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Diversification and financial soundness of banks: The Untold Story

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Abstract

The financial sector is an essential pillar for the development and growth of countries. Banks are major stakeholders of financial sector and have a very impactful role. The banking sector needs to be strong and financially sound. To enjoy the status of soundness, banks are adopting different diversification strategies to cater to the significant market of the unbanked population and increase revenues. Diversification techniques are affecting the overall financial position and stability of the banks. The study aims to assess the financial soundness of the listed banks in Pakistan. Banks are further categorized into national, international, public, private, Islamic, and conventional banks. The study employed different techniques to assess the financial soundness of banks. These banks have been checked through Bankometer analysis, Friedman test and regression analysis for robustness of results. Results of the study showed that all banks are enjoying sound position in terms of solvency but according to different categories the strategies and approaches are different to cater the risk of solvency. Furthermore, results also indicated that diversification is a comprehensive term which includes both income and asset diversification and these operational strategies has significant impact on banking performance. The study results are helpful for the internal management of the banks to adopt particular diversification strategy which is most fruitful to ensure the soundness and stability of their operations.

Keywords: Financial soundness, Bankometer, Asset diversification, Income diversification

Introduction

The economic development and growth of an economy depend upon the overall growth of all sectors, but the financial industry plays a crucial role in it. Pakistan is an emerging economy, and its financial system is based upon the country's banking system. The bank's primary function is to collect money from those who have access to capital (creditors) and provide it to those who need it (debtors). Providing this bank involves the credit creation process of an economy. So, banks are considered an important pillar for implementing the monetary policies of the State Bank of Pakistan (SBP).

The competition among the banks has been increased over time, but overall economic conditions are deteriorated and unpredictable, which is causing banks to divert their attention to accelerated activities to boost profitability. Due to the uncertainty of the financial environment, banks consider the non-core operations and the core operations to maintain financial stability and capture the significant market share(Dhingra, 2018; Khan & Ejike, 2017). Furthermore, financial inclusion policies of banks have also motivated them to make unusual business arrangements(Raza, Tang, Rubab, & Wen, 2019; Zulfiqar, Chaudhary, & Aslam, 2016). It includes alliances with non-banking financial institutes, providing agency services to customers, consortium financing, ventures with corporate sectors, green financing projects, promotion of Islamic banking, etc.). All these activities are known as the diversification strategies of banks(Rejchrt & Kling, 2018). There are two major dimensions of banks' diversification strategies; assets diversification and income diversification (Laeven & Levine, 2007).

The diversification strategies are not free of cost. There are certainly some positive impacts and some negative impacts of these strategies identified in many studies ((Brunnermeier, Dong, & Palia, 2012; C.-C. Lee, Hsieh, & Yang, 2014; Moudud-Ul-Huq, Ashraf, Gupta, & Zheng, 2018; Stiroh, 2004; Zhou, 2014). The severe issue is associated with the agency problem where the conflict of interest arises among various stakeholders because of management decisions (Jensen & Meckling, 1976). Despite this, the soundness and stability of these financial institutions are major concerns to predict the performance of financial institutions. Different models and tests are applied in previous studies to test the financial stability of banks, which include CAMEL, CLS-stress test, Z-score analysis, and Bankometer (Kumar, Harsha, Anand, & Dhruva, 2012; Kumari, 2013; Reddy & Prasad, 2011).

In Pakistan, few studies focused on checking the banks' financial soundness and banks' solvency score(Afzal & Mirza, 2012; Ashraf & Tariq, 2016; Chen, Liang, & Yu, 2018; Ismail, Hanif, Choudhary, & Ahmad, 2015; Shar, Shah, & Jamali, 2010). Still, scant literature has been found to check the performance and solvency of banks through another soundness measure called the Bankometer model. Furthermore, no literature is found to check the impact of diversification strategies (income and assets diversification) on banks' financial soundness. This study purposes a comprehensive view of the following two aspects of diversification on stability and financial soundness of banks working in Pakistan through different analysis techniques.

Research question

The study aimed to provide answers to the following question: whether the Bankometer is effective in checking the financial soundness of banks in Pakistan as per strict guidelines of the State bank of Pakistan (SBP) and also to check the ranks of the banks

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operating in Pakistan as per the soundness. In this regard, the following aspects need to be explored as sub-questions of the study: Do private banks outperform public banks in financial stability? Do national banks outperform international banks in financial stability? Do conventional banks are more prone to the risk of insolvency as compared to Islamic banks?

The next question under consideration is do banks perform differently in terms of solvency in competition over time? And do diversification strategies adopted by the banks affect the soundness of the banking business?

Study objectives

Following are the objectives of the study:

- To check the predictability of Bankometer for the financial soundness of banks listed in Pakistan and rank banks accordingly:
    - To assess the financial soundness of public and private banks
    - To assess the financial soundness of conventional and Islamic banks
    - To assess the financial soundness of national and international banks
- To check the soundness of individual bank and to check the banks' soundness in terms of years

Hypotheses of the study

Two methods are applied to conduct the analysis. One method is the Bankometer criteria, and the second method is the Friedman test. Following hypotheses are formed in this regard:

For Group-wise bank's comparison:

- H_{O1}: There is no significant difference in public and private banks in terms of solvency
- H_{O2}: There is no significant difference in national and international banks in terms of solvency
- H_{O3}: There is no significant difference in Islamic and conventional banks in terms of solvency

For the Friedman test following hypothesis is used:

- H_{O4}: All banks are not financially stable and sound in bank-wise comparison
- H_{O5}: All banks are not financially stable and sound over the years

For regression analysis:

The following hypothesis will be checked through the regression analysis:

- H_{O6}: There is no impact of asset diversification on the financial stability of the banks
- H_{O7}: There is no impact of asset diversification on the financial stability of the banks

Literature review

In the development of an economy, the financial sector plays a vital role. Banks are now forced to think about new ways to generate income as the competition grows day by day. Furthermore, the regulatory requirements (to maintain the minimum capital reserve requirement) are becoming very tough for banks, which further motivated them to consider non-banking income generation sources. Nowadays, banks are experiencing

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enhanced performance and more stable returns (risk-adjusted). They have to operate in a competitive environment with options to diversify their portfolios to increase their income and improve the diversification of assets(Amidu & Wolfe, 2013). Such diversifications reduce the risk of banks' default to a greater extent (AlKhouri & Arouri, 2019; Gulamhussen, Pinheiro, & Pozzolo, 2014; Krapl, 2015; B. S. Lee & Li, 2012). New ways of income generation and the core activities help reduce the banks' earnings volatility, which ultimately improves the performance. By considering the implications of diversification for banks, various studies have been conducted from time to time and proved that such activities positively influence the overall performance of the whole sector. (Chen et al., 2018; Liang, Kuo, Chan, & Chen, 2018; Meng, Cavoli, & Deng, 2018)

Diversification is a product that is not cost-free. The cost of diversification is the agency problem that may arise between the diversified entities. It is impossible to bring all stakeholders (inside and outside the organization) at one common interest(Amihud & Lev, 1981; Jensen & Meckling, 1976). Laeven and Levine (2007) have provided the same results Prior studies on diversification have discussed different approaches like the impact of combinations of banks with non-banking financial institutions, the fruitfulness of actual operations of the banks involved in diversified activities, and analysis of market perceptions and reactions to the banks' operational diversity (Moudud-Ul-Huq et al., 2018). According to Moudud-Ul-Huq et al. (2018), all these approaches do not provide a unified result about the cost and benefits of diversification strategies to banks; therefore, the quest is still buzz.

In contrast to this, Stiroh (2004) and DeYoung and Roland (2001)stated that diversified firms enjoy benefits in economies of scope. The banks can use the information collected from the customer to grant a loan for providing many other facilities (services), i.e., security underwriting, brokerage, etc. So, overall business of the banking companies will be increased(Bustaman, Ekaputra, Husodo, & Prijadi, 2017; DeYoung & Roland, 2001).

One drawback of diversification is the practicing bank will prone to risk. Diversified banks will have to encounter a high level of different kinds of risks in banking operations, e.g., credit risk, market risk, operational/liquidity risk, etc. (AlKhouri & Arouri, 2019).According to the portfolio theory, banks can benefit from diversification if their non-interest income is uncorrelated with the interest income stream and vice versa. Several studies have been conducted to empirically check the diversification effects on performance and risk measures of banks but provided diverse results. Some of the studies have provided adverse effects of diversification on the risk level of banks in the USA and Europe ((Brunnermeier et al., 2012; DeYoung & Roland, 2001; Lepetit, Nys, Rous, & Tarazi, 2008; Mercieca, Schaeck, & Wolfe, 2007; Stiroh, 2004; Trujillo-Ponce, 2013). Whereas; some other studies have provided positive results contrary to the adverse effects of diversification in developed countries (Baele, De Jonghe, & Vander Vennet, 2007; Chiorazzo, Milani, & Salvini, 2008; Elsas, Hackethal, & Holzhäuser, 2010; Rossi, Schwaiger, & Winkler, 2009). For developing and emerging economies, positive results are provided (Lee et al., 2014; Meslier, Tacneng, & Tarazi, 2014; Pennathur, Subrahmanyam, & Vishwasrao, 2012; Sanya & Wolfe, 2011). But on the other hand, negative results of diversification in terms of increased risk and low profitability have been reported by Maudos and Solís (2009), Batten and Vo (2016),and Hidayat, Kakinaka,

and Miyamoto (2012). Despite the significant results of the studies, found an insignificant relationship between banks' risk level and diversification strategies. So, mixed results in this regard are motivated to research the case of Pakistan; an emerging economy will have positive impacts on the CPEC project in the future.

Diversification has been categorized under two major dimensions. Laeven and Levine (2007)used assets and income diversification categories to check the impacts on valuation discounts of financial firms in almost 43 countries globally and reported adverse and significant effects. Baele et al. (2007)stated the positive impact of revenue diversity of banks on performance and negative implications of assets diversification on the firm's value. Edirisuriya, Gunasekarage, and Dempsey (2015) concluded that income diversification should be used to a certain level to get the positive impacts, but assets diversification does not impact firm value. So, based on these studies, diversification has been categorized into two dimensions for the current study.

In previous studies, different parameters are used like Bankometer, Z-score, and CAMEL (Nimalathasan & Pratheepkanth, 2012; Qamruzzaman, 2014; Rojas et al., 2012; Singh, Southwick, Gumm, & Makar, 2012)to measure the solvency of the banks. In literature, scant literature is found to on effects of diversifications on financial soundness of banks. There is a need to check how major strategies of banks relating to diversifications affect the financial stability of the whole sector. The current study aimed to fill in this gap and provide fruitful results and critical areas for improving banks' internal management.

Methodology

This study is quantitative and is based upon secondary data. The framework is the banking industry of Pakistan, and the sample is all commercial banks (public and private) listed at Pakistan Stock Exchange (PSX). Moreover, all those banks have been selected for which continuous data is available for the study chosen (2008-2019). Out of all commercial banks (listed at PSX), 20 banks have been selected based on data availability. Among these, sixteen banks are involved in conventional banking, and four banks are in Islamic banking operations. These 20 banks are also categorized based on Government-owned banks (3) and private banks (17).

Furthermore, according to national and international operations, nine banks are involved in global operations, and 11 banks are purely based upon national-level services. Only banking companies are considered in the sample as the focus of Non-banking financial institutions is different. They are not involved in commercial banking operations, so inclusion will not help to generalize the results. The data of all commercial banks are obtained from the annual reports and the datasheet provided by the state bank of Pakistan.

Variables of the study

Independent variable: Diversification:

(a) Income diversification: Income diversification (ID) is used as a first measure of the diversification strategies of banks. This can be defined as follows:

Non-interest income/ total operating income

Total operating income comprises interest-based and non-interest-based revenues of the banks. A higher ratio is a symbol of more diversified operations on the banks.

(b) Assets diversification: asset diversification is the second proxy of banks' diversification. It is measured as follows:

Non-interest-bearing assets / total assets
The total non-interest bearing assets consist of total assets, loans, and advances.
Dependent variable: S-score:
The solvency score of all banks is calculated with the help of the Bankometer model. Furthermore, the results of the Bankometer are confirmed through the Friedman test.
Control variables:
Size: Size is measured as the growth rate of assets of the banks
Liquidity: the liquidity of the banks is considered as the control variable and measured as Current assets / current liabilities

Results

Statistical Techniques

Banko**meter**

The solvency score of the banks is checked through the Bankometer model presented by the IMF (2000). Following are the valuation criteria for the banks according to this model:

$S = 3.5\ CAR + 1.5\ CA + 1.2\ EA + 0.6\ NPL/Loan + 0.3\ CI + 0.04\ LA$

Here;

- CAR= Capital Adequacy Ratio
- CA = Capital Assets ratio
- EA = Equity to Assets ratio
- NPL/Loan = Non-Performing Loan to Loan ratio
- CI = Cost to Income ratio
- LA = Loans to Assets ratio

S = Solvency and $50 < S < 70$
Following is the criteria of solvency as per this model:
Banks' S-value > 70 are solvent (super-sound banks)
Whereas banks having S-value <50 are in the danger zone and can be termed as solvent.
Criteria of these parameters as per IMF (2000):

1. Capital Adequacy Ratio, 40% = <*CAR* > = 08%
2. Capital to Assets Ratio, *CA* > = 04%
3. Equity to Total Assets, *EA* > = 02%
4. NPL to Loan Ratio, *NPL*/*Loan* =<15%
5. Cost to Income Ratio, *CI* =<40%
6. Loans to Assets, *LA* =< 65%

Following are the results of Bankometer:

Table 1: ***Bank analysis of Bankometer***

Banks	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Soundness status
Allied Bank Limited	117	106	111	119	12	115	122	124	131	132	132	136	Super sound
Askari Bank Limited	108	107	113	118	111	113	116	120	118	105	112	110	Super sound
Bank Alfalah	100	101	97	114	99	109	113	110	112	111	115	116	Super sound
Bank Al Habib	103	104	107	114	106	114	113	110	109	107	109	108	Super sound
Bank of Punjab	100	97	112	118	109	110	105	110	113	112	112	122	Super sound
MCB	134	121	123	132	146	143	141	142	134	130	131	125	Super sound
NBP	101	103	99	95	98	101	96	132	136	134	127	122	Super sound
UBL	115	105	111	126	126	121	124	117	118	114	114	113	Super sound
HBL	119	120	113	114	125	124	115	120	121	121	116	118	Super sound
Meezan Bank Limited	130	117	120	126	116	442	518	382	341	308	273	246	Super sound
Habib Metropolitan Bank	105	109	108	109	108	120	132	131	103	97	101	101	Super sound
Bank of Khyber	161	230	168	167	161	171	176	166	158	155	139	135	Super sound
Soneri Bank	115	117	127	124	128	130	128	130	123	129	123	119	Super sound
Summit Bank Limited	392	297	204	141	116	135	114	104	120	115	129	136	Super sound
Silk Bank Limited	123	125	161	119	193	169	222	172	176	262	248	247	Super sound
Standard chartered Bank Limited	135	145	150	145	189	140	129	120	153	156	109	110	Super sound
Samba Bank Limited	287	416	415	377	378	336	323	292	260	199	171	148	Super sound
JS Bank Limited	273	255	235	209	188	168	176	153	116	111	118	111	Super sound
Faysal Bank Limited	114	112	110	120	117	120	121	121	121	125	128	133	Super sound
Bankislami Pak.	426	257	264	176	164	145	115	114	117	132	130	126	Super sound

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According to Table.1, all the banks have s-score values of more than 70, which means banks are enjoying a super sound position. Furthermore, the test as per categories of different banks is also performed through t-statistics, and results are as follows:

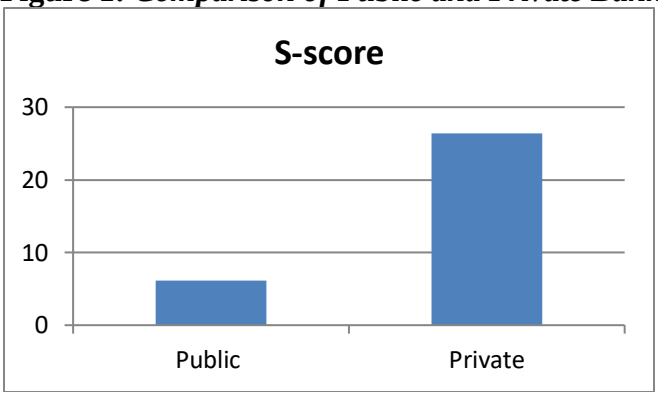
Public vs. private banks

Comparison is as follows, and results show that although the banks are sound and enjoying a good position, according to categories, banks' risk mitigating strategies are different.

Table 2: ***Ranks of public and private banks***

Ranks				
	Bank	N	Mean Rank	Sum of Ranks
Score	Public	3	9.00	27.00
	Private	17	10.76	183.00
	Total	20		
Asymp. Sig. (2-tailed)		.634		
Exact Sig. [2*(1-tailed Sig.)]		.689[b]		

Figure 1: ***Comparison of Public and Private Banks***



The test showed that the significance level is above 0.05, which means we failed to reject Ho that there is no difference in the solvency scores between public and private banks.

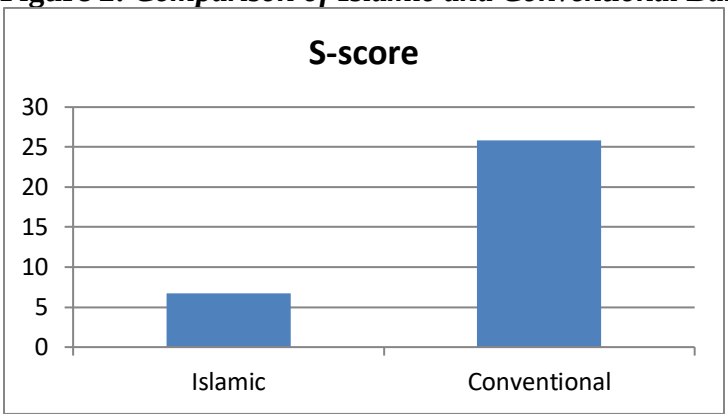
Islamic vs. conventional banks:

Comparison of banks as per Islamic and conventional category is as follows:

Table 3: ***Ranks of Islamic and Conventional Banks***

Ranks				
	Bank	N	Mean Rank	Sum of Ranks
Score	Islamic	4	11.00	44.00
	conventional	16	10.38	166.00
	Total	20		
Asymp. Sig. (2-tailed)	.850			
Exact Sig. [2*(1-tailed Sig.)]	.892[b]			

Figure 2: ***Comparison of Islamic and Conventional Banks***



The test showed that the significance level is above 0.05, which means we failed to reject Ho and there is no difference in the solvency scores of Islamic and Conventional Banks.

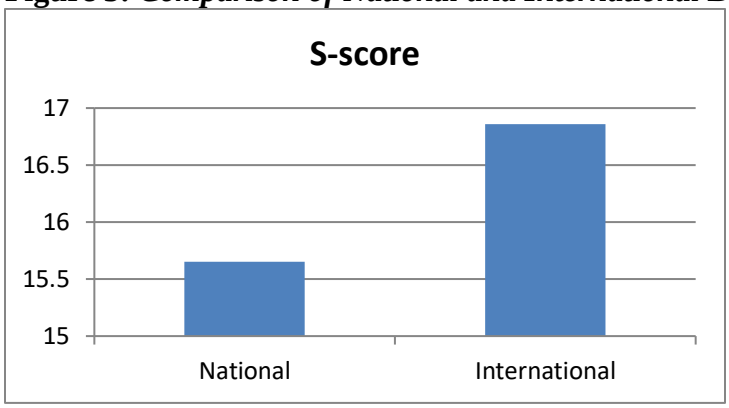
National vs. international banks

Comparison of banks as per national and international operations category is as follows:

Table 4: ***Ranks of national and international banks***

	Bank	N	Mean Rank	Sum of Ranks
Score	National	9	10.22	92.00
	international	11	10.73	118.00
	Total	20		
Asymp. Sig. (2-tailed)			.849	
Exact Sig. [2*(1-tailed Sig.)]			.882[b]	

Figure 3: ***Comparison of National and International Banks***



The test showed that the significance level is above 0.05, which means we failed to reject Ho that there is no difference in the solvency scores between Islamic and Conventional Banks.

Friedman test

The Friedman test is performed to confirm the results of the Bankometer:

Ho: The banks are not sound as per solvency criteria

The test is performed in two ways, i.e., bank-wise and year-wise. Both dimensions of the result showed that reject the null hypothesis and banks have a good position as per solvency parameters. The results are as follows:

Bank wise analysis

Table 5: ***Descriptive Statistics***

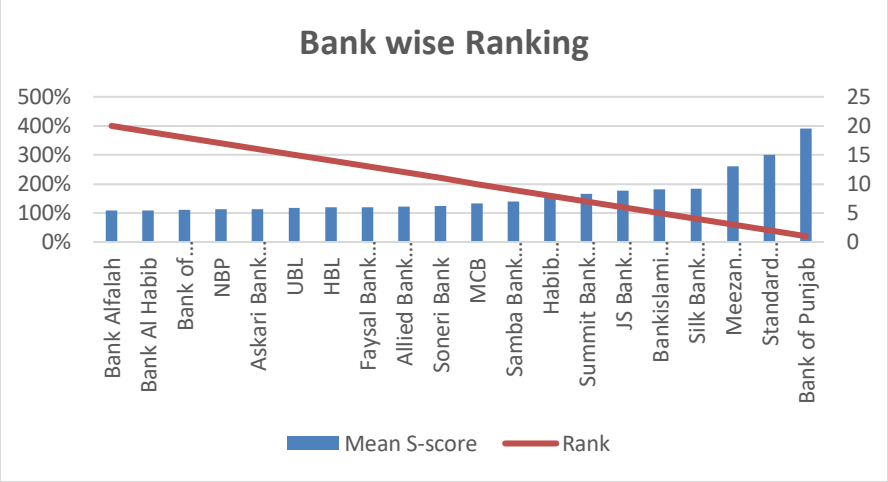
	N	Mean	Std. Deviation	Minimum	Maximum
Score	20	1.6255	.74328	1.08	3.90
Rank	20	10.5000	5.91608	1.00	20.00
Test Statistics[a]					
Asymp. Sig.	.000				

Table 6: ***Bank wise ranking and S-score***

Bank Name	Mean S-score	Rank
Bank Alfalah	108%	20
Bank Al Habib	109%	19
Bank of Khyber	110%	18
NBP	112%	17
Askari Bank Limited	113%	16
UBL	117%	15
HBL	119%	14
Faysal Bank Limited	120%	13
Allied Bank Limited	122%	12
Soneri Bank	124%	11

MCB	134%	10
Samba Bank Limited	140%	9
Habib Metropolitan Bank	166%	8
Summit Bank Limited	167%	7
JS Bank Limited	176%	6
Bankislami Pak.	181%	5
Silk Bank Limited	185%	4
Meezan Bank Limited	260%	3
Standard chartered Bank Limited	300%	2
Bank of Punjab	390%	1

Figure 4: ***Bank wise comparison***



As per the results of the Friedman test, the value of $\rho<0.05$,therefore, reject null hypothesis that all banks are not financially stable and sound in bank-wise comparison. The results are consistent with the Bankometer model and proved that banks, irrespective of different groups, are financially stable in the overall context.

Year-wise analysis

The year-wise analysis is as follows:

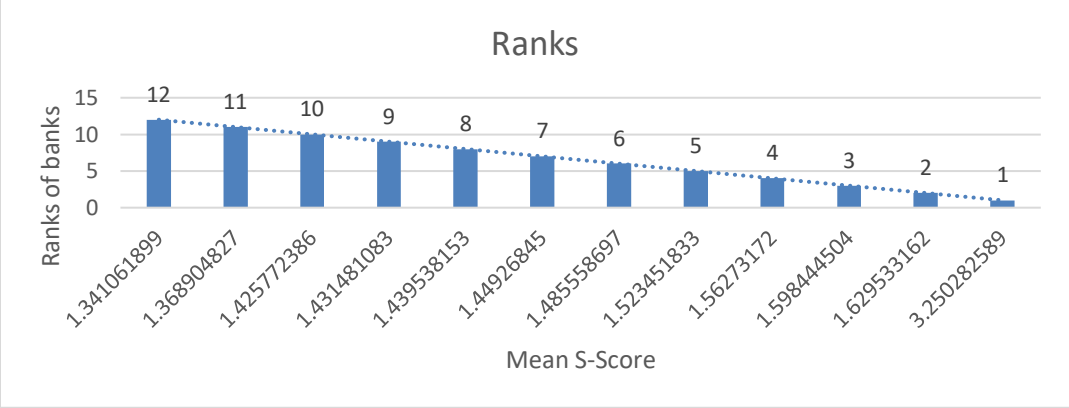
Table 7: ***Descriptive results***

	N	Mean	Std. Deviation	Minimum	Maximum
Score	12	1.6255	.51914	1.34	3.25
Rank	12	6.5000	3.60555	1.00	12.00
Test Statistics[a]					
Asymp. Sig.	.004				

Table 8: ***Year-wise analysis***

Years	Mean s-score	Ranks
2019	1.341061899	12
2018	1.368904827	11
2017	1.425772386	10
2011	1.431481083	9
2016	1.439538153	8
2010	1.44926845	7
2015	1.485558697	6
2012	1.523451833	5
2013	1.56273172	4
2014	1.598444504	3
2008	1.629533162	2
2009	3.250282589	1

Figure 5: ***Year-wise comparison of banks***



As per the results of the Friedman test, the value of $\rho<0.05$,therefore, reject null hypothesis that all banks are not financially stable and sound in year wise comparison. The results are consistent with the Bankometer model and proved that banks are financially stable throughout the study.

Regression analysis

After checking the solvency of the banks, the second step is to run the regression and study the impact of diversification of banks on the financial soundness of banks. Following are the results of the analysis:

Income diversification and financial soundness

Table. 9showed that income diversification is positively and significantly related to the financial soundness of banks. It means that banks who apply diversification strategies in their revenue patterns also enjoy positive results on soundness in the market.

Table 9:: *Income diversification and financial soundness*

FS	Coefficient	Std. Err.	Z	P > l z l	[95% conf. Interval]	
ID	1.809065	0.44492	4.07	0.000	0.937038	2.681092
Size	-0.3381333	0.374043	-9.04	0.000	-0.41144	-0.26482
Liq	1.74782	0.477246	3.66	0.000	0.812435	2.683204
Constant	7.51778	0.746249	10.07	0.000	6.055158	8.980402
Number of observations		240.000			Wald chi2	184.060
R-Sq		0.6494			Prob>chi2	0.000
Note: *** p<0.01, ** p<0.05, * p < 0.1						

All variables are significant at a 5% level of significance (evident from ρ- value). The model ρ- value is 0.000, which is less than 0.05 showed that the model is significant and the adjusted R square is 0.5341. In other words, these variables have explained around 53% variations in the model, which is considered a good model.

Assets diversification and financial soundness

The results of table 10. showed that asset diversification is positively and significantly related to the financial soundness of banks.

Table 10 : *Assets diversification and financial soundness*

FS	Coefficient	Std. Err.	Z	P > l z l	[95% conf. Interval]	
AD	0.1442887	0.031402	4.59	0.000	0.082741	0.205836
Size	-0.3417082	0.036956	-9.25	0.000	-0.41414	-0.26928
Liq	1.722089	0.470787	3.66	0.000	0.799365	2.644814
Constant	7.822339	0.735483	10.64	0.000	6.380819	9.263859
Number of observations		240.000			Wald chi2	192.230
R-Sq		0.6259			Prob>chi2	0.000
Note: *** p<0.01, ** p<0.05, * p <0.1						

It means that banks who apply diversification strategies in their assets also enjoy positive results on soundness in the market. All variables are significant at a 5% level of significance (evident from ρ- value). The model ρ- value is 0.000, which is less than 0.05 showed that the model is significant and adjusted R square is 0.5265. It means these variables have explained around 53% variations in the model, which is considered a good model.

Summary of results

From analyses, it is evident that all the selected variables (assets diversification, income diversification, and size) are significantly and positively related to the banks' financial soundness. Banks are enjoying their sound financial positions because of many factors, including diversification strategies. The bank size is a negative but significant factor, which shows that as the banks' size increases, the banks are more vulnerable to risk. So, the study results are in line with the studies of (Ashraf & Tariq, 2016; Batten & Vo, 2016; Lee et al., 2014). One unit change in the financial soundness of the banks is

caused by a 1.81 unit change in the income diversification strategy and 0.144 unit changes in asset diversification strategy of the banks.

Conclusion

As per the findings of the statistical tests, it is evident that banks in Pakistan are enjoying a super sound position in terms of solvency parameters. Furthermore, the group-wise tests of banks confirmed that although the banks have an excellent solvency position, each bank's approach to cater to solvency is not identical. These results have been verified by analyzing the banks' public/private, national/international, and Islamic/conventional grouping. The same has also been confirmed with the help of the Friedman test that banks' solvency position is sound. Then a regression analysis is performed to check the impact of diversification (in terms of assets and income) on the financial soundness of banks. The results confirmed that assets and income diversification are positively and significantly related to the banks' stability condition. So banks are enjoying a sound position, which is caused by the diversification strategies as well.

Furthermore, this sound position can also be termed as an indicator that banks have realized the options available to cater to the economy and take steps towards financial inclusion by providing diverse banking operations. The Bankometer model is an efficient model that can be used by the internal management of the respective banks to check the financial stability and crucial improvement areas to attract more investors and improve the banks' efficiency. It also provides a snapshot to investors and regulators about the solvency position of banks.

Future research and limitation

This study has been conducted for a limited period of sample time therefore, the results cannot be generalized. In order to generalize the results relating to the stable performance, long term performance of the banks should be checked against economic and financial crises. Economic and financial crises pose great threat to the operational efficiency of banking industry in current time therefore, future studies should be conducted on the impacts of such crises on resilience level and operational performance of financial institutions.

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