Comparative Analysis of Commercial Banks of Bhutan Based on Efficiency and Profitability

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Abstract

Bhutan is a small country and its financial sector is still growing financial soundness of the banking sector has a huge impact on the economy of a country and for investors, financial soundness of bank has an impact not only on owners but also on other stakeholders like investors, creditors, shareholders and the economy as well. A number of authors and researchers have done work on profitability, performances of banks and the main motivation to conduct this research is to predict the bankruptcy of financial institution that is private and public-sector banks. In Bhutan, there are four commercial banks and this study tried to explore the financial soundness of banks by using Altman's model. This examination investigated the significance and outcomes of the financial soundness of commercial banks and distinguishing the key inner and external elements influencing the profitability of banks. BOBL for a considerable period of time from 2011 to 2015, Z score test shown in the middle of bankruptcy and hazy area. BNBL Z score esteem demonstrated bank is in a solid position and while DPNB isn't in a great position. Private Tashi banks Z score shown secured zone It means the indicators used in the Altman model for Tashi reflecting better performance than other banks.

Keywords: **Altman test, BoB, BNBL, DPNB Tashi bank bankruptcy, Altman**

Introduction

Evaluation and comparison of all four Bhutanese commercial banks with the Altman z-score model
This study ardent to the performance of Bhutanese commercial banks during the period of 2010 to 2015. The study has identified some internal and external factors affecting the performance of the banks in the context of financial health. Profitability is necessary for survival and growth of financial Institutions. The banking system has a solid impact on the economy of a nation. The essential part of this section is to make the financial system appealing, boost the economy out of intervention and empower financial system that is basic for the economy of the nation. Business banks or commercial banks are the monetary foundations which gather idle cash of the general population and offer credits to organizations and family households. These banks likewise give various services to their clients. Commercial banks assume a vital part in the financial advancement of any nation. Particularly in developing nations like Bhutan, where there is a deficiency of capital, business banks turn out to be more essential. They help both Business organizations and customers to raise funds to address their issues [1].

Bhutan is a small country and its financial sector is still growing financial soundness of banking sector has a huge impact on the economy of a country and for investors, financial soundness of bank has an impact not only on owners but also on other stakeholders like investors, creditors, shareholders and the economy as well. A number of authors and researchers have done work on profitability, performances of banks and the main motivation to conduct this research is to predict the bankruptcy of financial institution that is private and public-sector banks. In Bhutan, there are four commercial banks and this study tried to explore the financial soundness of banks by using Altman's model [2].

Altman's' Z score model
Altman Z score model is utilized as a part of the course of deciding the financial status of various commercial banks of Bhutan. The first Altman Z score model created in 1968, was at first assess of manufacturing organizations. At that point, this model was re-examined in 1977. At that point, it is additionally re-examined to apply it to non-manufacturing organizations and developing markets. Banks having Z score more than 2.6 are thought to be exceptionally sound having no way of liquidation. Banks having Z score under 1.1 are considered to fall in bankruptcy zone, along these lines having exceptionally poor execution. The middle of 1.1 and 2.6 is thought to be a grey area having sound health of performance. Altman, E. I., Iwanicz-Drozdowska, M., Laitinen, focused in their studies the performance of Z score model for firms from 31 European and three non-European countries used a different modification of the original model.

This study revealed that the general score model works excellent for most by prediction accuracy of 0.75 and classification accuracy can be improved up to 0.90 by using country-specific estimation as it includes more variables. In this research paper applications of distress prediction models: What have we learned after 50 years from the z-score models? revealed about the relevancy of classic version of the Z -score bankruptcy prediction models. According to the author, this multivariate model remained most well-known and popularly used on a global basis it also revealed the practical application mainly used as an external analytical standpoint and other internal to the distress firm point of view. This paper also provided new insights to apply in a number of applications of Z score model [3].

Problem statement
To measure the financial soundness of Bhutanese commercial banks by using various ratios and linked together to assess the profitability and performance by Z score.

Scope of the study
This examination explores and investigates the financial positions and financial health of Bhutanese commercial banks by Z score model based on openly accessible data of four business bank's financial balance sheets. Altman's Z score model was utilized to access the financial wellbeing of the commercial banks and analyze the chances of insolvency. The Z score modal utilizes different accounting ratio to anticipate future insolvency. And furthermore, gives a quantitative measure to identify shortcomings early also, promote certainty to make strategies and arrangement to beat outcomes [4].

Objective of the study
To assess the financial soundness of Bhutanese commercial banks.

Grice JS, Ingram RW studied three main questions that Altman models are relevant today also as it was used for the period when developed, second model can be used to predict bankruptcy of non manufacturing firms and third question was is the model as useful for predicting financial conditions other than bankruptcy and found negative answers for first two questions and positive answer for last question. Studied the effect of global financial crisis on Islamic industry in Bahrain by financial ratio and revealed that bank's specific factors the loan to total assets ratio, loan to equity ratio and loan to overhead expenses ratio found a significant impact on the health of banks in terms of finance, analyzed the performance of Indian public sector banks during the post-liberalization period by using various accounting ratios pertaining to profitability, financial efficiency, operational efficiency, and financial soundness [5].

Principle component analysis method has been used to construct performance index and the Altman Z score used for testing solvency analysis. Logit model used to construct the Altman Z score for banks, the study revealed that the state bank of India continues to be number one bank in India. Husna HN, Rahman RA investigated in their studies the bankruptcy of Islamic banks through camel rating. Banks not performed well and distress financially also influenced the stakeholders. The study examined various ratios like asset quality, liquidity ratios, ratios of volatile liability to a total source of funds. Pradhan R focussed in Z score value of public sector bank and also evaluated the credibility of the banks. The Z score value reflects banks position when they applied for loans from RBI or any other funding agency.

This paper emphasizes the usage of back propagation neural network is to forecast the internal parameters to forecast the Z value up to 2020. The Altman Z-score bankruptcy model at age 45: Standing the test of time mainly discussed the validity of Altman model. Nandi JK, Choudhary NK in their studies designed an internal credit rating model for banks which improve the evaluation of credits and used Z score model to predict future defaulters so banks can take precautions. The model developed by the researcher is an application of multivariate discriminant analysis in credit risk modeling.

Warue BN, studied the effects of bank specific and macroeconomic factors on commercial banks of Kenya, used casual comparative research design and panel econometrics approach [6]. The study revealed that bank specific factors contribute to NPLs performance higher than the macroeconomic factors. So Banks need to focus on controllable factors to seek practical and achievable solutions to redress NPLs problems. Lazarides TG, Drimpetas E, Kyriazopoulos G, revealed in their research paper about the bankruptcy of six Greek cooperative banks after the 2007-2008 crisis by Altman model and found that Altman model to be very effective in prediction of bankruptcy and also the reason for bankruptcy was the direct borrowings from financial market which leads towards the liquidity problems.

Chotalia P, studied six Indian banks and from the exploration, it can be inferred that all the examined banks fall in grey zone yet out of six chose banks four banks *i.e.,* ICICI, Kotak Mahindra, Axis and HDFC have better monetary position contrasted with DCB and YES banks. All the tested banks are required to enhance their monetary execution to keep away from bankruptcy the banks can move forward their money-related execution or Z-score by keeping up working capital, expanding, held profit and EBIT and by diminishing aggregate obligations. Abdullah M, investigated twenty-nine banks as sample size and calculated ratios for examining the Altman's Z score model for forecasting banking failures of Bangladeshi banks and found that seven banks are in healthy financial position and twenty-two banks are insolvent during the time period of 2009-2014. Research also revealed that Islamic followers banks doing better than conventional banks [7].

Almansour BY, focused on the financial status of the Jordanian banks and used regression analysis to build up prediction model on 22 bankrupt and nonbankrupt Jordanian companies for the period 2000 until 2003. The outcomes demonstrate that working funding to add up to assets, current assets for current liabilities, advertise estimation of a current asset to current liabilities, market value of equity to book value of debt, retained earnings are good indicators for profitability and bankruptcy.
Victor G Gumbo, Simba Z focussed on the development of model to predict the profitability of bank failure in Zimbabwean banks for the period of 2009-2013. Researchers build model and analysis revealed that warning signal so developed and produced a sound result with high accuracy of 92.31% compared to 60% of the Altman model.

Researchers also concluded that the built model can be utilized as a logical early cautioning choice help apparatus in both on location and off-site bank observing framework to recognize banks that might encounter challenges. The capacity to recognize any issue in bank condition from openly accessible information will likewise diminish the cost of checking banks by reducing the requirement for on location examinations and similarly, give extremely important data to the leaders and also to other invested individuals. The early warning sign could likewise be a veritable choice help device for singular banks, the consequences of which will give the premise to proactive measures that can prevent any developing misery conditions. The model could be utilized as an option or supplementary choice help device to the camels rating framework [8]. Sharma NM, in their study applied the Altman model to the Indian banking system. The investigation found that with just two special cases the money related position of Indian banks discovered agreeably.

The two banks discovered in some way or another in trouble position are Canara bank among public banks and Kotak Mahindra bank among private segment banks. Be that as it may, capital ampleness proportion of both of these banks was sufficiently sound when contrasted with its associate banks. The examination recommends the utilization of hybrid model to make any definitive comment to the soundness of any organization. Ebiringa OT, benchmarking incidence of distress in the Nigerian banking industry on Altman scale. In this study researchers, applied the Altman's model in the prediction of distress in the Nigerian banking system. Three banks (Union bank, bank PHB, and intercontinental bank) considered in this study the time of the examination were utilized as contextual analyses. Four years of monetary measurements before trouble was used to register the most discriminating financial ratios that were substituted into the Altman's model. The aftereffect of the investigation demonstrates that Altman's model altogether anticipated the troubled state of each of the bank at 0.001 level. The suggestion being that Altman's model can be legitimately connected in the forecast of the wellbeing condition of banks in Nigeria. The paper suggests for additionally inquire about the timing and adjustment of the model keeping in mind the end goal to enhance its prescient capacity [9].

Roshni S, examined in the study and tried to apply the model to comprehend the probability of bankruptcy of chose firms for past 5 a long time from 2011 to 2015 which are recorded in BSE and NSE. Organizations are chosen from manufacturing and non-manufacturing sector. The investigation uncovers that none of the organizations totally has a place with safe zone aside from a couple of years. The vast majority of the organizations are in distress zone which obviously demonstrates that these organizations may go bankrupt in not so distant future.

Amin J and Maran M, in their research focused on Altman model and demonstrate on top five Islamic nations by worldwide Islamic banking sectors resources with the target to look at their bankruptcy, while ANOVA Post Hoc Scheffe test is applied to near examination on their monetary qualities identifying with liquidation. From the chosen sample the Saudi Arabian Islamic banks are discovered less bankrupt and in addition, two Saudi Arabian Islamic banks held the main two spots in z-score liquidation positioning rundown. Be that as it may, Malaysian Islamic banks are discovered more bankrupt as they entitled the base four positions on z-score bankruptcy profile list. On execution markers like liquidity, benefit and indebtedness concerning bankruptcy the Islamic banks from the top five Islamic banking sectors have a huge relationship. Nonetheless, the relationship on efficiency with respect to insolvency among the main five Islamic keeping money nations is discovered inconsequential.

The examination here is suitable for drawing the consideration of analysts and professionals of the Islamic banking industry towards the general deuteriation in compound yearly growth rate and the distinguished bankruptcy rate alongside comparing performance on liquidation [10]. Khalid AR, Raj K, Rishma RV in this research researchers utilized the Altman Z-score investigation to foresee an association's bankruptcy. The examination comes about for the period 2002-2004 demonstrated the shortcomings of Jordan marketing study products. The z-score from the examination (for the given time frame) was under 1.81 (z-score <1.81). Confirmation proposes that the firm has expanded its obligation and will confront bankruptcy in the close future. In liquidity proportions, the level of the working capital is under 1, showing an increment in liabilities over resources. Use proportions expanded from 41.7% to 56.7%, while stock turnover diminished by 1.2 times through the given time frame.

The primary highlights give a desolate picture and show wasteful aspects within the firm. Jan A, Marimuthu M applied Altman model to find out the bankruptcy profile of five Islamic banks and also used ANOVA post hoc scheffe test to compare financial characteristic relating to bankruptcy. The analysis drew in this paper focussed on the overall deterioration in compound annual growth rate and also identified bankruptcy rate along with comparative financial performance on bankruptcy. Chen PC, in their studies, demonstrate that credits issued to restating firms during the distorting time frame are related to a higher interest cost than loans made to non-rehashing firms during the same time. These outcomes are gotten subsequent to controlling for different determinants of borrowing cost.

Regarding nonprice terms of the credits, banks force progressively prohibitive money related contracts on advances issued to repeating firms than on those made to non-rehashing firms during the distorting period. Loans issued to repeating firms during the distorting time frame additionally have shorter maturities when contrasted with credits made to non-rehashing firms. These discoveries recommend that banks seem to acquire signals related distorting by borrowers and tailor terms of new loan contracts as needs be to mirror the additional risk (s) brought about by such data issues. Badea I, Matei G, investigated theoretical approach in conjunction with an applicable study by using Z score model for the banks listed in bucharest stock exchange for the period 2012-2014 and found that Transilvania bank is the only bank in the group of four which proves to be stable in profitability and liquidity.

Clemence WM, George Ochir, this investigation in this manner applies the Altman Z score, a multivariate money related investigation model to measure the financial soundness of banks in Kenya. The proportions that used were the independent factors and they included working cash-flow to total assets and retained income to assets, concentrates on the pertinence of Z score model seem to raise/inadequate particularly on money-related establishments, what's more, mostly centered around legitimacy and adequacy. This investigation utilized survey descriptive research outline. The objective populace was the business banks in Kenya. The information was extracted from reviewed yearly reports what's more, money related proclamations of banks particular sites and CBK for a period between 2010 to 2015. The yearly reports of banks incorporated the announcement of exhaustive pay and explanation of budgetary position. The gathered information was dissected utilizing progressed exceed expectations program. In the examination multivariate discriminant statistical systems as utilized by Altman 2005 was connected. Results showed that amid the period under examination high level of Kenyan banks were in the grey area.

Tahmoorespour R, Zarei A, Ariff M, Safari M, Mansori S, investigated in their paper on sovereign debt and sovereign credit rating: Literature review about the literature related to sovereigns debt credit rating and credit rating agencies. To assess the ability of sovereigns in meeting their financial obligations these ratings are used. Shamnath N, Mahesh R, to assess the execution of performance of banking sector used the bankometer model created from the IMF proposals in 2000 in the measurement of the financial health of the banking sector under examination. Researchers considered in their study that eight banks of which four from private part and four public banks and used the model bankometer and outcome demonstrated that banks under study were highly liquid, had solid capital base, could oversee obligation/risk well, had great benefit and resource quality also yet was all the while ailing in the productivity.

These discoveries propose that this model can be utilized as an early cautioning framework in evaluating money related execution of a bank. Raj KB, focussed in their study about training need of personnel to have efficiency and understanding of the credit risk. From the literature review it is clear that performance indicators, ratios are widely used for evaluation of the bank's performance and also a prediction of bankruptcy by the Altman model was also done by many researchers. Bhutan banking industry relating to future prediction and sustainability need to be the focus. This study identified a gap in bankruptcy and also will give scope for future researcher to work and bring more information on it.

Methods and Materials
It is quantitative in nature and based on financial data which are collected from 2010 to 2015. This data used to analyze and evaluate the financial soundness of the commercial bank of Bhutan. The population of this study is commercial banks only. In this study, four commercial banks are taken as a sample of study which is bank of Bhutan ltd, Bhutan national bank ltd, Druk Punjab national bank and Tashi bank. In order to organize the data and to achieve the goals of the study, statistical analysis and Altman's Z score model was applied to evaluate the commercial bank's financial statements.

Current assets
It is short term liquidity inflow and is expected to be due within one year. Examples.
- Cash and balances
- Cash and balances with central bank
- Balances with other banks
- Lending to other banks and financial institutions
- Net advances and net investments

Current liabilities
It is short term liquidity outflow and expected to be paid off within one year. Examples are:
- Account payable
- Tax payable
- Bills payable
- Borrowings
- Deposits

Total assets
It is a total of fixed assets and current assets presented in the balance sheet. Examples are.
- All gross investment
- Cash and equivalents
- Receivables
- Other assets

Retained earnings
It is the earning or profit retained by the institution and not distributed as part of the dividend. It is retained for the purpose to reinvest in the core business. Retained earning which account for the total amount of reinvested earnings or losses of a firm over time.

EBIT

Acronym EBIT stands for Earnings Before Interest and Tax. It reflects the profitability of the institution and calculated by subtracting expenses from revenue excluding tax and interest.

Book value of equity

It represents the value of the business according to financial statements. Is calculated by subtracting total liabilities from total assets.

Research frameworks

$Z = 6.56 \times 1 + 3.26 \times 2 + 6.72 \times 3 + 1.05 \times 4$

Indicators used for prediction of insolvency

$X1 = $ Current assets-Current liabilities/Total assets

X1 estimates banks ability to cover the financial obligation. It is a liquidity ratio reflecting the net liquid assets of the bank divided to the assets. If the value this variable decreases indicates the financial deterioration of financial health of the bank, whereas a high value of this variable reflects the reduction of the debts as opposed to the current assets. Working capital is important to a factor which has a direct impact on profitability as well as the liquidity of the bank. It is a tool to measure the competence of the business operation.

$X2 = $ Retained earning/Total assets

X2 measures how many the part of profits are invested in the business as compared to total assets. According to Altman, this variable reports the total amount of reinvested earnings and or losses of a firm over the entire life. It is foremost connected to the numbers of years of the banks and sensitive to manipulation of the financial statements to show the profit of the bank in the form of dividend or reinvestment. It also shows the capacity of the bank earn and accumulate profit based on assets.

$X3 = $ Earnings before income and tax/Total assets

X3 express the managerial efficiency in terms of the profitability of the business. This variable measures the productivity of a banks total assets notwithstanding any interest or tax on it. It also reflects the ability of the banks in generating profits from their assets.

$X4 = $ Book value of equity/Total liabilities

X4 express the financial leverage that is how many equity and liability are used to finance the asset of the company. It is reciprocal of debt-equity ratio relates the amount of a firm's debt financing with equity financing. If bank acquires debt finance will get extra money for further investment and will get a tax benefit. This variable reflects the financial stability of banks in the long term. According to Altman decline, the value of assets before the liabilities exceed the assets and the firm becomes insolvent. The variable value high or low depending on debt policy of a bank.

Situation	Z-score	Indicators	Remarks
1	Less than 1.1	Insolvent	Failed firms (distress zone)
2	Between 1.1 and 2.6	Healthy	Grey (zone of Ignorance)
3	2.6 and above	Secure	Non-bankruptcy

Table 1: Altman score remarks.

Table 1 Z score indicator sand remarks to keep bank in revelant zone accordingly.

Results and Discussion

From Tables 2 to 5 shown the calculated indicators of all four commercial banks of Bhutan for a considerable period of time from 2011 to 2015 for the calculation of Z scores respectively. Table 2 shown that the Z score value of bank of Bhutan is 0.59. It falls in failed firms zone therefore the bank must try to improve to come out of distress zone. Table 3 shown that the Z score value of BNBL is 1.99. It falls in the grey zone therefor the profitability of financial catastrophe is average. The bank must try to improve otherwise the bank may go to distress zone. Table 4 shown that the Z score value of DPNB is 0.72. It falls in failed firms zone therefor the bank must try to improve to come out of distress zone. Table 5 shown the Z score of Tashi bank reflected better score 3.2 than other three banks.

YEARS	2011	2012	2013	2014	2015	
Current assets	25578.3	28231.98	13709.19	38251.41	19546.23	
Current liabilities	20462.9	19590.9	23900.84	30807.53	28402.96	
Working capital	5115.4	8641.08	-10191.7	7443.88	-8856.73	
Total assets	26959.6	29592.78	30563.38	39650.53	39138.32	
Retained earning	2426.8	2204.92	2392.38	745.33	1197.9	
EBIT	921.31	950.39	1180.67	1156.96	1136.56	
BE	400	1000	1500	1500	1500	
Total libilities	24132.8	26387.86	26670.99	35344.64	34380.02	
X1 (WC/TA)	0.189743	0.292	-0.33346	0.187737	-0.22629	
X2 (RE/TA)	0.090016	0.074509	0.078276	0.018797	0.030607	
X3 (EBIT/TA)	0.034174	0.032116	0.03863	0.029179	0.02904	
X4 (BVE/TL)	0.016575	0.037896	0.056241	0.042439	0.04363	
A	1.244715	1.915517	-2.18749	1.231556	-1.48448	
B	0.293453	0.242898	0.25518	0.06128	0.099778	
C	0.229647	0.215817	0.259595	0.196082	0.195146	
D	0.017404	0.039791	0.059053	0.044561	0.045811	Average of Z
Z	1.785219	2.414024	-1.61367	1.53348	-1.14375	0.595062

Table 2: Altman score bank of Bhutan.

	2011	2012	2013	2014	2015	
Current assets	12407.38	13875.2	12752	13256.05	13891.14	
Current libilities	8582.58	7426.64	8499.31	7249.23	6924.9	
Working capital	3824.8	6448.56	4252.69	6006.82	6966.24	
Total assets	25754.38	27708.3	26665.82	29078.86	30929.45	
RE	1762.8	1587.51	1226.54	3307.98	4790	
EBIT	729	995.84	1070	1055	1286.61	
MVE	1000	4000	3582.09	3582.09	3582.09	
Total libilities	22366.04	22246.73	19249.15	22333.49	23560.54	
X1 (WC/TA)	0.148511	0.23273	0.159481	0.20657	0.22523	

X2 (RE/TA)	0.068447	0.057294	0.045997	0.113759	0.154869	
X3 (EBIT/TA)	0.028306	0.03594	0.040126	0.036281	0.041598	
X4 (BVE/TA)	0.044711	0.179802	0.186091	0.160391	0.152038	
A	0.97423	1.526711	1.046195	1.355099	1.477509	
B	0.223136	0.186777	0.149949	0.370854	0.504872	
C	0.190215	0.241518	0.269649	0.243806	0.27954	
D	0.046946	0.188792	0.195395	0.168411	0.15964	Average of Z
Z	1.434527	2.143797	1.661188	2.13817	2.42156	1.959849

Table 3: Altman score Bhutan national bank.

	2011	2012	2013	2014	2015	
Current assets	2887.53	3694.57	3331.86	4554.58	5554.9	
Current libilities	2453.33	3509.54	3046.32	3974.18	4616.77	
Working capital	434.2	185.03	285.54	580.4	938.13	
Total assets	4814.41	6037.71	6286.13	7261.32	8539.26	
Reserves	33.51	44.03	61.86	80.54	106.28	
EBIT	59.66	131.48	144.54	147.64	190.04	
BVE	444	449	449	450.03	450	
Total liabilities	4337.4	5323.99	5553.18	6524.95	7709.59	
X1 (WC/TA)	0.090188	0.030646	0.045424	0.07993	0.109861	
X2 (RE/TA)	0.00696	0.007292	0.009841	0.011092	0.012446	
X3 (EBIT/TA)	0.012392	0.021776	0.022993	0.020332	0.022255	
X4 (BVE/TA)	0.102365	0.084335	0.080855	0.068971	0.058369	
A	0.591631	0.201036	0.29798	0.524343	0.720687	
B	0.022691	0.023774	0.032081	0.036159	0.040574	
C	0.083274	0.146338	0.154516	0.136634	0.149553	
D	0.107484	0.088552	0.084897	0.072419	0.061287	Average of Z
Z	0.805079	0.459699	0.569474	0.769555	0.972101	0.715182

Table 4: Altman score Druk Panjab national bank.

	2011	2012	2013	2014	2015	
Current assets	3507.72	3921.56	4059	3308.77	3231.67	
Current liabilities	1143.68	1410.21	1419.01	2283.04	2601.13	
Working capital	2364.04	2511.35	2639.99	1025.73	630.54	
Total assets	3569.63	3997.09	4156.18	4730.19	4666.68	
RE	21.63	15.5	36.95	91.53	110.78	
EBIT	30.89	52.78	26.95	52.36	52.51	
MVE	220	220	300	300	300	
Total liabilities	3349	3718.52	3782.1	4337.19	4254.02	
X1 (WC/TA)	0.662265	0.628295	0.635196	0.216848	0.135115	

X2 (RE/TA)	0.006059	0.003878	0.00889	0.01935	0.023739	
X3 (EBIT/TA)	0.008654	0.013205	0.006484	0.011069	0.011252	
X4 (BVE/TA)	0.065691	0.059163	0.079321	0.069169	0.070522	
A	4.344457	4.121612	4.166887	1.42252	0.886357	
B	0.019754	0.012642	0.028983	0.063082	0.077388	
C	0.058152	0.088735	0.043575	0.074386	0.075614	
D	0.068976	0.062121	0.083287	0.072628	0.074048	Average of Z
Z	4.491338	4.285111	4.322732	1.632615	1.113406	3.16904

Table 5: Altman score Tashi bank.

Table 6 shown that the financial soundness of all four commercial banks according to the Altman Z score. It reflected the ranking of banks and Tashi bank with a Z score of 3.2 ranked at the top among another bank whereas BNBL Z Score is 1.99 and in the second position in terms of financial soundness. DPNB Z score is 0.72 and ranked in the third position and the last in Bhutan and oldest bank BOB ranked lowest among all banks with Z score 0.59 Bhutan. This exploration ponders focussed on the centrality of sustainability of banks and various banking activities and its effect on the monetary arrangement of a nation. This examination investigated the significance and outcomes of the financial soundness of commercial banks and distinguishing the key inner and outer elements influencing the profitability of banks.

SR. NO.	Bank	Z score	Indicator	Rank
1	BOBL	0.59	Insolvent	4th
2	BNBL	1.99	Healthy	2nd
3	DPNB	0.72	Insolvent	3rd
4	TASHI BANK	3.2	Secure	1st

Table 6: Altman score result sampled bank Z score and ranking.

Conclusions

Based on analysis following conclusion are made.

- Out of four commercial banks, three distressed banks like BOBL and DPNB need to take some immediate steps to overcome problems of insolvency.
- Financial ratios assess the performance of banks and financial soundness by Altman test.
- Internal factors like capital adequacy, assets quality, earning strength, liquidity sufficiency, are internal factors which measure the profitability of banks.
- It is suggested that investor and depositor should not only rely on financial ratio and Z score model but also consider external factors like international affairs, economic factors, political factors, etc while taking the decision of investment.
- Altman Z-scores and ratio examination ways to conclude perspectives why the firm under investigation went bankrupt. Along these lines, it is reasoned that Altman's model might be utilized as an indicator and maybe proof to decide the association's insolvency later on. It is a numerical model reflects reality, subsequently, firm need to consider other economic parameters to determine the firm's future operating activities and its financial position performance.

- The present study will lead the analysts to comprehend the bankruptcy profile of Bhutanese commercial banks alongside the important role of different performance indicators causing bankruptcy in different countries.

- The findings of this study will likewise lead the analysts and professionals related to the Bhutanese banking industry towards the selection of more particular models and methods of diagnosing bankruptcy.

- By managing working capital and credit risk Bhutanese banks can do better in the future.

- A banking organization that fails to measure and manage credit risk leads to large losses. Bank organizations should perform best to overcome financial difficulties. NPL is one unmistakable Indicator; the bigger its designation to credits, the more disappointment inclined the firm tends to be. Likewise, a low capital proportion/ratio expands the odds of disappointment. So also, firms with extensive acquired assets positions will probably come up short. The proportion of business and mechanical operational credits to add up to resources is a clear forerunner to disappointment.

- The study also reflected that the Z score can be used to assess the factors which take part in the poor financial health of banks.

- Banks of Bhutan must pay attention to efficiency conditions because it gives a good effect on financial stability and control bankruptcy.

- This study also revealed the importance of comparative bankruptcy study and also it will help bank management to analyze and identify key performance indicators that affect sustainability and to develop KPI and implement efficiently.

- The concept of bank failure has not materialized in Bhutan and comparative study not done as such and can be used by future researchers to analyze the most vulnerable and significant variables.

- Z score model limited to financial ratios which totally depends on bank's financial statement and manipulations in the statement is an ongoing problem that can counterfeit stability of bank in order avoid distrust from stakeholders and cause a negative impact on bank's activity.

- Researchers can extend their study to add more variables and can use different models to predict the financial health of banks.

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