

Banks Soundness in Pakistan: A PLS-SEM Approach



Submitted by

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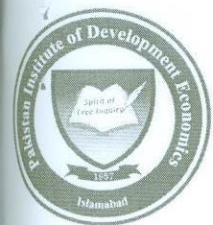
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CERTIFICATE

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ABSTRACT

The research is conducted to test banks' soundness of 20 listed Pakistani banks post crises, period (2009-2018). The core purpose is to identify the key parameters that are contributing to the smooth functioning of the sector. The banks included Islamic, private and public owned banks. PLS-SEM technique was applied on CAMELS with 42 indicators and the most significant parameter for Banks' soundness were identified. Stock Returns was taken as the dependent variable and direct indicator for Banks soundness. Outcomes showed that Earning parameter contributed most significantly to Banks soundness in Pakistan. Other parameters like management, capital and liquidity were also found to be significant but results showed that banks are executing with lower capital base and less liquidity and management also needs improvement. Sensitivity parameter showed no relevance with banks soundness in Pakistan. Overall, Pakistani banking industry is sound and worldwide banking crises couldn't affect Pakistani banks considerably.

Chapter I

INTRODUCTION

Modern economies need an effective and functional financial system and banking system is a core to the financial life of a society. Banks on their own create no wealth but the activities performed by the banks facilitates numerous processes of the modern financial life. The financial prosperity of economies depend upon banks as they are the distributors and conservators of liquid capital that is the backbone of businesses and industrial activities. Therefore they can guarantee scope for accomplishing financial improvement. Modern bank gives important and valuable services to the economy. Thus a sound and stable banking system is crucial for the financial development of the economies.

All of the functions of a commercial banks depends on its rudimentary function to accept deposits and give out loans. Depositors are rewarded with returns or premiums that encourages them to save more. The small and dissipated savings of the community are organized and made available for worthy ventures by the banks. These savings stimulates investments as they are the source of capital for investments. Capital possesses key significance in financial advancement of any economy. A greater economic development is not possible without having enough level of Capital formation. Insufficient savings result in deficient capital which is commonly seen in under developed economies. A minimum of 15% of the state's income should be saved in order to create enough capital for investments, however only 5% of the state's income is saved in underdeveloped economies. New investments create job opportunities so banks play a great role in generating employment opportunities as well. Banks also create easiness of trade. Both trade and exchange play a great role in economic development of countries and these days directly depend on banks as funds

are sent and received from and to anywhere in the world via banks. By services like internet banking, mobile banking, visa and master debit and credit cards money transactions have been made very simple, easy and quick. Banks make and implement monetary policies which deals with the problems of inflation and deflation, stabilizes currency exchange rates and so forth. They actualize approaches to identify and resolve financial issues effectively and assume essential job in a balanced social-monetary advancement of the nation. Current banks have spread out their tasks to the whole world. There are numerous unlisted ways banks are taking part in deciding the futures of the economies therefore a sound and developed banking system is crucial for the economies of the present era. According to Gaur, Sukhija and Julee (2012) soundness of the banking system is reflected by the development of the economies.

1.1 Idea of Soundness

Since bank industry plays such crucial roles in the development of a country economically so there must be a sound and stable banking industry in any country. Banks are prone to systematic crises which can lead them to default. Banks defaults can trigger financial crises throughout the economy. Financial crises can be infectious and damaging, inciting calls for quick reaction. In the past, financial crises have driven economies into deep recessions and sharp current record inversions. Laeven and Valencia (2008) describe systematic crises as when a country's financial and corporate sector encounters huge numbers of defaults and country's monetary establishments and companies confront extraordinary challenges reimbursing contracts on time. Therefore, non-performing loans increase drastically and all or the vast majority of the aggregate banking capital is depleted. This circumstance might be joined by discouraged resource costs, (for example, real estate and equity prices) on

the impact points of run-ups before the crises, sharp increments in real interest rate, and a log jam or inversion in capital streams.

Since 1970 -2017, 151 banking crises have been identified and recorded and most countries have encountered somewhere around one systematic banking crises during the period of 1970-2017 (Laeven and Valencia, 2018). Systematic banking crisis is not a single country event. It creeps down country to country, major example of which is the global financial crises of 2008. Earlier, during in the mid-2000s was an abnormal period in the aspect of low frequency of crises; disturbed by the global financial crises. Amid the Asian Financial Crisis of the late 1990s there was a serious decrease in the trust in the financial system. Some episodes of lesser degree of financial crises were seen in middle and low income economies after the crises of 2008; however in regards of systematic banking crises there is relative quiet presently. The late nineties incorporated a few scenes in high-pay nations, mirroring the funds and credits emergency in Japan, Nordic countries and USA. Reinhart and Rogoff (2009) stated that low, middle and high developed economies face an equal threat of financial crises. However according to Laeven and Valencia (2018) banking crises was prevalently a middle and low income countries incident since 1970 till before the financial crises of 2008.

Financial crises, if occurs at present day would be a bigger financial crises than ever. This is due to the ripple effect; as most perspectives in the present financial sector are interrelated (King, 2013). The finance world is more reliant than any other time in recent memory, with expanded and more extensive banking exercises that associate most monetary institutions on the planet (Gofman, 2017). This was seen by the latest financial crises that started in 2007 that influenced the whole worldwide economy. This crisis prompted a recharged enthusiasm for how a crisis of this scale was allowed

to occur in any case and what sort of control that could have been executed so as to counteract it. This premium particularly concerned the banking division that got a great deal of criticism in the manner in which they directed their tasks. Pennacchi (2005) describes the requirement for bank control as a security net to ensure depositor's interest and to maintain a strategic distance from other financial outcomes. Dima, Dinca and Spulbar (2014) draw out the conclusion that global financial stability significantly depends on a sound banking framework. Instability in the banking division speaks to the basic transmission medium for different shocks that are endogenous or exogenous. Since global financial crises of 2007, catching early cautioning signs of potential banking or financial sector shocks has turned out to be progressively vital. In such manner, a basic need has emerged to test health indicators and soundness of banking and financial sectors and furthermore to perceive how they can be improved.

By Soundness of banking sector it is meant that the principle components of the framework are capable to absorb engrossing unfavorable unsettling influences and are able to manage risk effectively and efficiently.

1.2. Soundness and Stock Returns

Due to the crucial role that banks play in any economy it is important to identify the determinants of bank's soundness. Hogarth, Reis and Saporta (2002) showed through empirical investigation that a crises in the banking sector of any country inflicts considerable damage to its economy. According to a study conducted by Cornett and Tehranian, (1992) profitability and earnings of a bank assist to predict financial crises as banking sector with good and consistent profits is better able to resist negative shocks. Variances in profitability affects the capacity of the banks to issue new equity.

Heryanto (2016) investigated the effect of profitability and liquidity on the stock returns of banks of Indonesia. He concluded that profitability of banks is directly related to the stock prices. High profits are reflected in high stock prices. This finding was in consistent with the researches of Primadoko (2005) that established a positive significant relationship between profitability and stock returns. Cole, Mushirian and Wu (2008) analyzed and documented the relationship between bank stock returns and bank's future economic growth. They were the first to show that systematic banking crises strengthens the positive link between economic growth and returns of the bank. A significant and positive relationship between stock returns of the banking sector and future economic growth was established in their study.

1.3 Research Question:

Based on the above background the purpose of this study is to test how sound Pakistani banking system is and to provide an integrated framework for estimating the determinants and indicators of the soundness of the banking system in Pakistan. Regarding the theoretical precedence the main research question is:

- What elements of performance contribute to the soundness of banking sector in Pakistan?

1.4 Research Objective:

- To identify the most significant indicators of CAMELS parameters to test Bank's Soundness.
- To investigate the effect of CAMELS constructs on Stock Returns and to identify the most significant construct for Bank's Soundness.

1.5 Significance of the Study:

Resilient financial systems in a country are essential for both domestic and international economic and financial stability therefore this study will provide a framework to estimate the determinants of soundness in Pakistani banking sector and will give certain policy measures to improve it.

1.6 Plan of Study:

This study has been organized as follows. Chapter II presents a literature review of financial soundness of banking systems throughout the world in general and Pakistani banking system in particular. Chapter III discusses the methodology of the empirical study. This discussion includes several topics like traditional method of testing banking soundness and its weaknesses, using CAMELS framework and the rationale of application of PLS-SEM. Chapter IV presents results of both Measurement and Structural models and discusses them in detail. While chapter V presents the final conclusion and policy recommendations.

Chapter II

LITERATURE REVIEW

To measure financial soundness various financial soundness indicators (FSIs) have been used in various studies worldwide. Čihák and Schaeck (2007) are the pioneers to study potential banking sector crises by using FSI's. They run the main tests on the capacity of FSIs to clarify the emergence of banking crises. They used FSIs that were not arranged under a generally acknowledged worldwide system. Along these lines, some FSIs are not entirely comparable.

Vaithilingam, Nair and samundra (2006) used the 6 I's framework that included Intellectual capital, Integrity, Infrastructure, Interaction, Institutions and Innovation to empirically measure the bank's soundness of under developed, developing and developed countries. Results established a significantly higher value of 6I'for developed countries It was also established that high level of 6I's contributed decidedly to the soundness of banks.

Dang (2011) used CAMEL framework to examine the soundness of the banks. She discovered that CAMEL rating is critical to banking supervision and is right now well-known approach among regulators around the world. She also used the stress test tool that indicated the banks that failed due to insufficient Capital. She discovered huge similarities between CAMEL model and Basel Regulations.

Bastan, Mazraeh and Ahmadvand (2016) worked on Iranian Banks with CAMELS arrangement and used Causal Loop diagram to study the causal structure in CAMELS. The research examined the correlations in the causal variables. The outcomes demonstrated that Iranian Banks are low at Capital and Assets, and there found no good quality Management that translated into most imperative issues of

Iranian banks. Increased performance and soundness can be achieved by managing, and building up the above mentioned variables.

Navajas and Thegeya (2013) tested the adequacy of FSIs as indicators of potential banking crises for 80 countries that report FSI's to the IMF and checked whether FSI's wide macroeconomic markers, and institutional markers can without a doubt foresee crises events in banking sector by utilizing multivariate logit models. They found out that CAR and ROE demonstrate a negative relationship with crisis episodes over various model specifications. The investigation additionally shows that lagged ROE might be a leading indicator of banking crises.

Kolum (2016) used CAMELS and Z score testing approaches to examine the performance of Kenyan commercial banks. His research discovered that CAMELS approach is better in conceiving distinct ratings than CAMEL. The study recommended that banks administrators center around guaranteeing that their banks are well capitalized, limit non performing advances, quality administration and satisfactory liquidity to accomplish bank soundness. Likewise speculators and depositors ought to survey banks dependent on these significant elements when settling on their venture and banking choice.

Bergendorff and Osbäck (2017) performed quantitative research by taking the data of 30 largest banks in the European Union. They used CAMELS variables and discovered that there have been clear changes in the banking division throughout the years in terms of betterment. Results showed a reasonable increment in capital proportions in the banks, because of the new capital prerequisites. The discoveries however demonstrated productivity and liquidity is still too low for a completely sound banking segment, yet might be owing to the ongoing retreat. They found that

there is still space for further enhancement in both leverage and liquidity proportions and in addition of profitability.

Dima, Dinca and Spulbar (2014) took the data set for 63 developed and under developed countries including OECD and non OECD countries and measured banks' soundness using Z score methodology. They examined that development of the capital, efficiency in the banking sector and banks soundness forms a financial nexus for the country. They discovered that various kinds of risks can be controlled, managed and overcome by the banking sector with sound and large banks. It is likewise discovered that banks soundness can be increased in robust way by the enhanced actions of supervising and reducing banks operational risks through advanced capital development.

Salina (2017) used the cluster analyses technique and Principle component Analysis to group sound and unsound banks in Kazakhstan. She tested and re estimated Altman Z' and EM score models and constructed logit and probit and MDA models. Altman models demonstrated fair capacity to anticipate banks' financial unsoundness in Kazakhstan. The MDA, logit and probit models demonstrated predictive accuracy more than 80%. The model that coordinated the MDA, logit and probit types presents predominant consistency. Cluster analyses technique identified the degree of financial soundness in Kazakhstan banks.

Masud and Haq (2016) in their paper examined private commercial banks of Bangladesh and checked their soundness. The data was taken from 2006-2014. They used trend analysis and statistic tools techniques. On the basis of financial indicators they ranked the commercial banks. The outcomes showed that higher deposits branches, higher loans, and higher investments by a bank does not necessarily mean

that it is sound and have higher profits. General financial situation is forecasted through trend analysis of the historical available data.

Moyo (2018) investigated South African Banks to establish relationship between efficiency and competition. 17 international and local Banks were taken under study for the period of 2004-2015. He checked how bank's soundness was affected by efficiency and competition by using Lerner index, Boone indicator and Z score methodologies. Results demonstrated that Lerner index showed negative effect of competition on efficiency while Boone indicator showed positive effect. On account of bank soundness, the outcome is incompletely reliable with what different analysts have found. He observed that competition when utilizing the Boone indicator is negatively related with the Z score inferring that challenge upgrades bank soundness.

Roman and Sargu (2013) explored 15 commercial Romanian and investigated their soundness for the period of 2004-2011. To accomplish this they used a standout amongst the most prominent strategies for the investigation of the financial soundness of banks, the CAMELS ratio analyses. Averages of the variables were computed separately and banks were ranked according to the obtained averages. The acquired outcomes featured the qualities and the vulnerabilities of the banks, underlining the need to fortify the concerns of decision makers to enhance and expand bank soundness.

Pompella and Dicanio (2016) measured the financial soundness and vulnerability of 246 listed banks worldwide, by performing stress test. They developed a stochastic method to test banks' resilience and formed banks' resilience index. Resilience was described as the ability to absorb shocks in distress situations. They inferred that bRi could establish another incredible choice to test financial soundness because it can

give proof of which banks are solvent. They demonstrated that bRi could be the major indicator of well-being of banks and it is suitable for observation purposes.

Gagnis, Pasiouras and Zopounidis (2006) developed a multi criteria decision aid model for 894 banks from 79 countries and classified banks on the basis of their soundness into three groups. UTADIS method was used to develop the model. The banks were assigned to the respected groups by using Fitch rating system. The outcomes demonstrated that capitalization, asset quality and the market where banks operate are the most critical criteria in grouping the banks. Productivity and effectiveness are also critical properties, while stock exchange and size are the minimum imperative ones. UTADIS accomplishes higher order precision than ordinary logistic regression and discriminant analyses which are utilized for benchmarking purposes.

Onyema et al., (2018) examined ten commercial Nigerian banks for the period of 15 years from (2000-2015) for soundness. Instead of using traditional models like CAMELS ratio analysis and CLSA-stress test, another successful model for estimating soundness of banks has been utilized in this examination named “Bankometer S-score model.” The outcome demonstrated a noteworthy contrast in banks contemplated utilizing the Bankometer S-score model. The investigation presumed that Bankometer S-score model can help the administration of any bank in determining the issue of insolvency and can remove the inadequacy created from inefficient banking activities.

Rahman (2016) examined twenty-four Bangladeshi commercial banks and investigated their soundness. He also utilized Bankometer model instead of using other methodologies of CLSA-Stress test and CAMELS. Soundness of chosen banks

has been estimated for the year 2015 and again consistency of soundness of these banks has been assessed for significant lot covering (2010-2015). The examination uncovers that every one of the banks have guaranteed sound financial status exclusively and banking industry has dependably been in ideal position amid the period (2010-2015). At long last, this examination infers that "Bankometer" model will help the interior administration of any bank in deciding indebtedness issues and expelling the inadequacy created from wastefulness in keeping money activities.

2.1 Literature Review with Reference to Pakistan:

In case of Pakistan, Ali and Ansari (2007) attempted to use CAMELS ratio analyses for Islamic and Conventional Banks. They investigated and compared the performance of both types of banking systems in Pakistan for the period of four years (2008-2012). T-Test statistical measure was used to find the significance of mean differences between two banks of these ratios. The investigation reasons that Conventional banks are increasingly productive and operationally effective while not so much solvent but rather more risky when contrasted with Islamic Banks.

Zeb and Sattar (2017) conducted a threefold study measuring the profit efficiency, impact of financial regulations on soundness, efficiency and profits of Pakistani commercial banks for the period of six years, (2008-2014). They used the methodology of Data Envelopment Analysis (DEA) and examined profit efficiency. They further applied Z-score methodology to test the soundness of the said banks and applied Panel Regression Approach to examine the effect of financial Regulation on these banks. The research primarily influenced efficiency of profits in larger banks. Outcomes of the research suggested that financial soundness and profit efficiency of banks are significantly affected by the financial regulations.

Ishaq et al., (2016) evaluated ten commercial Pakistani banks and examined how they performed from 2007-2013 by using CAMEL ratio analyses. In order to measure the execution of the banks regression and correlation techniques have been used. The study concludes that to examine banks' performance in Pakistan CAMEL methodology is a significant and fit measure.

Shar, Shah and Hajan (2010) tested the vulnerability of Pakistani Banks individually, that were in financial distress by using Bankometer model covering the period from 1999-2002. They affirmed the precision of bankometer methodology by applying it on banks individually and measured solvency of each bank. The outcomes were then contrasted with CAMEL methodology and CLSA-stress test. Bankometer results were validated through balanced standard for stress test. Bankometer analyses classified the banks who were under pressure as insolvent, whereas sound banks of past examination discovered to be solvent. Bankometer analyses could not classified the banks as sound banks that passed the standard of stress test and were classified as sound banks by the stress test standard primarily because they were deficient in capital. Majority of the banks were found to be solvent under both the standards of CLS stress test and Bankometer.

Irama et al., (2018) critically assessed loan securitization, bank soundness and evaluated the impact of loan securitization on bank soundness for 10 selected banks for the period of 2007-2015 in Pakistan. Z score testing technique was applied on Logit model to understand the impact securitization on soundness. Various correlation tests were also performed. The outcome of this study demonstrated that, securitization process looks unequivocally influenced by firm specific uniqueness. Furthermore it is found that bank participating in credit securitization likelihood

lessen the bank's liquidity. Furthermore, expected credit risk of those banks was analyzed that came out to be high henceforth it's reasoned that securitization is being utilized as a risk transfer tool in public and private banks.

Ashraf and Tariq (2016) used Bankometer in their study and tested soundness of Pakistani banks. They applied the model on every bank recorded on Pakistan Stock Exchange over the period 2006-2014. Soundness of each bank has been figured independently which exhibit which bank is too steady and which is near bankruptcy. For examination reason, Z-score display is likewise utilized for banks recorded on Pakistan Stock Exchange. These two models revealed similar outcomes, yet anyway some are marginally extraordinary. According to the consequences of the two models Bank of Punjab's budgetary soundness is in hazy area and should be improved to reach in the ensured zone of soundness.

Sarwar and Asif (2011) led this examination to check the wellbeing and soundness of banking sector of Pakistan. CAMEL Framework was used to analyze soundness. Simply ratios were calculated and compared for the selected 6 banks, 2 from each major zone of the banks that is Banks, Domestic Foreign and Islamic Banks in Pakistan for the period of last 3 years. The outcome demonstrates that regardless of monetary issues around the world, Pakistan has a solid and sound banking framework to help its economy.

FSIs' like CAMELS ratio have been also used to examine and compare Islamic Banks' performance and commercial banks in Pakistan for the period of 2005-2009 (Jaffar & Manarvi, 2011). It is also used to empirically test the overall execution of Pakistani commercial Banks for the period of 2000-2012 (Zafar, Afridi & Urooge, 2017).

2.2 Hypotheses:

1. Capital contributes significantly to Banks' soundness.
2. Asset contributes significantly to Banks' Soundness.
3. Management contributes significantly to Banks' Soundness.
4. Earnings contributes significantly to Banks' Soundness
5. Liquidity contributes significantly to Banks' Soundness
6. Sensitivity contributes significantly to Banks' Soundness

Chapter III

DATA AND METHODOLOGY

An efficient and systematic examination of data is inescapable in any research. In order to acquire dependable outcomes, it is important to develop scientific methods of data collection and apply proper and reliable methods for the investigation of data. The methodology followed in the present investigation is discussed under the accompanying heads.

3.1 Data Collection

Data analyzed in this research is purely secondary. It is collected from the yearly published Financial Statements by each of the respective Banks under study and from The State Bank of Pakistan published statistical reports.

3.2 Period of the Study

This research is covering a period of 10 financial years starting from 2009 to 2018. The financial year starts from January 1st, and ends on December 1st of the same year.

3.3 Sampling and Design

The research includes Government owned and Private Banks. A total of 20 of banks that are listed at Karachi stock exchange have been taken and investigated for soundness of the Banking sector in Pakistan for financial year 2009-2018. Banks that are listed provide homogeneity in the comparison of banks as done by Ayadurai and Eskandari (2018). The overall averages of the whole data was computed. There were 3 government owned Banks and 17 Private sector Banks including 2 Islamic Banks.

3.4 Tools & Techniques Used For Data Analysis

To test the soundness of banks, so far various indicators have been used; the most popular amongst them is the CAMELS approach, earlier used as CAMEL, now being modified by including the Sensitivity indicator, making it one of the best indicators for the assessment of Soundness of Financial Institutions.

CAMELS analyses is a recognized universal rating framework that bank supervisory specialists use so as to rate financial institutions as per six elements spoken to by its abbreviation. Each bank is allocated a score by the supervisory experts. If rated as one it is considered to be the best, and if rated five it is considered to be the most noticeably bad for each factor.

Generally the Banks with score of under two are viewed as high-quality organizations. With scores more noteworthy than three are viewed as not exactly attractive establishments.

The abbreviation CAMELS represent the following accompanying variables.

3.4.1 Capital adequacy:

Capital Adequacy is an imperative pointer of the financial wellbeing of a bank. This shows the banks' ability to keep up capital is compatible with the nature and degree of all sorts of risks. It reflects the capacity of the bank to meet the need for additional capital. Capital Adequacy is exceptionally in securing stakeholders' confidence. Capital is viewed as a pad to ensure investors and advance the soundness and productivity of financial organizations around the world. Furthermore, it determines that whether the banks have sufficient cash-flow to hold unexpected losses or not.

3.4.2 Asset quality:

The quality of assets a bank possesses determines the soundness of a bank. Asset quality characterizes the soundness of banks against slump in assets. Quality of assets is evaluated by rating the determinants of risk that an institution faces and to compare them with the capital profit of the institution. Under specific risks this determines the soundness of the institution. The efficacy of an establishment's speculation policies and practices is reflected by the Asset quality of that institution.

3.4.3 Management:

This factor represents if an organization is able to respond and overcome financial pressure. An affluent execution of banking operations depends on managers, workers and board of directors. The Managers are responsible to measure and control the risks an organization faces in its daily activities.

3.4.4 Earnings:

A Banks' earnings include all of the incomes that is generated through various unconventional and extra ordinary resources. Through earnings banks efficiency is measured and also its ability to cover possible losses.

3.4.5 Liquidity:

An institution's aptness to convert its non-liquid assets into cash is termed as liquidity. It is surveyed by considering sensitivity of interest rate risks, and availability of easily convertible assets to money.

3.4.6 Sensitivity:

This parameter determines the sensitivity of banks towards market risks. It measures how banks executions are affected by inauspicious shifts in interest rates, prices of

commodities and exchange rates. It is surveyed by observing concentration of credit. That's how analysts forecast that in which way issuing loans to some particular industries can influence the organization. This includes lending to agricultural sector, medical sector and power generating sectors.

3.5 List of Variables

S. No.	Category	Code	Variables
1	Capital	X1	CAR
2		X2	Tier 1 to RWA
3		X3	D/E
4		X4	E/A
5		X5	Capital to Asset
6	Asset	X6	NPLs to Total Loans
7		X7	Pr. to NPLs to NII
8		X8	Total Loans/ Total assets
9		X9	Net NPLs to Capital
10		X10	Equity to net loan
11		X11	Deposits/ Assets
12		X12	NPLs to net loan
13		X13	NPLs to Total Equity
14	Management	X14	Management Expense to total Assets
15		X15	Total Loans/ Deposits
16		X16	Business per employee
17		X17	Net Income to No. of Br.
18		X18	Total Liabilities to No. of Br.
19		X19	Total Assets to No. of Br.
20		X20	Total Deposits to No. of Br.
21		X21	Total loans to No. of Br.
22	Earning	X22	ROA (before tax)
23		X23	ROA (after tax)
24		X24	Cost/ Income
25		X25	NII to interest expensed
26		X26	NII to total income
27		X27	Non-interest income to total income
28		X28	ROE (before tax)
29		X29	ROE (after tax)

S. No.	Category	Code	Variables
30		X30	ROCE
31		X31	Non-interest expense to total income
32	Liquidity	X32	Liquid Assets to Total Assets
33		X33	Liquid Assets to Total Deposits
34		X34	Deposits to Assets
35		X35	NPLs to Asset
36		X36	Investments to Assets
37	Sensitivity	X37	Log of Total Assets
38		X38	P/E
39		X39	Log of Total Assets + P/E
40		X40	DuPont Ratio
41		X41	Net NPLs to Net Loans
42		X42	Pr. To NPLs to Total Loans
43	Stock Returns	X43	BE/ME

3.6 Ratio Calculation

i. CAR:

It is the ratio of the bank's capital to bank's risk. It expresses bank's capacity to absorb loss. It is calculated as:

$$\frac{\textit{Tier 1 Capital} + \textit{Tier 2 Capital}}{\textit{RWA}} \times 100$$

Whereas,

Tier 1 Capital comprises of Intangible Assets, Equity Capital, Revenue Reserves and Ordinary share capital. Tier 1 capital is utilized to ingest losses and does not require a bank to terminate operations. It is all time and effectively accessible to pad misfortunes endured by a bank.

Tier 2 Capital contains Unaudited Reserves, Unaudited Retained Earnings and General Loss Reserves. This capital assimilates misfortunes in case of an organization is liquidating or winding up. It is utilized to assimilate misfortunes if a bank loses all its Tier 1 capital.

ii. Tier 1 Capital to Risk weighted asset:

This expresses the financial stability of the bank. According to the global standard, minimum total capital to risk weighted assets under Basel III is 10.5%. It is calculated as:

$$\frac{\textit{Tier 1 Capital}}{\textit{RWA}} \times 100$$

iii. Capital to Total Asset:

It is calculated as:

$$\frac{\textit{Total Capital}}{\textit{Total Assets}} \times 100$$

iv. Debt to Equity:

It is also known as gearing ratios. Debt to equity ratio of a bank measures its financial leverage. It is calculated as:

$$\textit{Debt to Equity ratio} = \frac{\textit{Total Liabilities}}{\textit{Total Shareholder Equity}} \times 100$$

v. Equity to Asset:

It evaluates the proportion of company's assets owned by the investors and by the debt holders. Higher the equity-to asset proportion means bigger rate of its resources are claimed by the company and its speculators.

$$\textit{Shareholders Equity} = \frac{\textit{Total Shareholder Equity}}{\textit{Total Asset}} \times 100$$

vi. NPLs to Total Loans:

A loan is termed as a Non-performing loan when the indebted person has not made the booked installments for a predefined period. For the most part the period is 90 days or 180 days. It is the proportion of the measure of nonperforming advances in a bank's credit portfolio to the aggregate sum of exceptional advances the bank holds.

$$\frac{\text{Total NPLs}}{\text{Total Loans}} \times 100$$

vii. Provision to NPLs:

Provision to NPLs is an allowance put aside as a recompense for uncollected advances. It is also known as Valuation Allowance. Following ratio calculates the percentage of provision to non-performing loans to Net interest income.

$$\frac{\text{Pr. to NPLs}}{\text{NII}} \times 100$$

viii. Net NPLs to Capital:

It shows percentage of NPLs to total capital.

It is calculated as:

$$\frac{\text{Net NPLs}}{\text{Total Capital}} \times 100$$

ix. Total Loans To Assets

Percentage of total loans is calculated with respect to Assets.

$$\frac{\text{Total Loans}}{\text{Total Assets}} \times 100$$

x. Equity Net Loan

Shows the percentage of Total Equity with respect to total loans

Calculated as:

$$\frac{\text{Total Equity}}{\text{Net Loans}} \times 100$$

xi. Total Loan to Total Deposit:

LDR compares bank's total loans to total deposits for the same period.

$$LDR = \frac{\text{Total Loans}}{\text{Total Deposits}} \times 100$$

xii. Loan Growth Rate:

$$\text{loan growth rate} = \frac{\text{total deposits}}{\text{total loan}} \times 100$$

xiii. Management Expense to Asset:

The management expense ratio, also known as Expense ratio measures the amount of asset utilized on operating and administrative activities. It is calculated as:

$$\text{Expense Ratio} = \frac{\text{Operating Expense}}{\text{Net Income}} \times 100$$

xiv. Business per Employee

$$\text{Business per employee} = \frac{\text{Total Loans} + \text{Total Deposits}}{\text{Total Number of Employees}}$$

xv. Return on Asset:

It is the financial ratio that shows how much profit is earned in relation to the overall resources of the company. It is calculated as:

$$ROA = \frac{\text{Net Income}}{\text{Total Asset}} \times 100$$

xvi. Return on Equity:

It measures the financial performance of a company. It can be computed as:

$$ROE = \frac{\text{Net Income}}{\text{Average shareholder's Equity}} \times 100$$

xvii. Investment Income to Total Assets

$$\frac{\text{Total investments}}{\text{Total Assets}} \times 100$$

xviii. ROCE:

$$ROCE = \frac{\text{Operating Profit}}{\text{Capital Employed}} \times 100$$

xix. Cost to Income Ratio:

It shows the cost of a company in relation to its income.

Formula to calculate:

$$\frac{\text{Operating Cost}}{\text{income}} \times 100$$

xx. Non-interest Expenses to Total Income

$$\frac{\text{Non – interest Expenses}}{\text{Total Income}} \times 100$$

xxi. Liquid Assets to Total Assets:

It shows the percentage of liquid assets in relation to total assets.

$$\frac{\text{Liquid Assets}}{\text{Total Assets}} \times 100$$

xxii. Liquid Assets to Total Deposits:

It shows the percentage of liquid assets in relation to total deposits.

$$\frac{\text{Liquid Assets}}{\text{Total deposits}} \times 100$$

xxiii. Advances to Deposits:

$$LTD = \frac{\text{total loans}}{\text{total deposits}} \times 100$$

xxiv. DuPont Analysis:

It is a well-known methodology to analyze the basic performances of the organizations.

$$(Asset\ Turn\ over\ ratio \times Equity\ Multiplier \times Profit\ Margin) \\ \times 100$$

Where,

$$Asset\ Turnover\ Ratio = \frac{Total\ income}{Total\ Assets}$$

$$Equity\ Multiplier = \frac{Total\ Assets}{Shareholder's\ Equity}$$

$$Profit\ Margin = \frac{Net\ Income}{Total\ Income}$$

xxv. Share Price to Earning:

It is also known as the Price Multiples or the Earnings Multiples.

$$P/E = \frac{Market\ value\ per\ share}{Earnings\ per\ share}$$

Stock Returns:

$$SR = \frac{Book\ Equity}{Market\ Equity}$$

3.7 Econometric Techniques:

3.7.1 Z score:

It is one of the traditional statistical technique used by the World Bank as one of the indicator to measure financial soundness in their Global Financial Development Database. It is a measure of risk that reflects banks probability of insolvency. A higher z-score subsequently suggests a lower likelihood of banks insolvency. It is also known as standard score. A z-score is the number of standard deviations from the mean a data point is.

The z-score has a few constraints as a measure of financial soundness. The most vital impediment is that the z-scores depend absolutely on accounting data. Along these lines it is just as good as auditing framework or underlying accounting information. Also, the z-score measures each financial institution separately, conceivably ignoring the risk that a default in one financial institution may lead to the loss of other financial institutions in the system.

3.7.2 Structural equation modeling (SEM)

Statistical analytical tools have been in use by researchers of social sciences to stretch out their capacity to create and affirm their investigations and discoveries for a long time. Through 1980s only first generation statistical methods were overwhelmingly used for the exploration and research purposes. Second generation statistical methods started expanding in 1990. Partial Least Square Structural Equation modeling (PLS-SEM) is referred to as one of the second generation statistical tools. It is multivariate analysis that analyzes multiple variables simultaneously with statistical tools.

SEM has two types:

i. Co-Variance based SEM, (CB-SEM):

Covariance-based SEM (CB-SEM) is principally used to affirm or dismiss a theory. It does this by deciding how well a proposed theoretical model can appraise the covariance matrix for a sample index.

ii. Partial least square SEM, (PLS-SEM):

PLS-SEM also known to be PLS Path Modeling is fundamentally used to create theory in exploratory research. It focuses on the explanation of the variance in the dependent variables while analyzing the model.

A PLS model further consists of two models:

- i. Structural Model (Inner Model):** The relationship between constructs or latent variables is shown by the structural model.
- ii. Measurement Model (Outer Model):** Measurement model estimation ensures the validity and reliability of the constructs and consequently helps for the appropriateness of their inclusion in path model.

Wold (1974) was the first one to create PLS-SEM procedure. Fornell and Bookstien (1982) explained that PLS-SEM is dependent on iterative technique which amplifies the endogenous construct's explained variances. PLS-SEM is a technique of structural equation modeling that estimates latent variables with complex cause-effect relationship models. Its' a non-parametric, multivariate methodology. To evaluate models with latent variables and their coordinated connections it is dependent on iterative OLS regression (Wold 1982; Lohmöller 1989).

According to Babin, Hair and Boles (2008) SEM's success is ascribed by its ability to measure latent variables and their relationships. It is a very useful technique to investigate complete theories and to understand concepts (Rigdon, 1998). PLS is essentially expected for research settings that contain copious information and theory emaciated. Constructing the model is then a developmental procedure. Fresh information is excerpted by the model accordingly giving explanations and reasoning to the hypothetical structure.

An iterative computation handles SEM by using measurement and structural models one by one and evaluates latent variables that is why known as 'partial'. Latent Variables are assessed in indirect way through a couple of indicators. They are assessed as the weighted sum of its variables by the outer model or measurement

model and inner or structural model evaluates latent variables by the techniques of simple or multiple regressions. This estimation goes over itself until convergence is achieved.

Researchers like Rönkkö et al., (2016) viewed PLS critically. There has been a noteworthy purpose of dispute that PLS-SEM technique is usable with little sample sizes. Kock and Hadaya (2016) recommended that the case is not justified, and it suggests two techniques to estimate small sample sizes in PLS-SEM. Anyhow, it is yet thought to be the best technique as compared to CB-SEM specifically when it is obscure that data is composite or basic.

PLS-SEM has extensive applications to administrative difficulties, specifically, where human association is found. For instance, the illustrative model utilized in this section clarifies administrative ability by watching other latent constructs, for example, relational aptitudes, innovative style, and passionate development and experience. Such builds are frequently estimated indirectly through composite markers dependent on metric or semi metric information (Avkiran, 2018).

PLS-SEM turned out to be especially prevalent in social sciences for example in Marketing and family business by Sarsted, Ringle, Smith and Reams (2014), in Accounting, as by Lee et al., (2011), Management Information Systems by Schmitz et al. (2016), in Operations Management by Peng and Lai (2012), and in tourism by Rasoolimanesh and Ali (2017). Areas like engineering, environmental sciences Brewer et al., (2012) and Medicine Berglund and Westerling (2012) comprehensively applied PLS-SEM technique on latent variables with composite cause-effect relationship models.

3.7.3 Econometric model

i. Outer Model (Measurement Model)

$$1) X1 = \gamma_1 Capital + e_1$$

$$2) X2 = \gamma_2 Capital + e_2$$

$$3) X3 = \gamma_3 Capital + e_3$$

$$4) X4 = \gamma_4 Capital + e_4$$

$$5) X5 = \gamma_5 Capital + e_5$$

$$6) X38 = \gamma_{38} Sensitivity + e_{38}$$

$$7) X39 = \gamma_{39} Sensitivity + e_{39}$$

$$8) X40 = \gamma_{40} Sensitivity + e_{40}$$

$$9) X41 = \gamma_{41} Sensitivity + e_{41}$$

$$10) X42 = \gamma_{42} Sensitivity + e_{42}$$

ii. Inner Model (structural model)

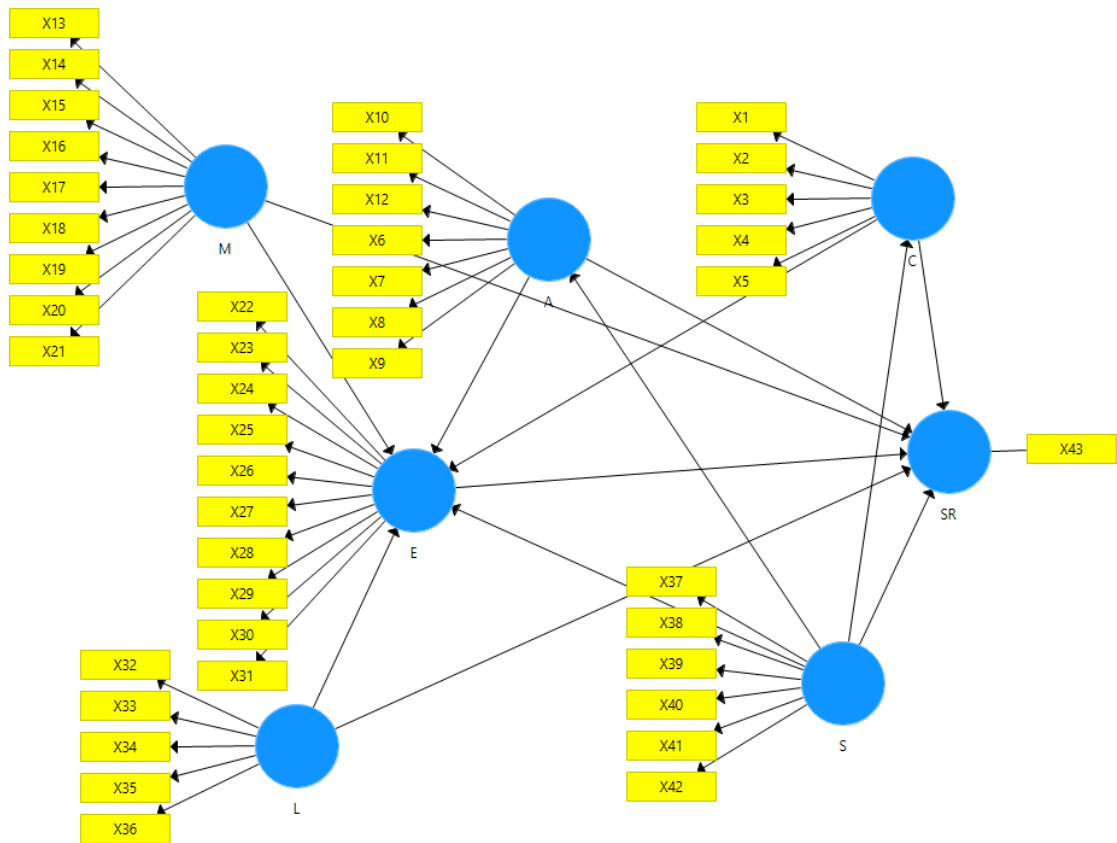
$$1) Stock Returns = \alpha_0 + \alpha_1 C + \alpha_2 A + \alpha_3 M + \alpha_4 E + \alpha_5 L + \alpha_6 S + \mu_1$$

$$2) Capital = \beta_0 + \beta_1 S + \mu_2$$

$$3) Asset Quality = \gamma_0 + \gamma_1 S + \mu_3$$

$$4) Earnings = \varepsilon_0 + \varepsilon_1 C + \varepsilon_2 A + \varepsilon_3 M + \varepsilon_4 L + \varepsilon_5 S + \mu_4$$

3.8 Path Diagram (Initial Model)



Chapter IV

RESULTS AND DISCUSSION

Table No. 4.1 Outer Loadings, Cronbach's Alpha and Composite Reliability Values

	Items	Loadings (p-values)	AVE	Cronbach's Alpha	Composite Reliability
Capital	X1	0.85 (0.00)	0.77	0.79	0.78
	X2	0.91 (0.00)			
Asset	X8	0.81 (0.02)	0.66	0.77	0.81
	X9	0.70 (0.01)			
	X12	0.87 (0.00)			
	X13	0.86			
Management	X15	0.71 (0.00)	0.63	0.73	0.76
	X16	0.87 (0.00)			
	X17	0.87 (0.01)			
	X18	0.73 (0.001)			
	X19	0.74 (0.02)			
	X20	0.79 (0.04)			
Earnings	X23	0.93 (0.03)	0.69	0.70	0.82
	X25	0.82 (0.02)			
	X26	0.78 (0.00)			
	X27	0.70 (0.00)			
	X28	0.94 (0.04)			
	X30	0.82 (0.02)			
Liquidity	X32	0.75 (0.00)	0.69	0.86	0.88
	X33	0.91 (0.00)			

Sensitivity	X37	0.47 (0.00)	0.50	0.82	0.83
	X38	0.74 (0.00)			
	X39	0.42 (0.03)			
	X40	0.90 (0.02)			
	X41	0.82 (0.00)			

As discussed in chapter 4 model estimation in PLS-SEM assesses Measurement Model (outer model) that is the relationship between the constructs and indicators and the Structural Model (inner model) that is the relationship between the constructs. At first model estimation focuses on the Measurement Model that includes Reflective Measurement Model and Formative Measurement Model and then on Structural model. The following chapter covers the detail assessment and analysis of both measurement and structural models.

4.1 Assessing Measurement Model

Measurement model evaluates Internal Consistency Reliability, Convergent Validity and Discriminant Validity. Internal consistency reliability assesses the reliability of the indicator variables. It is evaluated through well-known criteria Cronbach's Alpha and Composite Reliability. Convergent validity takes two measures that are supposed to be related and are measuring the same construct, and shows the extent to which these measures are related. It is evaluated by considering the Outer Loadings of the indicators and the Average Variance Extracted (AVE). Outer loading shows that how much the associated indicators have in common while AVE shows the extent to which the variance of indicators is explained by the constructs. The following table is

showing the results for internal consistency and reliability (Cronbach's Alpha and Composite Reliability) and convergent validity (Outer loadings and AVE).

Items Removed: Indicators removed <0.5.....List

- a. Outer Loadings with values > 0.5 indicates Indicator Reliability, Hulland (1999)
- b. Average Variance Extracted (AVE) with values > 0.5 shows Convergent Reliability. Bagozzi and Yi (1988), Fornell and Larcker (1981)
- c. Composite reliability with values (CR) > 0.7 indicates Internal Consistency Gefen, et al., (2000)
- d. Cronbach's alpha with values > 0.7 establish indicator Reliability. Nunnaly (1978)

Discriminant Validity shows the degree to which two constructs are genuinely different from each other and are capturing totally unique phenomena not expressed by any other construct in the model. There are two methods to assess discriminant validity. One method is to examine the Cross Loadings of the indicators and the second more conservative measure is the Fornell-Larcker criterion. Discriminant validity is established with the help of cross loadings when an indicator's outer loading on its corresponding construct is higher than its outer loading on all other constructs in the model. The presence of cross loadings that exceed the indicators' outer loadings represents a discriminant validity problem. This criterion is considered liberal in terms of establishing discriminant validity (Hair, Ringle, & Sarstedt, 2011). That is, it is very likely to indicate that two or more constructs exhibit discriminant validity.

Table 4.2 (Cross Loadings)

	Capital	Asset	Management	Earnings	Liquidity	Sensitivity
X ₁	0.85	-0.42	0.13	0.40	0.76	0.43
X ₂	0.98	-0.29	0.04	0.27	0.80	0.31
X ₈	0.41	0.81	-0.50	-0.43	0.31	-0.30
X ₉	-0.44	0.70	-0.53	-0.71	-0.54	-0.49
X ₁₂	-0.31	0.87	-0.20	-0.61	-0.12	-0.79
X ₁₃	-0.47	0.86	-0.35	-0.66	-0.31	-0.83
X ₁₅	0.02	0.60	0.71	-0.64	-0.04	-0.47
X ₁₆	-0.07	-0.30	0.87	0.50	-0.04	0.41
X ₁₇	0.28	-0.35	0.87	0.61	0.09	0.33
X ₁₈	0.19	-0.10	0.73	0.33	0.39	0.28
X ₁₉	0.21	-0.11	0.74	0.34	0.37	0.29
X ₂₀	0.09	-0.12	0.79	0.37	0.21	0.28
X ₂₃	0.27	-0.73	0.76	0.93	0.33	0.81
X ₂₅	0.24	-0.56	0.74	0.82	0.17	0.73
X ₂₆	0.14	-0.34	0.26	0.78	0.44	0.34
X ₂₇	-0.44	0.35	-0.27	0.70	-0.21	0.28
X ₂₈	0.28	-0.91	0.63	0.94	0.27	0.89
X ₃₀	0.35	-0.78	0.55	0.82	0.44	0.68
X ₃₂	0.58	0.28	0.25	0.37	0.75	0.33
X ₃₃	0.76	0.30	0.28	0.38	0.91	0.35
X ₃₇	0.32	-0.33	0.26	0.37	-0.17	0.47
X ₃₈	0.44	-0.50	0.25	0.47	0.26	0.74
X ₃₉	0.29	0.13	0.35	0.39	0.15	0.42
X ₄₀	0.33	-0.81	0.63	0.37	0.54	0.90
X ₄₁	-0.45	0.71	-0.41	-0.45	-0.66	0.82

Fornell- Larcker Criterion measures and compares the latent variable correlations with the square root of AVE values. The square root of AVE values should be higher than the latent variable correlations to establish discriminant validity. This methodology illustrates that constructs share higher variance with their corresponding indicators as compared to the other constructs in the model. Outcome of this study establishes discriminant validity.

Table 4.3 (Fornell-Larcker criterion)

	A	C	E	L	M	S	SR
A	0.87						
C	-0.37	0.81					
E	-0.84	0.36	0.79				
L	-0.29	0.78	0.38	0.83			
M	-0.52	0.10	0.74	0.27	0.83		
S	-0.86	0.39	0.88	0.34	0.58	0.70	
SR	0.54	-0.10	-0.70	-0.22	-0.54	-0.59	1.00

However, Henseler, Ringle and Sarstedt (2015) appeared by methods of stimulation study that the methodologies of Fornell-Larcker and Cross Loadings do not identify the absence of discriminant validity in most common researches. Therefore an alternative approach was proposed by them which is based on multivariate-multimethod matrix to evaluate discriminant validity that is the Heterotrait-monotrait proportion of relationships (HTMT). This new approach was contrasted by the Fornell Larcker criterion and Cross loading method by means of Monte Carlo stimulation study and its superior performance was established.

Table 4.4 Discriminant validity HTMT

	A	C	E	L	M	S	SR
Asset							
Capital	0.839						
Earning	0.747	0.410					
Liquidity	0.718	0.803	0.458				
Management	0.738	0.341	0.810	0.456			
Sensitivity	0.877	0.610	0.095	0.484	0.718		
Stock Returns	0.682	0.092	0.741	0.222	0.534	0.730	

All items values < 0.9 establishes discriminant validity. (Henseler, Ringle and Sarstedt, 2015)

4.2 Assessing Structural Model

After assessing and confirming the reliability and validity of the construct measures the next step is to assess the results of the Structural (Inner) Model. The most common measure to evaluate structural equation model is through coefficient of determination R^2 . It measures the predictive accuracy of the model in percentage form.

Table 4.5 (R square values)

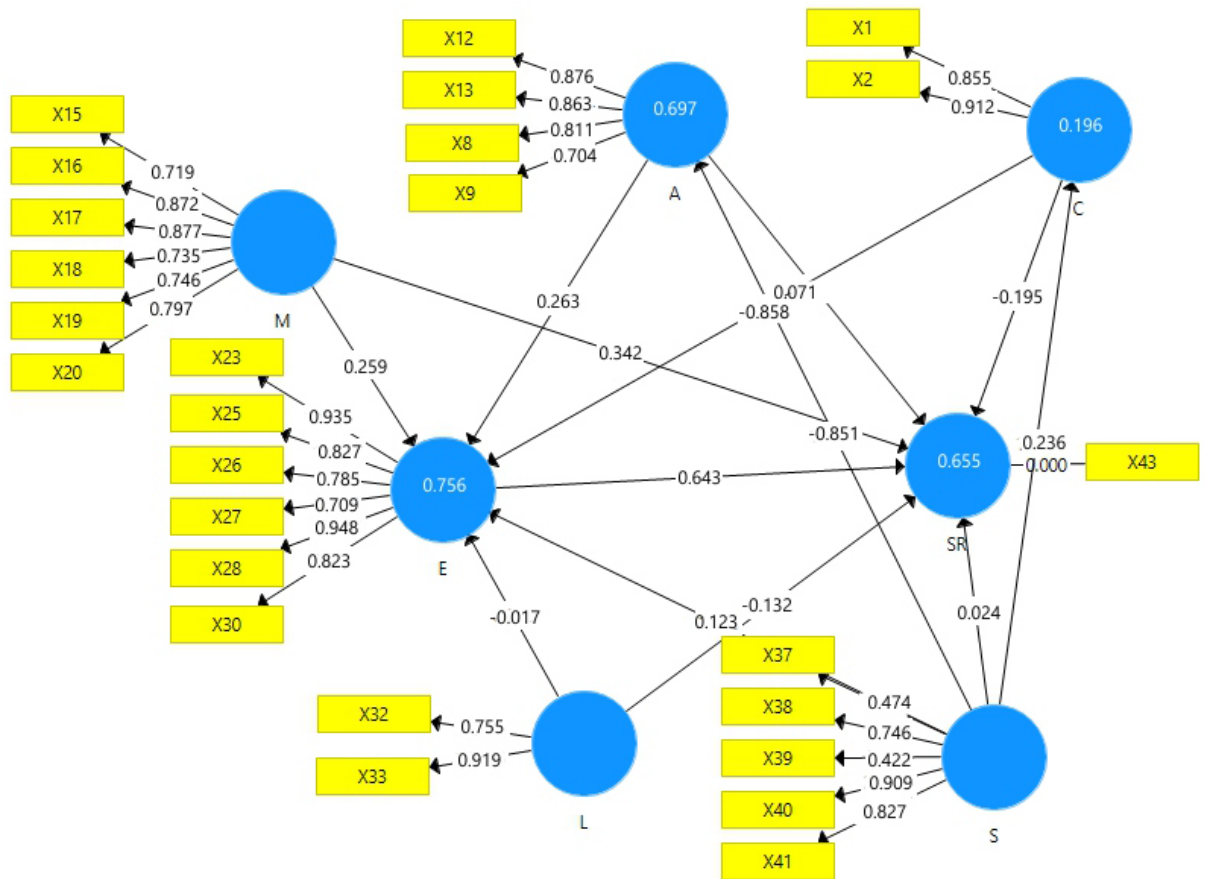
	R square	Adjusted R square
Asset	0.697	0.635
Capital	0.196	0.151
Earnings	0.756	0.669
Stock Returns	0.655	0.449

The significance of the relationship between the constructs and their predictive capabilities is assessed by the 97.5% Bca confidence interval, Path Coefficients and f square values respectively.

Table 4.6 (Path Coefficients, 97.5% Confidence Interval and f square values)

Soundness Constructs	Path Coefficients	97.5% Bca confidence interval	f square values	Significance?
C-SR	-0.195	(0.282, 0.996)	0.061	Yes
C-E	0.071	(0.121, 0.884)	0.027	Yes
A-SR	0.341	(0.194, 0.245)	0.083	Yes
A-E	0.263	(0.077, 0.181)	0.004	Yes
M-SR	0.342	(-0.056, 2.082)	0.010	No
M-E	0.259	(0.003, 0.174)	0.023	No
E-SR	0.643	(0.224, 0.679)	0.134	Yes
L-E	-0.017	(0.234, 0.913)	0.007	Yes
L-SR	-0.132	(0.366, 1.592)	0.019	Yes
S-SR	0.024	(-1.331, 1.298)	0.027	No
S-E	0.123	(0.002, 0.77)	0.019	No
S-C	0.236	(-0.504, 0.711)	0.002	No
S-A	-0.858	(-0.037, 0.289)	0.006	No

Path Diagram (Final Model)



Capital construct is showing weak path coefficients with stock returns and earnings. It has small predictive relevance with stock returns and earnings as f square stand at 0.061 and 0.027 respectively. Capital construct has established a significance at 97.5% confidence interval for stock returns (0.282, 0.996) and with earnings (0.121, 0.884). Thus hypothesis 1 is accepted. The study is in line with Berger and Bouwman (2012) study results that the bank capital improves the organization execution of a small bank in any circumstance, while the medium or bigger bank's adequate capital improves company's performance during banking crises. It inferred the significance of capital in deciding the survival of banks. Having sufficient capital helps the banks cope admirably during financial crises thus playing positive role in ensuring bank

soundness. Dao and Ankenbrand (2014) found that capital risk is directly related to the level of capital adequacy in Vietnamese Banks. It empirically supported that capital regulation approach should be used to deal banking risk. Weak and negative path coefficients in this study shows that Pakistani banks are operating at low levels of capital. Chen (2001) predicted that low level of capital reduces bank's lending ability that reduces aggregate investment. When aggregate investment falls it reduces the revenue, persistent low revenue reduces banks net worth that in turn reduces the stock returns.

Asset construct is showing a significance at 97.5% confidence interval with stock returns (0.194, 0.245) and earnings (0.077, 0.181) thus supporting hypothesis 2. Weak path coefficient (0.341) with stock returns suggests that banks are operating at low level of assets. Asset has small predictive relevance with stock returns and no predictive relevance with earnings. Sriwardany (2006) showed in his study that asset growth of a company is directly related to the change in stock prices of the company. According to him asset growth information of a company brings positive response from the investors that in turns increase the firm's stock price.

Management construct has not established a significance at 97.5% confidence interval, thus rejecting hypothesis 3. Path coefficients are showing weak but positive values whereas f square value for stock returns and earnings is showing no predictive relevance. The results contradicts theory that better service and management quality plays an important role in creating value of the company by influencing purchasing pattern of the customers hence affecting investment and profitability. Management quality serves as internal determinant of the bank's profitability because management objectives, policy decisions and action reflects in banks operating results. Zimmerman (1996) found an important contributing factor in bank performance is the decision of

the management regarding loan portfolio concentration. Good bank performance is often associated to the good management quality by many researchers. Various investigations have reasoned that cost control is the essential determinant of bank's profitability. Expense management offers noteworthy and predictable opportunities to increase profitability. With the enormous size and the huge contrasts in pay rates and wages, the efficient utilization of workers is a key determinant of relative profitability as total operational cost of the banks is reduced by these costs. Staff expenses seems to negatively affect bank's ROA in the investigation of Bourke (1989). Whereas the outcome is similar to the study of Goyit and Nmadu (2016). They investigated the effect of management and service quality on the profitability of the banks in Nigeria and found there exist no significant relationship between management and service quality and the profitability of the banks.

Earnings construct has established sound significance at 97.5% confidence interval with share returns, thus failed to reject hypothesis 4. The path coefficient is 0.643 that suggests that earnings has a positive and moderate relationship with stock returns. F square value is showing average predictive relevancy. Mashoka (2013) showed there is significant and strong positive relationship between earnings of the banking sector and their stock returns. Huge number of studies investigated earnings parameter by breaking down income to its fundamental factors that is accruals and cash flow components (Sloan, 1996). These investigations suggested accruals are lesser persevering as compared to cash flows. As, Sloan (1996) deeply investigated both cash flows and accruals components of earnings and the degree to which this information is translated to stock returns. The outcomes demonstrate that despite the fact that the accruals are less diligent than the cash flows, investors normally cannot differentiate between them. According to the study of Mashoka (2013) cash flows and

accruals both of the components have significant positive relationship with the stock returns however cash flow component is given more weightage as compared to accruals. For banking and servicing sector higher the cash flow higher the stock returns.

Liquidity construct has negative path coefficients with stock returns -0.132 and with earning -0.017 . There is a sound significance at 97.5% confidence interval with share returns and with earnings (0.366, 1.592) thus failed to reject hypothesis 5. Negative path coefficients are showing there is insufficient liquidity. No predictive relevance is seen. Liquidity risk became the most dreaded financial risk of all times after the financial crises of 2007-2008. Liang and Wei (2012) demonstrated that continued fears of market illiquidity aggravated the global financial crises. Liquidity has become an important financial phenomenon since the Russian debt crisis in 1998, further impelled by the recent global financial crisis of 2007-2008. These eras were associated with a widespread deterioration in liquidity across countries and markets.

Sensitivity construct highlights ineffective path coefficients with stock returns (0.024) earning (0.123) capital (0.236) and negative path coefficient with asset (-0.858). None of the construct established significant relationship at 97.5% confidence interval thus rejecting hypothesis 6. Small predictive relevance is seen with stock returns and earnings while no predictive relevance is seen with capital and asset. The results suggests that sensitivity is not effecting bank soundness in Pakistan. Fama and French (1992) reported that the market beta has little or no ability in explaining the variation in stock returns on U.S stock on selected non-financial firms.

Results shows that earning is significant for bank soundness whereas sensitivity is insignificant. Banks are executing their operations with lower levels of liquidity ratio

and capital which can cause bank failures. Bank failures with the similar causes were seen during 1930's Great Depression. Basel III established Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) seems not to be enough to generate enough liquidity levels and capital.

Overall results are summarized as follows:

Hypotheses 1 and 2 is accepted as our results show that Capital and Asset contributes significantly to banks' soundness.

Hypothesis 3 is rejected as Management has not a significant contribution to banks' soundness in Pakistan.

Hypothesis 4 is accepted as Liquidity contributes significantly to banks' soundness.

Hypothesis 5 is rejected as Sensitivity doesn't contribute significantly to banks' soundness.

Chapter V

CONCLUSION AND POLICY RECOMMENDATION

The investigation exhibit PLS-SEM application on 20 listed banks to assess banking sector soundness in a parsimonious way in Pakistan. 42 ratios were taken as indicators of CAMELS and the most relevant ratios in case of Pakistani banks were identified. After identifying the ratios, the effect of CAMELS parameters on share returns was observed and most significant parameters were identified. Both processes were completed by using PLS-SEM methodology. The most relevant ratios to measure Capital Adequacy were found to be CAR, and Tier1 to RWA. The ratios that determined Asset Quality are mostly NPLs ratios that is Net NPLs to capital ratio, NPLs to Net Loans, NPLs to total Equity and Total Loans to Asset ratio. Most relevant ratios for Management parameter are Total Loans to Deposit ratio, Management expense ratio, Net income to No. of br. And total deposits to no. of branches. Earnings parameter most significant ratios are ROA (after tax), NII to Interest Expensed ratio, NII to Total Income ratio, ROE (before tax), ROCE and cost to income ratio. Significant ratios for Liquidity parameter are found to be Liquid Assets to Total Assets and Liquid Asset to Total Deposit ratios whereas relevant ratios for Sensitivity are Net NPLs to Net Loans, DuPont ratio, Price to earnings ratio and Log of Assets. The most significant constructs for Pakistani bank soundness is Earning, whereas Sensitivity is found to be the least relevant. However, Liquidity, Capital adequacy and Management are significant to share returns hence, playing a considerable role in banks soundness of Pakistan. Outcomes also recommended that banks worked with lacking capital and liquidity to pad adversity. Basel III regulations were expected to deal this situation but no effective solution were seen for two major problems of replacement of lost capital in time and risk measurement.

5.1 Policy Recommendations

This research is very much helpful in identifying the strong and weak areas of Pakistani banks hence giving directions that improvement in certain areas can add a lot to the overall performance and soundness of the banking sector as by reducing Non performing Loans, enhancing screening procedures and by limiting credit risks, asset quality can be improved. Bank's management should manage banking operation costs and see that cost to income ratios stays within an acceptable range. Earnings can be enhanced by maximizing interest income from loans and introducing new products and schemes to attract investors. There should be a high focus on increasing the deposits of the banks and maintaining sufficient levels of liquidity. Capital base needs to be improvised and maintained modestly. According to Calomiris and Herring (2013) convertible contingent capital (CoCos) can maintain adequate level of capital and can improve risk management. Kodres and Narain (2010) recommended that shock absorbers should be enhanced by increasing the liquidity levels and capital. According to Moosa (2010) any financial institution size is viewed as the most critical measure but there should be refocus and diversion to interconnectedness, leverage and multifaceted aspects. There should be limits placed on the scope and size of the banks so that the problem of 'too big to fall' can be addressed. He also stresses on the evaluation of management quality in decision making. Moshirian (2011) suggested that large banks should be given the freedom to grow and new policies should be devised that can create convergence with bank soundness.

5.2 Future Directions for Research

Future researchers can use different combination of ratios and add other ratios to indicate CAMELS parameter and then assess their effect on banks' soundness. They can individually check the soundness of every bank and can rank them or a

comparison for Islamic and Conventional Banks can be done by investigating which of the CAMELS construct is significant or not significant for banks soundness of these two differently operating systems.

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APPENDIX

1. Public Limited Banks:

- National Bank of Pakistan
- The Bank of Khyber
- The Bank of Punjab

2. Local Private Banks including Islamic Banks:

- Allied Bank Limited
- Askari Bank Limited
- Bank Alfalah Limited
- Bank Al Habib Limited
- BankIslami Pakistan Limited
- Habib Bank Limited
- Faysal Bank Limited
- Habib Metropolitan Bank Limited
- JS Bank Limited
- Meezan Bank Limited
- MCB Bank Limited
- Standard Chartered Bank Limited
- Samba Bank Limited
- Silk Bank Limited
- Soneri Bank Limited
- Summit Bank Limited
- United Bank Limited