutions can formulate and implement various strategies that enhance their resilience and stability. Below are key mitigatory strategies:

Robust Risk Management Framework

Banks need to institute robust risk management systems and regularly evaluate and identify potential risks across all operations, including credit, market, operational, and liquidity risks. Early detection of risks creates scope for implementing mitigatory measures in good time before the risks are pronounced and adversely affect the bank's operations. In addition, banks have also been able to create diverse portfolios of products services and asset classes to spread risk across different asset classes, sectors, and geographic areas, reducing exposure to any single source of risk (Mishchenko, 2021).

Adequate Capital Buffers

There is a need for banks to maintain adequate capital reserves that are more than the minimum regulatory requirements to create the capacity to absorb potential shocks and their potential attendant losses. In addition, banks should regularly carry out stress tests to evaluate the extent to which capital levels would withstand adverse economic scenario (Antoun, 2021; Farooq, 2025).

Effective Liquidity Management

Effective management of the cash flow is very critical for ensuring that the bank can meet short-term obligations. This follows that banks should institute robust liquidity management strategies to ensure adequate cash flow at all times. In addition, there is also a need to establish diverse funding sources, including lines of credit and interbank loans, as a strategy to enhance liquidity resilience (Chen, 2022; Rafid, 2024).

Strong Governance and Leadership

Good corporate governance practices assist in ensuring that the bank is efficiently and effectively run, with minimal disruptions to the smooth flow of operations. There is, therefore, a need to ensure that the board is carrying out its fiduciary duty in providing adequate oversight and strategic direction and is actively involved in risk governance and strategic decision-making. Banks also need to foster a culture of accountability, transparency and integrity, where management is responsible for maintaining the financial health of the banks and their compliance with regulatory requirements (Isayas, 2021; Younas, 2021).

Compliance and Regulatory Adherence

It is incumbent upon banks to implement robust compliance programs to ensure adherence to laws and regulations, reducing the risk of penalties and operational disruptions. There is also a need to conduct regular

internal and external audits to proactively identify compliance issues and take corrective measures (Challoumis, 2024; Younas, 2021).

Investment in Technology and Cybersecurity

To enhance operational efficiency and reduce system vulnerabilities related to outdated systems, banks need to invest in modern technology solutions. Cybersecurity protocols also need to be strengthened to protect the banks against data breaches and financial fraud. (Kharisma, 2021; Yasir, 2022).

Enhanced Customer Relationships

Effective customer engagement and building strong relationships with customers assist banks in fostering loyalty and reducing the risk of sudden withdrawals or defaults. In addition, banks should also focus on customized financial products and services that meet the needs of diverse customer segments, improving satisfaction and customer retention (Kumar, 2022; Pambudi, 2021).

Market Intelligence and Adaptability

To keep abreast with market developments and economic indicators and anticipate changes that may affect the institution's stability, banks should continuously monitor market trends and be proactive in responding to market developments that may adversely affect their operations. Agility and flexibility in adapting to the dynamism of the market are thus crucial in responding to emerging risks (Isayas, 2021; Younas, 2021).

Crisis Management Planning

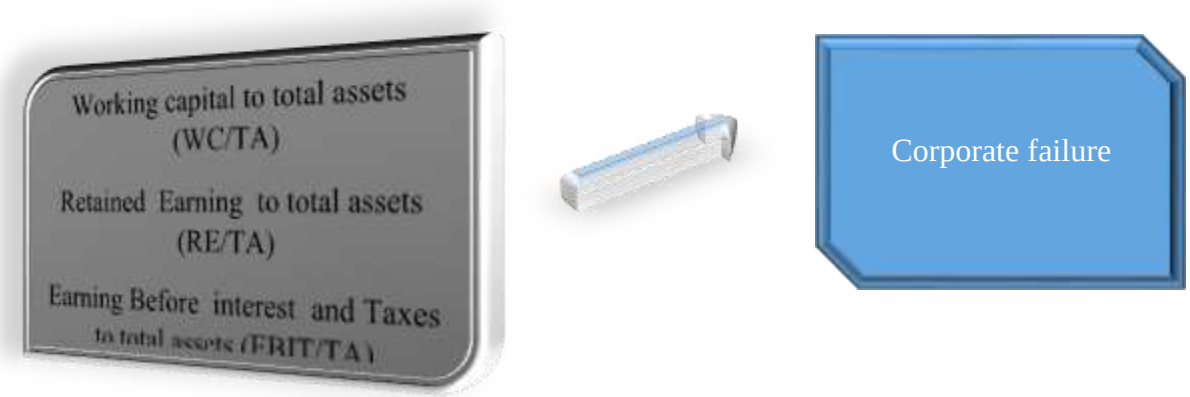
Given the volatility, uncertainty, complexity and ambiguity that characterize the operating environment, banks need to develop contingency plans and create comprehensive crisis response strategies that outline procedures for responding to financial distress. In addition, they could also conduct regular training and simulation exercises to prepare staff for crises, ensuring efficient and effective responses (Crespí-Cladera, 2021; Lone, 2022).

Through the astute formulation and effective implementation of these mitigatory strategies, financial institutions have scope to enhance their resilience against insolvency and build a more secure operational framework. Proactive measures in risk management, capital adequacy, liquidity planning, and governance are essential for navigating the complexities of the financial landscape and safeguarding the institution's long-term viability.

Conceptual framework

The conceptual framework for this study revolved around the evaluation of the Altman Z-Score model's effectiveness in predicting corporate failure among financial institutions listed on the Zimbabwe Stock Exchange (ZSE). The dependent variable in this framework is corporate failure; the independent variables entail key financial ratios and indicators derived from the Altman Z-Score model.

Fig 1: Visual depiction of the study's conceptual Framework (Source: Researcher's visualization)



The dependent variable for this study (Corporate Failure) entails an event where a financial institution becomes insolvent or faces severe financial distress leading to bankruptcy or liquidation. This outcome will be identified based on financial data and regulatory filings indicating insolvency or delisting from the ZSE due to financial difficulties.

Independent variables for this study consist of key financial ratios and indicators derived from the Altman Z-Score model. These variables are hypothesized to significantly contribute to the predictive accuracy of the model in identifying corporate failure. The primary financial ratios and indicators include the Working Capital to Total Assets (WC/TA), which measures short-term liquidity and operational efficiency (A higher WC/TA ratio indicates better liquidity management, potentially reducing the risk of corporate failure (Altman, 1968)); Retained Earnings to Total Assets (RE/TA) which reflects profitability and the company's ability to generate earnings from its assets over time. (Higher RE/TA ratios signify stronger profitability and financial stability. (Ohlson, 1980); Earnings Before Interest and Taxes to Total Assets (EBIT/TA) which indicates operational profitability and efficiency (Companies with higher EBIT/TA ratios are generally better equipped to cover their interest and tax obligations, lowering the risk of financial distress (Altman, 1968); the Market Value of Equity to Book Value of Total Liabilities (MVE/BVL) which represents the market's valuation of the company relative to its debt obligations (Higher MVE/BVL ratios suggest that the market perceives the company as financially stable and less likely to face bankruptcy (Altman, 1968) and the Sales to Total Assets (S/TA): Measures the efficiency of asset utilization in generating sales revenue (Higher S/TA ratios indicate effective use of assets to generate revenue, which can contribute to financial stability (Altman, 1968).

3. Methodology

The study made use of a mixed methods research approach, which uses both qualitative and quantitative methods, as advised by Creswell and Clark (2017) and earlier on by Johnson and Onwuegbuzie (2004). The primary quantitative research instruments included financial statements and numerical data extracted from publicly available sources such as the Zimbabwe Stock Exchange (ZSE) archives, company websites, regulatory filings, and financial databases like Bloomberg and Reuters. These sources provided essential financial metrics, including total assets, total liabilities, working capital, retained earnings, earnings before interest and taxes (EBIT), market value of equity, and sales. These quantitative measures are pivotal for computing the Altman Z-Score, a well-established model used to predict corporate failure based on financial ratios (Altman, 1968**).**

In addition to quantitative data, qualitative research instruments were utilized to gather insights from industry experts. A structured interview protocol was employed to conduct interviews with selected financial industry experts. This qualitative research instrument allowed for in-depth exploration and understanding of best financial practices that can mitigate the risk of corporate failure in Zimbabwean financial institutions. (Guest, 2006).

Publicly available financial statements for the identified institutions were accessed through multiple sources, including official Zimbabwe Stock Exchange (ZSE) databases and archives, which provided annual reports, balance sheets, income statements, and cash flow statements. Additionally, financial disclosures and regulatory filings available on the respective companies' websites and through the Reserve Bank of Zimbabwe were utilized. Comprehensive and historical financial data were also obtained from subscription-based financial databases such as Bloomberg, Reuters, and other financial research platforms.

The financial statements were closely reviewed to extract the necessary financial data for the two years preceding each firm's bankruptcy. The specific financial data collected from these statements were standardized as per ZSE requirements and are common to all financial institutions. This basic data included Total Assets, which represent the sum of all current and non-current assets owned by the firm; Total Liabilities, indicating the total amount of short-term and long-term liabilities owed by the firm; Working Capital, defined as the difference between current assets and current liabilities; Retained Earnings, the cumulative amount of net income retained by the firm rather than distributed as dividends; Earnings Before Interest and Taxes (EBIT), which is the firm's operating profit before deducting interest and taxes; Market Value of Equity, calculated by multiplying the firm's current stock price by the total number of outstanding shares; and Sales (Revenue), the total revenue generated from the firm's primary business operations.

Using the collected financial data, the following Altman Z-Score ratios were computed: Working Capital to Total Assets (WC/TA), calculated by dividing working capital by total assets; Retained Earnings to Total Assets (RE/TA), calculated by dividing retained earnings by total assets; Earnings Before Interest and Taxes to Total Assets (EBIT/TA), calculated by dividing EBIT by total assets; Market Value of Equity to Total Liabilities (MVE/TL), calculated by dividing the market value of equity by total liabilities; and Sales to Total Assets (S/TA), calculated by dividing sales by total assets. These ratios were computed for each financial institution for each of the two years leading up to their bankruptcy.

On the other hand, qualitative data collection was conducted through structured interviews with the 20 industry experts through the use of video-based multimedia communication platforms. The experts were purposively selected based on their perceived knowledge and understanding of the financial services sector and possession of expert knowledge of the industry. Their selection was based on criteria to ensure their seniority in financial leadership roles, specialization in risk management practices, significant experience in decision-making related to corporate risk assessment, and recognized contributions to the financial sector through publications or advisory roles. The participants thus comprised financial analysts, regulators, and financial institution executives, The interviews were designed to delve deeply into the perceptions and insights of these experts regarding best financial practices to mitigate corporate failure risks among financial institutions listed on the Zimbabwe Stock Exchange (ZSE). Each interview was carefully structured using a semi-structured interview protocol, which provided a framework while allowing flexibility for exploratory discussions. This approach ensured consistency across interviews while enabling the capture of in-depth responses and varied perspectives. The interview protocol included open-ended questions designed to elicit detailed explanations and examples from participants, thereby enriching the qualitative data with contextual insights and practical experiences.

During the interviews, techniques were employed to record and manage data effectively. All interviews were audio-recorded with the consent of the participants to ensure accurate capture of responses and to facilitate later transcription. This methodical recording process minimized the risk of data loss or misinterpretation, preserving the integrity of the qualitative data collected.

Following each interview, detailed transcripts were created from the multimedia recordings. These transcripts underwent thorough analysis to identify recurring themes, patterns, and divergent viewpoints relevant to the research objectives. Coding and thematic analysis techniques were applied to systematically organize and interpret the qualitative data, extracting meaningful insights into the perspectives of industry experts on effective risk management practices. Furthermore, data saturation was monitored throughout the interview process to ensure that sufficient depth and breadth of information were obtained to address the research questions comprehensively. This iterative approach allowed for the refinement and validation of emerging themes, enhancing the credibility and reliability of the qualitative findings.

To enhance validity, methodological triangulation was employed, combining multiple data collection methods (in-depth interviews) and sources (diverse industry experts) to capture a comprehensive range of perspectives on financial risk management and corporate failure mitigation. This approach helped mitigate bias and ensured that findings were grounded in a broad spectrum of expert insights. (Creswell, 2017). Furthermore, the credibility of qualitative data was strengthened through the use of a detailed interview protocol and semi-structured interviews.

4. Discussion of Findings

This discussion was divided into thus the quantitative analyses and qualitative analyses.

Quantitative analyses

The Altman Z-Score model is as follows:

Z-score **= (1.2 × X1) + (1.4 × X2) + (3.3 × X3) + (0.6 × X4) + (1 × X5)**

Where:

Z = Bankruptcy Index

X1 = Working Capital ÷ Total Assets (This Ratio Assesses liquidity by measuring short-term financial health)

X2 = Retained Earnings ÷ Total Assets (This ratio indicates the cumulative profitability of the firm)
X3 = EBIT ÷ Total Assets (This ratio measures operational Efficiency)
X4 = Market Capitalization ÷ Total Liabilities (This ratio gauges leverage)
X5 = Sales ÷ Total Assets (This ratio evaluates asset efficiency)
The following information was revealed after performing an Altman Z score for the selected industry players:

Table 1: Z score two years before the collapse

Firm	X_1	Factor 1	X_2	Factor 2	X_3	Factor 3	X_4	Factor 4	X_5	Factor 5	Z-Score
F1	0.1854	1.2	0.0577	1.4	0.0388	3.3	0.3616	0.6	0.2103	1	0.8586
F2	(0.0843)	1.2	0.0843	1.4	0.3430	3.3	0.1404	0.6	0.5291	1	1.7621
F3	0.1854	1.2	0.0306	1.4	0.0388	3.3	0.3616	0.6	0.2103	1	0.8206
F4	0.1576	1.2	0.2612	1.4	0.3025	3.3	0.1223	0.6	0.0821	1	1.7085
F5	0.9870	1.2	0.0492	1.4	0.1817	3.3	0.8335	0.6	1.0895	1	3.4425

The above computations of the Z-scores were for the selected financial firms two years before their corporate failure. The Z-score for each institution is displayed in the table. The Z-scores calculated two years before bankruptcy accurately predicted 4 out of the five bankruptcy cases, as indicated in the table. A bankruptcy situation is indicated when the Z-Score is ≤ 1.81. This resulted in an 80% accuracy rate for predicting failure. These findings imply that if the Altman Z-Score had been consistently applied in evaluating the financial health of these financial institutions, the financial distress could have been detected in good time, and mitigatory interventions could have been implemented to save the financial institutions from insolvency and collapse.

Table 2: Financial statement for the firms that collapsed (Figures are in 000s)

Firm	Working Capital '$000	Total Assets '$000	Retained Earnings '$000	EBIT '$000	Sales (Net Operating Income) '$000	Market Value of Equity '$000	Book Value of Debt '$000
F1	1073	27943	375	7391	3357	2593	10341
F2	-1429	9745	1071	2005	3113	12899	48007
F3	-4427	64211	1486	1397	7992	10934	30406
F4	1723	14972	2978	3783	1034	8403	64321
F5	16019	32726	921	3402	945	18437	131086

The data shown in Table 2 was retrieved from the financial statements of the firms that had suffered a corporate failure. The data was from the financial statements prepared one year before corporate failure. The data was deliberately used to calculate the Altman Z-Scores of the respective firms to determine the extent to which the Z-score model could accurately predict the "Corporate failure" of the respective financial institutions one year before bankruptcy. This was in line with the second research objective of this study.

Table 3 Z-scores for the selected financial firms one year before their corporate failure

Firm	X_1	Factor 1	X_2	Factor 2	X_3	Factor 3	X_4	Factor 4	X_5	Factor 5	Z-Score
F1	0.0384	1.2	0.0134	1.4	0.2645	3.3	0.2507	0.6	0.1201	1	1.2083
F2	(0.1466)	1.2	0.1099	1.4	0.2057	3.3	0.2687	0.6	0.3194	1	1.1375
F3	(0.0689)	1.2	0.0231	1.4	0.0218	3.3	0.3596	0.6	0.1245	1	0.3617
F4	0.1151	1.2	0.1989	1.4	0.2527	3.3	0.1306	0.6	0.0691	1	1.3978
F5	0.4895	1.2	0.0281	1.4	0.1040	3.3	0.1406	0.6	0.0289	1	1.0831

Table 3 presents the computations of the Z-scores for the selected financial firms one year before their corporate failure. The Z-score for each institution is displayed in the table. The Z-scores calculated one year

before corporate failure successfully predicted all five cases of failure, as shown in Table 3. Corporate failure is indicated by a Z-Score ≤ 1.81. The prediction accuracy was 100%.

The findings demonstrate that the Altman Z-Score model can be effectively used to predict corporate failure, as Z-scores for the two successive years indeed indicated that the financial institutions were in distress, leading to their failure. These findings are consistent with similar studies whose findings were similar (Elia, 2021; Molla, 2022; Setegn, 2021). There are, however, other studies (Gyawali, 2023), whose findings indicate that the Z-Score could not successfully predict financial distress and corporate failure. This could be explained by differences in contexts in which the model was applied. Predominantly, the model has been applied successfully to predict financial distress and the risk of corporate failure in both developed and developing economies. While the application in this study is retrospective (post failure of the banks being reviewed), its successful application in the Zimbabwean scenario on the sampled banks over that period of turbulence in the financial services sector implies that the model has scope for effective application to detect distress indicators and give basis to bank executives to formulate and implement strategies to timely mitigate against the causes of the identified distress factors. Its regular application during the banks' going concern tenure can be a prudent measure to avert possible insolvency among financial institutions.

Qualitative data

The qualitative data gathered through the semi-structured interviews were thematically analyzed and the following themes were quite prominent from the analysis: composition of boards, the role of independent directors, audit integrity, risk management, regulatory compliance, operational efficiency, ethical standards, the agency problem, and the importance of transparency and accountability. The major themes from the findings are discussed below.

Diverse Board Composition and Good Corporate Governance practices

Findings from the interviews revealed that there is a need for a robust corporate governance framework in mitigating corporate failure. Respondents indicated that there was a need for a good balance of executive and non-executive independent directors on the board for objectivity in evaluating management decisions and making strategic resolutions that had a bearing on the financial well-being of the financial institution. The respondents also emphasized the need for high levels of accountability and transparency among the firm's management and board members. Such good corporate governance practices were envisaged to safeguard the financial well-being and ongoing concern status of the organization. The other critical factor that was raised, which is governance-related, was audit integrity, wherein the participants questioned whether there was integrity in the conduct of annual financial audits of the failed firms, given that they were listed in the Zimbabwe Stock Exchange and the production of audited financial statements annually was a listing requirement. While audits are not fool-proof, the feeling was that if audits had been conducted with integrity, there was scope to identify some of the 'tell-tell' signs that these financial institutions were now heading for bankruptcy.

Robust Risk Management Systems

The participants highlighted the importance of robust risk management practices, including the implementation of enterprise risk management systems (ERM), comprehensive risk identification, assessment methodologies, and mitigation strategies, with more emphasis on stress testing and situational analyses. Narratives provided insights into successful risk management strategies. Discussions around risk management revealed the importance of effective risk management practices in mitigating financial distress and possible collapse. Risk identification, ERM implementation, stress testing, and scenario analysis were quite prominent in the discussions, reflecting their importance in mitigating corporate failure.

Regulatory Compliance

In the case of regulation, experts emphasized the importance of adherence to regulatory standards such as Basel III, capital adequacy ratios, and liquidity requirements. The participants highlighted the role of regulatory bodies, compliance challenges, and the need for robust supervisory frameworks to ensure consistent compliance. There was strong consensus among experts on the critical role of regulatory adherence in mitigating systemic risks and some of the factors highlighted as most important included diligently tackling the compliance challenges, complying with the regulatory standards of Basel III, ensuring capital adequacy and regulatory oversight.

Operational Efficiency

In terms of operational efficiency, participants identified cost management as a key practice for financial stability. They also highlighted technological adoption and process optimization as other critical factors that could potentially contribute to operational efficiency. Technology adoption emerged as the most important factor, with some participants highlighting the rapid technological advancement and the need for banks to provide fintech solutions to customers' problems. Cost management and process optimization were also highlighted as important. The highlight of these factors underscored the importance of operational efficiency strategies in enhancing institutional resilience and guarding against insolvency. Measures of central tendency helped identify the most frequent strategies and provided insights into their typical distribution across responses**.**

Ethical Standards

Participants highlighted the critical role played by adhering to ethical standards in the financial services sector, as they not only shape the behaviour of institutions but also their stability and resilience. Ethical conduct by bank employees can mitigate financial distress, enhance trust, and foster sustainable practices. During the interviews, the participants intimated that upholding ethical standards had the potential to foster trust and reputation among key stakeholders such as customers, suppliers, investors and regulators. In addition, it was observed that ethical conduct would enhance institutional reputation, which in turn would contribute towards customer loyalty and retention and attraction of investors, which would minimize the chances of the bank experiencing financial distress. Conversely, the absence of ethical standards could lead to practices that contribute to financial instability and crises, for example, fraudulent activities, insider trading and misrepresentation of financial statements. Those unethical behaviors were contributors to financial losses and could potentially trigger non-compliance to regulatory provisions. Participants also cited the other risks associated with unethical practices, such as predatory lending and insufficient risk assessment, which could lead to non-performing loans, ultimately contributing to financial distress. Unethical behavior could also mislead investors, resulting in significant financial losses and waning investor confidence.

The Agency Problem

The agency problem emanates from the conflict of interest between principals (owners or shareholders) and agents (managers or executives) in an organization. In the banking sector, this problem can significantly contribute to financial distress, as the interests of managers may not always align with those of the shareholders. During the interviews, participants asserted that sometimes bank executives pursued risky strategies for short-term profitability to secure their job contracts and be guaranteed performance bonuses, but at the expense of shareholders' long-term sustainability in terms of the bank's stability and long-term profitability. They cited that the agency problem is sometimes worsened by a lack of effective board oversight, where the board of directors does not effectively and regularly monitor the management activities, resulting in managers exploiting their privileged positions for personal gain, which then leads to an increased likelihood of financial distress. The experts interviewed also intimated that the banks' compensation structures also contributed to the agency problem as their compensation packages for bank executives seemed to emphasize short-term performance as part of incentivizing the executives. While these structures seemed noble, their disadvantage was that they led to the prioritization of short-term results at the expense of long-term stability and sustainability. The sentiments coming from the interviewees were that sometimes bank managers' excessive risk-taking behaviors for short-term profitability may lead to significant financial losses and distress. That could also result in increased vulnerability to economic turbulence and lack of stakeholder confidence, investors, depositors and regulators, leading to the latter exercising more stringent regulatory controls. This may, in turn, exacerbate the bank's distressed position due to limited flexibility.

Transparency and Accountability

Transparency and accountability are fundamental governance tenets that underpin the stability and integrity of financial institutions. These principles foster trust among stakeholders, enhance regulatory compliance, and promote effective governance. In an era of increasing scrutiny and complexity in financial markets, their importance cannot be overstated. During the interviews, the experts bemoaned the continuously declining transparency and accountability in the financial services sector, citing that it had led to waning confidence in the banking system over the years. The interviewees highlighted that transparency was critical for building trust among key stakeholders. In addition, it was fundamental for informing decision-making as shareholders,

for example, would require transparent reporting on the bank's operations, risks and the overall stability of the bank. This was critical for investment decisions and misinformation would be misleading to the investors. The respondents indicated that transparency was important in enhancing institutional reputation and facilitating regulatory compliance, both of which are key in ensuring the financial health of the bank and reducing the risk of distress and insolvency. It was also the experts' contention that accountability was key in holding bank executives and their employees responsible for the decisions and actions, managing risk, ensuring stakeholder confidence, and overall improvement of good governance. Effective implementation of transparency and accountability was envisaged to improve the banks' integrity and enhance market confidence, positively contributing towards financial stability and reducing the risk of insolvency.

The analysis of quantitative Z-score predictions and qualitative insights from participating financial experts provide an in-depth understanding of factors influencing corporate failure in Zimbabwean financial institutions. The study's findings highlight the Altman Z-Score model's effectiveness in predicting financial distress well in advance while also highlighting governance, risk management, regulatory compliance, operational efficiency, ethical standards, the agency problem, and transparency and accountability as critical areas needing attention for mitigating financial distress and corporate failure.

5. Conclusion and Recommendations

The Altman Z-Score model, developed by Edward Altman in 1968, has garnered recognition for its robust predictive accuracy in assessing corporate distress globally, including in emerging markets such as Zimbabwe. This study reaffirms the model's efficacy in forecasting financial distress among Zimbabwean financial institutions, consistent with previous research (Altman, 1968; Ohlson, 1980). The model's reliance on financial ratios like working capital, total assets, and EBIT underscores its alignment with fundamental indicators of corporate health and its theoretical underpinnings. The findings resonate well with findings from similar studies in the financial services sector (Elia, 2021; Molla, 2022; Mwai and Mwangi, 2019; Ncube and Ndlovu, 2021; Setegn, 2021). Based on the findings of this study, it can be concluded that the Altman Z-Score can be effectively applied in assessing financial distress and the risk of corporate failure in the financial services sector. It is, therefore, recommended that the Reserve Bank of Zimbabwe (RBZ), Zimbabwe Stock Exchange (ZSE) the Securities Exchange Commission (SEC), and other regulatory bodies for the financial services sector, consider making the Altman Z-Score model part of the regulatory framework to ensure that banks are regularly evaluating their financial well-being using a composite model that encompasses several financial ratios. Such regular assessments and reporting will assist banks in keeping themselves in check in terms of their financial health, and where there are signs of distress, such information will be critical for informing the implementation of mitigatory strategies to avert insolvency and eventual collapse.

Qualitative analysis revealed a complex interplay between governance dynamics and risk management strategies in mitigating corporate failure. Theoretical perspectives on corporate governance underscore the pivotal role of board independence, ethical conduct, and transparent governance structures in mitigating financial risks (Adams, 2010; Yermack, 1996). This study's findings corroborate these theoretical arguments, highlighting the positive influence of effective governance practices on organizational stability, as also indicated by various authors (Isayas, 2021; Jun, 2024; Younas, 2021). From the experts' submissions, good risk management practices also contribute towards ensuring good financial health for the financial institutions, minimizing the chances of insolvency. Banks should institute robust risk management systems and regularly evaluate and identify potential risks across all operations, including credit, market, operational, and liquidity risks. These sentiments are consistent with the literature as postulated by Mishchenko (2021), Li (2021) and Younas (2021). The study findings also indicate that regulatory compliance, operational efficiency, ethical standards, managing the agency problem, and transparency and accountability are some of the critical areas needing attention for mitigating financial distress and corporate failure. These findings corroborate existing literature as these factors have been earlier cited as fundamental in ensuring sound bank management and sustainability. (Challoumis, 2024; Crespí-Cladera, 2021; Kharisma, 2021; Kumar, 2022; Lone, 2022; Pambudi, 2021; Yasir, 2022). It can, therefore, be concluded that all these facets of bank management are very important and can complement the Altman Z-Score model and another existing framework in ensuring that bank solvency is regularly ensured and enhanced, minimizing or eliminating, where possible, the risk of corporate failure. Ensuring adherence to Codes of Ethics for the banking industry, continuous training and development,

enhancing transparency and accountability mechanisms and ensuring leadership commitment are some of the strategies that can also go a long way in averting financial distress and corporate failure in the financial services sector (Bătae, 2021; Salehi, 2023; Younas, 2021).

Implications for Theory, Policy and Practice

The study contributes to theory, policy and practice. Below are the implications of the study.

Implications for Theory

The study contributes to new knowledge as it adds to the existing body of literature on the use of Altman's Z-Score in evaluating the firm's financial performance to detect financial distress and the risk of bankruptcy. While the model has been extensively applied to various industries, its application to the financial services sector has not been hitherto nuanced. Thus, this study complements the few previous studies that focused on the model's application to the financial services sector. The application of the three theories, Agency Theory, Signaling Theory and Stakeholder Theory, as lenses through which the Altman Z-Score's predictive capabilities can be applied to the financial services sector is also novel. While these theories have been utilized individually in previous studies, their complementarity provides lenses through which the concept under study can be viewed as a new dimension, which contributed new knowledge and profound application of theoretical framework triangulation.

Implications for Policy

The findings from this study have significant implications for policy in the realm of financial risk management, particularly within the context of emerging markets like Zimbabwe. The effective use of the Altman Z-Score model in predicting corporate failure underscores the need for regulatory bodies and financial institutions to adopt robust, evidence-based tools for early warning, risk assessment and mitigation. From a policy perspective, the validation of the Altman Z-Score model's predictive capability suggests that regulatory bodies should consider mandating the use of such predictive models as part of the financial reporting requirements for publicly listed companies. By incorporating these models into the regulatory framework, policymakers can enhance market transparency and stability, allowing for timely intervention to mitigate broader economic impacts. Also, policymakers can use the study's findings to develop policies that promote financial stability and resilience in the corporate sector. By encouraging the adoption of effective financial distress prediction models and the integration of qualitative factors, policymakers can create an environment that supports sustainable business practices. Policies that enhance corporate governance standards, improve transparency, and strengthen regulatory frameworks can further mitigate the risk of corporate failure. Policymakers can also look at instituting stiffer penalties for non-compliance to various regulatory provisions as a deterrent to non-compliance. Additionally, policymakers can use these insights to design training and development programs aimed at improving the financial and managerial skills of executives in the financial sector.

Implications for Practice

From a practical standpoint, financial institutions should integrate the Altman Z-Score model into their regular risk management processes, serving as an early warning system to identify and address potential financial distress before it escalates into insolvency. Training and capacity-building programs for financial analysts on the use of predictive models can further enhance these practices. The importance of qualitative factors in predicting corporate failure suggests that financial institutions should adopt a more holistic approach to assessing financial health, incorporating governance metrics, management quality evaluations, and compliance audits into their risk assessment protocols. This holistic approach can provide a deeper understanding of operational vulnerabilities and facilitate the development of more effective mitigation strategies. The study's findings can also inform strategic decision-making processes within financial institutions, guiding investment decisions, resource allocation, and strategic planning. By leveraging predictive models and qualitative insights, institutions can make more informed decisions that enhance their long-term stability and profitability. Additionally, effective communication with stakeholders is crucial in managing financial distress.

Recommendations for Further Studies

Future studies could develop and validate hybrid models that combine financial ratios with qualitative metrics, thereby providing a more comprehensive assessment tool. Research could explore methodologies for

quantifying qualitative data, such as developing scoring systems or using artificial intelligence and machine learning techniques to analyze unstructured data from financial reports and news articles.

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