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A Comparison of Technical Efficiency of Performance of Different Banks Before and After Merger: A Study of Pakistan Banking Industry

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Abstract
Mergers and acquisitions are the part and parcel of every field, especially in banking industry. This research is focused on the performance of mergers in the last decade. As evident from recent past the banking industry in Pakistan has to cop with many mergers. Mergers are not opted only for the sake of synergy and economic benefits but there are certain other reasons. In Pakistan the other stimulant is the State Bank of Pakistan's capital requirement, which is being raised with the passage of time. This study has analyzed the performance of 6 mergers (Prime and ABN AMRO, ABN AMRO and Royal Bank of Scotland, RBS and Faysal Bank, Saudi Pak Commercial Bank and Silk Bank, Union Bank and Standard Chartered Bank and Cres and Samba Bank), occurred in the last decade in Pakistan banking industry. Regression analysis is used to analyze the contribution level of different variables in the bank profitability. The results for net assets, net advances, branches and labor productivity were found to be extensive and quite significant. In the second phase the Data Envelopment Analysis of all the banks were done and it is found that all the banks involved in merger have got their performance improved by some extent. The two stage analysis was used for the analysis of the bank performance i.e. first for efficiency and the later for effectiveness of the bank. The first stage results were found to be impressive for most of the banks but in second stage (effectiveness) the results were quite different. A complete comparison of the individual variables has been done in order to pin point the deficiency of individual banks. Main four resulting banks have shown significant improvement in all the independent variables except the Faysal Bank whose labor productivity has shown rapid downward trend. Overall, the mergers and acquisitions, especially in Pakistani environment, are found to be a win-win situation.
Key words: Data envelopment analysis (DEA), Mergers and Acquisition (M&A)

1. Introduction

The phrase mergers and acquisitions (abbreviated M&A) refer to the aspect of corporate strategy, corporate finance and management dealing with the buying, selling and combining of different companies that can aid, finance, or help a growing company in a given industry grow rapidly, without having to create another new business entity.

The most important source considered for financing is banking sector. The common point of view, according to most of the researchers in the past, is that the uplift in the performance regarding financial aspects will result in improving functions and activities of the organization. The subject of financial performance and research for its measurement has gained importance and is well advanced within finance and management. Some important factors, agreed upon, to improve financial performance are; the institution size, its asset and the operational efficiency.

After independence, Pakistan inherited Habib Bank Limited, which was established in 1941 Bombay (Mumbai). After the creation of Pakistan the bank was shifted to Karachi. Next year of creation, the Pakistan government established regulator, i.e. central bank, named as State Bank of Pakistan (SBP).

The banks in Pakistan were nationalized by the government of Pakistan in 1974. The aim was to make the credit available for the high priority sectors of economy. This step from government left no room for the private sector in banking business. The act of nationalization was not proven to be good one for the particular sector as it affected the performance negatively. After continuous efforts and evaluation of the nationalized banks government withdrew its decision.

In order to improve the efficiency of the sector and to promote the competition, the first step was taken and twenty (20) banks including ten (10) domestic banks were allowed to commence their business. The process for

denationalization / privatization of Nationalized Commercial Banks (NCBs) was also initiated. Now, most of the banks are privatized, including three big names of HBL, MCB and ABL.

In Pakistan, the banking industry has shown a dynamic growth in last decade. This intense competitive environment, firstly, leads to the change in the sector's behavior towards innovations, product development and the services offered to the customers and secondly, the mergers and acquisition are in trend to increase market share and up bringing the organization to cop with the expected policies of regulator.

Banking is acting as a bridge between different firms for modern trade and commerce as well as working as financial intermediation. Therefore, the efficiency appraisal of this sector is needed as lifesaving drug. Moreover, the strong regulatory institution and system is needed to look after the affairs regarding this prime sector. In order to fulfilling above said responsibilities, State Bank of Pakistan, from the date it was established, is working quite impressively. Due to this, the banking sector in Pakistan has appeared as the strongest sector among rest. From past few years the State Bank of Pakistan is formulating tightening the monitory policies to safeguard the interest of the stakeholders against insolvency. For this purpose the regulatory body has decided to raise the minimum capital requirement as per Basel II. Therefore, the merger of small banks (not fulfilling this requirement) with the larger one is expected in the future.

Following research, for the above mentioned reason, is aimed to appraise the performance of the past mergers so that one can expect and estimates the merger results. This study will further come up with the best merging result in the sample in comparison to others.

1.1 Significance of study

Banking, as being the main foundation of economy and growth of the country, is a very important subject to be studied. Many hidden corners are still un-addressed in this particular field. A bunch of studies are available for this subject that enlightened the magnitude of the field.

The great merger movement (Lamoreaux, 1988) was predominantly US business phenomenon that happened from 1895 to 1904. During the above said time many small firms, having small market shares, merged with similar and large firms. A careful estimation is that more than 1800 of these firms were consolidated and been disappeared. However, most of them were "quick merger" and resulted into failure due to overlook of different factors such as; unrelated technology and different management.

The emergence of increased rivalry by non-bank financial intermediaries (for example, insurance companies, pension funds, investment firms) has imposed growing pressure on banks to enhance both profitability and productive efficiency. Thus, the strategic priority in banking has changed over the recent decades with the emphasis on profitability, performance and value creation rather than growth and size. A variety of policies have been considered internationally with a finding that the most preferred strategy among all is merging.

Motives of merger include economy of scale, enrichment of market share, synergy, tax reduction, geographical diversification and vertical integration. However in this study, the motive is to abide by the tightening policy of State bank of Pakistan about the paid up capital requirement including all above said motives.

Banking industry in Pakistan, as evident from history, has shown a large and fast growth in last decade. So this industry is becoming rich and complex with the passage of time. The regulatory authority for commercial banks in Pakistan is tightening the policies with the course of time. As we have seen many mergers in the past, it is becoming the need of hour that banks with small no. of branches and lesser paid up capital should merge with large banks as the requirement for required reserve is getting tougher and tougher.

This study performs the performance appraisal of the merged banks individually (pre-merger) and in combination (post-merger). The said study will try to find out the reasons of the post-merger performance both positive and negative and come up with the guidelines about best merging results.

1.2 Research objectives

The following research objectives are focused:

1. To compare the performance of merged banks, before and after their merger.
2. To come up with a verdict about the corresponding behavior of the variables that impact the performance of a merger and bank's profitability.

1.3 Research Questions

1. What are the similarities and dissimilarities among the variables those affect the performance of merged banks?
2. Which merger shows the best merging results and why?

1.4 Problem Statement

Which of the mergers took place from 2001 to 2010 were beneficial and in what aspects similar or dissimilar to one another?

2. Review of Literature

Mergers can be said as the conclusion of the procedure whereby more than two companies operating independently, before, comes under the same umbrella (Brockington 1987). Another type of merger, called

conglomerate merger, refers to the scenario where one company takes over the other company from an unrelated industry. A question may arise, is there any differences between mergers and acquisitions. The answer is simple, as in acquisition the company purchases or takes over the effective controlling interest in another company which entitled her the control of the assets and management of the former company without the loss of identity of the both firms.

There is no harmony found among the views and conclusions of different researchers in the previous empirical studies as yielded results about the changes in operating performance of the mergers were inconsistent. Splitting the literature, three categories can be found in this regard. Firstly, the one who report significant improvement in the post-merger performance, second, those who finds deterioration in the profitability and the last those judges no change occurred. (Matynova, Renneboog, Nov 2006).

The US studies, using the more sophisticated methodology, shows that there is no change, observed, in the profitability of the bidding and targeted firms (Moeller and Schlingemann, 2004). While some others are of the view that take-over results in significant improvement (Heron and Lie, 2002; Linn and Switzer, 2001). The studies done for UK show more conflicting conclusions as Dickerson et al. (1997) discover that the performance after such acquisition decline significantly, whereas, Powell and Stark (2005) show the exact opposite results.

Discussion continues, some researchers are of the view that the acquisitions of relatively large targets are likely to produce better results than small ones. However, it might be possible that the management will face some major difficulties in integrating, such large, acquisitions and will yield in total loss of the objective. Support, for both points of views, is available in the previous literature. Linn and Switzer (2001) and Switzer (1996) come up with the evidences that support the first point of view of taking over the large targets, whereas, Clark and Ofek (1994) documented that the management confronting with this procedure may face difficulties in managing a large resulting firm. These management difficulties further lead to reduction in profitability and performance

Looking at the primary objective of this sort of business combination, it is observed that the aim is to get economic advantage in such a way that resulting business will yield higher present value than the simple addition of the individual ones. In the views of Earl Bunting, goals of the business must not confront with those of the community, if so; these business combinations are not only a step to enhance the shareholders' value but also a source of improvement of the people's well-being.

The study conducted in year 2007 by Hannan and Pilloff (2007), concludes that the profitability is a crucial stimulant for merger. This study further reveals the relationship between the profitability and the chances to be acquired and determines that the firms with less profitability and suffering from operational inefficiency have greater chances to be acquired by others. Similarly, some other researchers come up with the same belief that the acquisition serves as a tool to transfer assets from the firms those are poorly managed to the firms those are managed in a better way (Knapp et al. 2006, Koetter et al. 2007).

For the emerging markets (Soussa and Wheeler ,2006) the results are quite different as the researchers found that such mergers and acquisitions are not in the favour of the acquirer and further extends the view that it also serves as an ignition to the principal agent type of problem where an imbalance is found between management and stockholder's interest.

The literature about merger and acquisition is full of different kind of results, views and believes. Zhang (1995) finds that the mergers and acquisitions serve well for the institutions and firms to even out their incomes and profits with less unpredictability.

In addition to taking the common advantages like cost efficiency, economy of scales and geographical expansion, the acquisition also provide the up-to-date technology and results in improving the management strategies with an increase in product range to be marketed (Benston, Hunter and Wall, 1995).

The most common expectations from this sort of business combinations include:

a. Relative growth in economic activities.
b. Enhanced profitability resulting from
    a. Economies of supply, procurement and marketing scale.
    b. Operating economies.
    c. Synergy.
c. Diversification of risk as a result of diversifying investments and operating environments.

According to Pandey (2005) the mergers, acquisitions or any type of business combinations are targeted to harvest the following benefits:

1. Limit competition as it tends to encourage monopolistic build-ups.
2. Gain economies of scale and increased income with proportionately less investment.
3. Utilize underutilized market power.
4. Overcome the problem of slow growth and low profitability.
5. Achieve diversification of activities and hence investment.
6. Displace existing (inefficient) management.

7. Circumvent Govt. policies and regulations.
8. Overcome financing constraints.

As mentioned by Enyi 2007, above said benefits are earned by mergers and combinations but there are some problems too. Mainly, following three steps involved in the procedure of merger and require a careful attention to implement it intelligently.

1. Planning: A proper plan must be made to take over any firm. The points into consideration must be planned out clearly.
2. Search and Screen: Birds of same feather, they say, flock together. So, there must be compatibility of the goals between the firms involved in this process, otherwise, the resulting merger will fail. This is the reason due to which this process takes a long time to be implemented.
3. Financial Evaluation: Financial evaluation of the firm is also very important task as the main objective of business is to enhance the shareholder's wealth. Problem may arise, while evaluating the performance, due to differences in the competencies, system and methods of reporting accounting transactions between the merging firms. The remedy is to convert all the statement of the firms into a uniform format before evaluation.

It has been a subject of research for many researchers in the past as well as the present. As profitability is the main aim of any business, the determinants of bank profitability have also been widely studied theoretically as well empirically.

The literature available in this regard can be separated into two groups. Firstly, those that focused on a particular country (Berger et al.,1987; Berger, 1995b; Barajas et al., 1999; Naceur and Goaied, 2001; Naceur, 2003; and Athanasoglou et al., 2005) and those that aimed on panel of countries (e.g Hasleem, 1968; Short, 1979; Bourke, 1989; Molyneux and Thornton, 1992; Demirgue-Kunt and Huizinga, 1999; and Abreu and Mendes, 2002). In the light of the discussion and conclusions of the above mentioned authors, the company level determinants of bank profitability can be identified with some ease.

Company level determinants of bank performance comprise characteristics of individual banks that affect their profitability. Shareholder and managerial decisions and activities can directly influence these characteristics; hence, they also differ from company to company. They include:

1. Capital Size
2. Size of the deposit liabilities
3. Size and composition of credit portfolio
4. Interest rate policy
5. Labor productivity
6. State of information technology
7. Risk level
8. Bank size
9. Bank age etc.

Capital size can be seen in two ways. Narrowly, the capital can be seen as the amount contributed by the owners of the bank (paid-up share capital) that gives them the right to enjoy all the future earnings of the bank. The other comprehensive one is that the capital is the amount of owner's funds available to support a bank's business (Athanasoglou et al., 2005: 14). The later definition includes reserves, and is also termed total shareholder's funds (Anyanwaokaro, 1996:140). This is not a matter of discussion which definition is used for capital, bank's capital is widely used to analyze the status of its financial strength (Bobakova, 2003: 25). Positive correlation between returns and capital has been reported by Furlong and Keeley (1989), Keeley and Furlong (1990), Berger (1995b), Naceur (2003) and Kwan and Eisenbeis (2005). Investigating the determinants of Tunisian bank's profitability, Naceur and Goaied (2001) indicated that the best performing banks are those who have struggled to improve labour and capital productivity and those who have been able to reinforce their equity. Bourke (1989), Abreu and Mendes (2002) and Naceur (2003) agree that well-capitalized banks face lower need to external funding and lower bankruptcy and funding costs; and this advantage translates into better profitability.

Evidence from Naceur and Goaied (2001) indicated the best performing banks are those who are maintaining high level of deposits relative to their assets. As these deposits helps in investment and lending activities and results in increasing the banks return on assets ceteris paribus (Allen and Rai, 1996 and Holden and El-Bannany, 2006).

Bashir,2000 and Fries et al., 2002 are of the view that the profitability function for a bank includes the size and composition of its credit portfolio. So, this is fairly evident that the banks, having large credit portfolio, show greater profitability (Rhoades and Rutz, 1982). However, major financial losses are on the credit of substandard loans that results in failure of many banks (Olajide, 2006: 27). For this reason, sometimes, the large credit portfolio may also result in reduction of profitability, if the key proportionate of credits consists of substandard loans. Therefore, this is an appropriate variable, to be included, in performance evaluation.

The past review of literature supports the view that labour productivity is a factor which positively and significantly affects the profitability of banks (Athanasoglou et al., 2005). This is why, the banks always focus to improve their profitability through keeping the labour force steady, and ensuring higher quality of newly hired labor, right sizing and increasing overall output via incorporating new technology.

Summarizing the discussion, while analyzing the Nigerian banks Uhomoibhi (2008), revealed that capital size and size of credit portfolio are significantly defining and affecting the profitability of the banks. On the other hand the remaining variables were appeared to be insignificant in this regard, whereas, the risk and profitability relationship was undiscovered.

Some other researchers have used different measures for firm's performance appraisal. The most common indicators (Ismail & Davidson, 2007) include profitability measures, capital adequacy measures, loan quality measures, deposit utilization, interest rate risk measures and liquidity risk measures.

This research will follow the methodology, for bank performance appraisal as well as the forecasted merger performance, as a mix of different methodologies used by different researchers in the past. i.e the DEA model given by Cooper et al. (2000) and used by Sultan et al., (2011), and the other determinants found most common in the previous literature.

3. Materials and Methods

Population:

All banking mergers occurred from 2002 to 2011 in Pakistan.

3.1 Sample

1. Samba and Cres bank
2. Standard chartered and Union bank
3. Faysal and Royal bank of Scotland
4. Royal bank of Scotland and ABN Amro
5. ABN Amro bank and Prime Bank
6. Saudi Pak Commercial bank and Silk Bank

3.2 Variables and their description

Net Income

Net income, a company's total earnings or profit, is taken as the indicator of bank's profitability. Net income can be calculated by adding up all the revenues earned by a business and subtracting the costs like operating cost, depreciation, interest paid taxes and other expenses. Mathematically it can be written as:

Net Income = Total Revenue- Total Expenses

Total expenses can be further elaborated as under:

Total Expenses = Operating Expenses+ Interest Expenses + Taxes

Net income is taken as a dependent variable for this study as it demonstrates the financial health of any business organization. If the net income for a firm is high, it is said to be financially strong and vice versa.

Assets Net of Advances

Every organization or business is based on the type and quantity of assets it has. If the assets are large in volume and being utilized in an efficient manner, the company will perform well in all aspects. For this study, Assets is used as a determinant of bank's profitability. Advances are also included in assets for a banking industry as they are generating spread but it majorly depends on the composition of their portfolio (Bashir, 2000 and Fries *et al*., 2002: 10). So, for this study, this variable is decomposed and assets are taken after subtracting the value of advance i.e., assets net of advances.

Labor Productivity

Labor productivity, as evident from previous literature and most of the researchers, is also a big contributor in overall performance, efficiency and effectiveness of the bank. An empirical study by Athanasoglou *et al.* (2005: 23, 25) shows that bank's profitability is significantly and positively affected by labour productivity growth.

This indicator serves as an independent variable in this research for evaluating the overall efficiency and performance of different banks. This is a resultant ratio of number of employees to the net income of the firm. Formula used to calculate labor productivity is as under:

Labor Productivity = Net income / No. of employees

Non-Performing Loan

"A loan is nonperforming when payments of interest and principal are past due by 90 days or more, or at least 90 days of interest payments have been capitalized, refinanced or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons to doubt that payments will be made in full" (International Monetary Fund).

In the light of the definition of the non-performing loan, as the volume of the NPL increases the overall net

income tends to be reduced and affects the performance of the bank. Since substandard loans and advances can be a source of intense financial losses to a bank which have resulted in numerous bank failures (Olajide, 2006: 27), it follows that a large volume of substandard loans could also be responsible for reducing bank's profitability. Therefore, NPL is also taken as independent variable in this research which leads to a good or bad performance of the company (bank). There is an expected inverse relationship between NPL and the performance of the firm. NPL is taken as a percentage of total credit portfolio of the bank.

NPL % = Non performing loans / Total loans and advances

No. of Branches

Branches serve the banking industry as retail stores. More the No. of branches, more the customer or clients you can serve. So, this is also an important variable to be included in the research as an independent variable as we can't deny its contribution in the bank's profitability and overall performance.

Net Advances

Loans and advances are responsible for generating revenue for the banks through spread building (Rhoades and Rutz, 1982). As it is a determinant of the bank's profitability and performance, it has been taken as independent variable.

This study has been conducted in different steps as a combination of methods:

1. Correlation among the profitability determinant variables and the corresponding variables of different banks.
2. Regression analysis for the variables to check the contribution level of each variable in the profitability of each bank.
3. DEA of each bank in the data set to evaluate and compare the bank performance before and after merger.

3.3 Correlation

Correlation is generally refers to the relationship between two variable or data sets. It has nothing do to with causality but it predicts the relationship. This measure is being frequently used to analyze whether any sort of relatedness exists between the variables in the data set. The correlation coefficient ranges from 1.00 to -1.00. If the coefficient value is high, the strong will be the relationship and vice versa.

3.4 Regression Analysis

Regression analysis serves as a tool to find out the relationship among the variables. For this the variables are divided into dependent and independent variables and it analyzes the dependency of the dependent variable on the independent variables. More specifically, this method helps us in understanding that how the typical value of the dependent variable changes in response to any change in the one of the independent variable keeping the other independent variables unmoved. The equation for regression analysis is as follows:

$$y_i = \beta_0 + \beta_1 x_i + \beta_2 x_i^2 + \varepsilon_i, \ i = 1, \ldots, n.$$

Regression equation (this research):

N_income = **f** (A_N_Ad, Lab_Prod, NPL, BRANCHES, Net_Adv)

N_Income: Net income
A_N_Ad: Assets net of Advances
Lab_Prod: Labor productivity
NPL: Non-performing Loans
Net_Adv: Net Advances

T- Statistic

A t-test is used to test the hypothesis whether to support the null hypothesis or not. It is applied when the test statistic follows a normal distribution if the values of scaling term in the test statistic are known. The t-statistic was introduced in 1908 by William Sealy Gosset.

to make this research possible.

4. Results and Discussion

Table 1: Correlation of the variables

	Net income	Assets net of advances	Labor productivity	Non-performing Loans	BRANCHES	Net advances
Net income	1.00	0.595	0.87	0.288	0.421	0.66
Assets net of Advance	0.595	1.00	0.301	0.87	0.855	0.913
Labor productivity	0.87	0.301	1	0.037	0.208	0.417
Non-performing Loans	0.288	0.87	0.037	1.00	0.874	0.798
BRANCHES	0.421	0.855	0.208	0.874	1.00	0.927
Net Advances	0.66	0.913	0.417	0.798	0.927	1.00

The above mentioned table (Table-1) summarizes the results for correlations among the different variables under study. Net income is the dependent variable. The results for correlation among the independent and dependent variables is given which shows the smooth relationship. All the correlation values for assets net advances range from 0.301 to .855 except the value for net advances and the asset net advances which is 0.931. All the other values for the correlation coefficient are below 0.9 which suit our regression by removing the multi-co linearity.

Table 2: Regression Analysis R, R square and adjusted R square

R	R Square	Adjusted R Square
.957[a]	0.916	0.906

Model summary shows quite significant results for our selected variables. The value for R square is 0.916 that reflects the percentage of the variation and contribution of the independent variables in the dependent variable. The results show that the variables are contributing more than 90% in the dependent variable and adjusted R square is very close to the R square value i.e. 0.906, which again ensures the reliability of the model.

Seeing Table-3, the individual contribution of the independent variables, one can clearly see the high significance of the selected variables in the prediction of the bank's profitability. As net income is taken as a measure of bank's profitability, this regression analysis evaluates the significant contribution by independent variables. Beta coefficients are the results for telling us the desired information.

As depicted by the table and figures, this is quite significantly proven that selected independent variables have significant contribution in the dependent variable (net income) regardless of their positive or negative signs.

Coefficients

Table 3: Regression coefficients and their sig

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-43813.701	135935.845		-0.322	0.749
	Assets net of Advances	0.012	0.005	0.384	2.567	0.014
	Labor Productivity	892.859	91.64	0.603	9.743	0.000
	Non-performing Loans	-33.082	31.505	-0.137	-1.05	0.300
	BRANCHES	-14966.801	5324.949	-0.482	-2.811	0.008
	Net Advances	0.024	0.008	0.614	3.019	0.004

N_income=

0.384(A_N_Ad) + 0.603(Lab_prod) - 0.137(NPL) - 0.482(Branches) +0.614(Net_Adv)+ε

The standardized beta coefficient for assets net of advances is 0.38, labor productivity 0.603 and net advances is

0.614 with significance 0.014, 0.00 and 0.008 respectively. The other two variables, non-performing loans and branches, have shown negative contribution in the dependent variable. Branches as variable shows the contribution -0.482 as beta coefficient and NPL (non-performing loans) shows -0.137. All the variables used in analysis have shown significant results except the NPL.

The Data Envelopment Analysis for the banks in the sample is as follows:

In this research the data envelopment analysis is used in two stages. The stage-1 is for the efficiency and stage-2 is for the effectiveness of the bank. As we know, the efficient does not means the effectiveness. Today is the era of being efficient as well as effective. Most of the banks which appeared efficient in the stage-1 analysis were not found effective in the stage-2.

Table 4: Cres Bank DEA Stage-1

DMU No.	*DMU Name*	*Efficiency*
1	2003	1.00000
2	2004	1.00000
3	2005	1.00000
4	2006	1.00000
5	2007	1.00000

The above table shows the result about Data Envelopment Analysis stage-1 of Cres Bank. This stage shows the efficiency of the bank. This is very clear in the table that the said bank is consistently efficient and performing well throughout the time period, i.e the efficiency is 1.00.

Table 5: Cres Bank DEA Stage-II

DMU No.	*DMU Name*	*Efficiency*
1	2003	1.00000
2	2004	0.86287
3	2005	0.56385
4	2006	0.27388
5	2007	1.00000

As said earlier, a bank should be efficient as well as effective to show the good results. For this particular bank it is quite evident that regardless of showing consistent efficiency the bank did not appeared to be effective as well. While doing the DEA, it is found that the banks performance is neither consistent nor up to the standards. For the year 2003, the effectiveness of Cres bank was good but with the passage of time it declines, from 2004 to 2006.

Table 6: Samba Bank DEA Stage-I

DMU No.	*DMU Name*	*Efficiency*
1	2008	1.00000
2	2009	0.92237
3	2010	0.86676
4	2011	1.00000

The above table No. 6 shows the results for the Samba bank after the Cres bank
was merged with the said bank. For DEA stage-1, it appears to be quite efficient as the value of DEA analysis moves between 1.00 and 0.866. We can say this bank is utilizing its resources in a better way to produce good efficiency results.

Table 7: Samba Bank DEA Stage-II

DMU No.	*DMU Name*	*Efficiency*
1	2008	1.00000
2	2009	0.71066
3	2010	1.00000
4	2011	1.00000

In the DEA stage-2 the Samba bank has shown better results than the stage-1 analysis (table No. 7). The results for effectiveness show consistency in 2008, 2010 and 2011 and the only result for 2009 is not up to the mark but still good one. This means that the said bank is efficiently as well as effectively using its resources in order to producing the desired results.

The Saudi Pak commercial Bank also shows good results in DEA stage-1 and consistently performing well as far as the efficiency is concerned (see Table No. 8). The range of the efficiency analysis is between 1.00 and 0.91. Having a look at the results, year 2002, 2004, 2006 and 2007 were the most efficient years for the Saudi Pak bank.

Table 8: Saudi Pak Commercial Bank DEA Stage-I

DMU No.	*DMU Name*	*Efficiency*
1	2002	1.00000
2	2003	0.91345
3	2004	1.00000
4	2005	0.93795
5	2006	1.00000
6	2007	1.00000
7	2008	0.94447

Table 9: Saudi Pak Commercial Bank DEA Stage-II

DMU No.	*DMU Name*	*Efficiency*
1	2002	1.00000
2	2003	0.93692
3	2004	1.00000
4	2005	1.00000
5	2006	0.47843
6	2007	0.48758
7	2008	0.44012

While comparing the results of stage-1 and stage-2, difference can easily be identified. The Saudi Pak bank was found efficient in most of the years but the effectiveness and net income of the bank was declining with the passage of time. In years from 2002 to 2004, the performance of the bank was unquestionable but since 2006 it was showing the results in declining pattern, moving from bad to worse. So, the Saudi Pak bank was not performing up to the standards and bench mark in the industry.

Table 10: Silk Bank DEA Stage-I

DMU No.	*DMU Name*	*Efficiency*
1	2009	1.00000
2	2010	1.00000
3	2011	1.00000

Table 11: Silk Bank DEA Stage-II

DMU No.	*DMU Name*	*Efficiency*
1	2009	0.77232
2	2010	1.00000
3	2011	1.00000

Looking at the last two tables (Table-10 &11) for the Silk Bank it is proven that the said bank is not only efficient, after merger, but also becomes effective. The results in these tables strongly support the statement as the efficiency results are consistent with value of 1.00 and the effectiveness average is approaching 1.00.

Table 12: Union Bank DEA Stage-I

DMU No.	*DMU Name*	*Efficiency*
1	2000	1.00000
2	2001	0.85937
3	2002	0.86636
4	2003	1.00000
5	2004	1.00000
6	2005	1.00000

In Table-12 the DEA stage-1 (efficiency) results are shown for the Union Bank. The Union bank appeared to be an efficient bank as per the results derived from data envelopment analysis. The said bank has shown consistency in the results as for most of years it was 1.00 and rest of the years it was near to 1.00 i.e. 0.86.

Table 13: Union Bank DEA Stage-II

DMU No.	*DMU Name*	*Efficiency*
1	2000	0.78634
2	2001	1.00000
3	2002	0.80791
4	2003	1.00000
5	2004	0.92118
6	2005	1.00000

The results for data envelopment analysis stage-2 of Union bank were found to be not too different from stage-1 analysis (see Table 12 & 13). As shown in the table above the Union bank was found effective and the value of the DEA stage-2 was moving to and fro between 0.78 and 1.00 in different years. This range further disclosed that the performance of the bank was well controlled.

Table 14: Standard Chartered Bank DEA Stage-I

DMU No.	*DMU Name*	*Efficiency*
1	2006	1.00000
2	2007	1.00000
3	2008	0.99384
4	2009	1.00000
5	2010	1.00000
6	2011	1.00000

After the acquisition of the Union bank it became Standard chartered Bank. The above mentioned table depicts that the Standard Chartered Bank had continued the performance accordingly. The efficiency of the above mentioned bank was remain consistent for all years except 2008 but again it showed a good result i.e. 0.99 which is again very near to the best result.

Table 15: Standard Chartered Bank DEA Stage-II

DMU No.	*DMU Name*	*Efficiency*
1	2006	1.00000
2	2007	1.00000
3	2008	1.00000
4	2009	0.91687
5	2010	1.00000
6	2011	1.00000

The second stage analysis for Standard Chartered Bank again shows the same result as it was in stage-1. The said bank was found performing well in both aspects i.e. generation of deposits and advances and generation of reasonable profits to show its effectiveness.

Table 16: Prime Bank Stage-I

DMU No.	*DMU Name*	*Efficiency*
1	2002	0.90475
2	2003	1.00000
3	2004	1.00000
4	2005	1.00000
5	2006	1.00000

Table cited above explains the efficiency situation of the Prime Bank. Except year 2002, the efficiency parameter for the said bank was found to be 1.00. This means that the bank administration was working properly in order to lift the efficiency standards.

Table 17: Prime Bank DEA Stage-II

DMU No.	*DMU Name*	*Efficiency*
1	2002	1.00000
2	2003	1.00000
3	2004	0.88596
4	2005	1.00000
5	2006	1.00000

As far as the results of the second stage for effectiveness is concerned, nothing is changed for the Prime bank. The performance of the bank under discussion was found to be excellent as all the values were approaching to 1.00 or exactly 1.00.

Table 18: Abn Amro bank DEA Stage-I

DMU No.	*DMU Name*	*Efficiency*
1	2006	1.00000
2	2007	1.00000

For both stages, after taking over Prime Bank, the Abn Amro bank's management was found to be consistent with the efficiency and effectiveness of the operation of the bank. The said bank continued to perform well in both aspects as shown in table No 18 & 19.

Table 19: Abn Amro Bank DEA Stage-II

DMU No.	*DMU Name*	*Efficiency*
1	2006	1.00000
2	2007	1.00000

Similarly, after taking over the ABN Amro bank, the Royal Bank of Scotland also used the resources quite efficiently and effectively. The Royal Bank of Scotland's results for both stages also depicts the same as they were found to be 1.00 on most of the occasions.

Table 20: Royal Bank of Scotland DEA Stage-I

DMU No.	*DMU Name*	*Efficiency*
1	2007	1.00000
2	2008	1.00000
3	2009	0.85284

Table 21: Royal Bank of Scotland DEA Stage-II

DMU No.	*DMU Name*	*Efficiency*
1	2007	0.90549
2	2008	1.00000
3	2009	1.00000

Only in 2007, the effectiveness measure was found to be slightly less than 1.00 i.e. 0.905. Rest all the values are exactly 1.00. This means that the bank was working properly as far as the efficiency and effectiveness of the operations is concerned.

Table 22: Faysal Bank DEA Stage-I

DMU No.	*DMU Name*	*Efficiency*	*Efficiency II*
1	2003	0.95138	1.00000
2	2004	1.00000	0.68605
3	2005	0.99450	1.00000
4	2006	0.99025	1.00000
5	2007	1.00000	0.89347
6	2008	1.00000	1.00000
7	2009	0.98893	0.92325
8	2010	0.98981	0.75328
9	2011	1.00000	1.00000

Table No. 22 shows the data envelopment analysis of the Faysal Bank Ltd. for the years, starting from 2003 till 2011. From 2003 till 2009 the bank was working individually, so results for those years show the analysis of the bank before merger and the later represent the performance of the bank after RBS was been merged with it. For both stages of analysis the bank maintained the consistency in the performance, before and after the merger. This result characterizes the good health of the bank management and financials. The result ranges from 1.00 to 0.68 approximately and the least values mostly belong to before merger era. So this can be said that the merger was in

favour of the bank.

4. Conclusion

This research has shown good results in the favour of the expectations as perceived before. The merger examples, those were analyzed, have shown growth with respect to most of the variables. All the resulting banks have achieved the required targets as set for the mergers.

The regression analysis, to check the contribution of different variables, has come up with strong results for Net Advances and Labor Productivity and rest are found to be less contributory as compared to earlier two but significant except Non Performing loans. The results for comparison of the contributor's trends are summarized as below:

Table 23: Summary of trend shown by different variables of different banks after merger.

Bank Name	Net Assets	Net Advances	Deposits	Labor productivity
Faysal Bank	↑	↑	↑	↓
Samba Bank	↑↓ [a]	↑	↑	↑
Silk Bank	↑↓ [a]	↑	↑	↑
Standard Chartered Bank	↑	↑↓ [a]	↑	↑↓ [a]

a. Mix trend

In second phase the different merger instances have been analyzed and the results are found to be quite similar as of previous researches. The analysis for Prime Bank and ABN AMRO Bank was done with the help of DEA. It is found that ABN AMRO Bank has reduced the volatility in efficiency as well as in profit generation. The support for these results were found in the previous literature as well as Zhang (1995) was of the view that merger and acquisition help to stabilize the profitability and eliminate fluctuations. RBS and ABN AMRO Bank's merger was not appeared to be success story as far as the DEA is concerned. Might be the method adopted for integration was the cause for these results but the fact is that its efficiency declined. This merger was not in favour of the acquiring bank. The last merger in this series was of RBS and Faysal Bank. This merger has end up with a good performance in both aspects of efficiency and effectiveness.

Inefficiency can be reason for being acquired (Hannan and Pilloff ,2007). Cres Bank has appeared to be a good evidence of Hannan et al. point of view. The efficiency for the said bank was declining with the passage of time and after being merged with Samba Bank, this inefficiency was replaced by efficiency which can be a reflection of good management. This merger is also a success for the Samba Bank (Acquirer) as the results for DEA are predictable and dependable having the least value of 0.86.

The Union Bank was also performing well before merger but the performance was being stabilized by merging with SCB relatively. The motive behind this merger was appeared to the market existence as the Standard Chartered bank is a foreign bank and had no existence in Pakistani market before this merger.

In short, all the banks involved in mergers have extracted the benefits and growth as far as the Pakistan banking industry is concerned. However, there are certain limitations. Firstly, this research is for the same industry and only banking institutions were chosen as sample, and secondly, the methodology can be further extended to some financial ratios and different profitability models.

5.1 Research Extension and Suggestions

This research can be further enhanced to compare the merging performance of the firms from different industries and countries which will bring us more motives and merging performances to compare the differences among different countries and the behavior of different industries towards mergers and acquisitions. The suggestions for further research are as follows:

1. This research has been limited to DEA but it can be further extended to the stock evaluation of the banks under study.
2. If proper data is available, one can further diagnose the causes of this particular merger by individual variable comparisons and come up with the alarming situations, for the smaller banks, to be avoided.
3. This research will help out the banks and researchers to further study the mergers in future prospects with projected statements and trends in their different variables.

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