

Measuring Operational Efficiency of Foreign Branches of Bangladeshi Banks as Financial Intermediary

Asmina Akter¹

¹ Lecturer, Department of International Business, Faculty of Business Studies, University of Dhaka, Bangladesh
Correspondence: Asmina Akter, Lecturer, Department of International Business, Faculty of Business Studies, University of Dhaka, Bangladesh. E-mail: asminaakter.ib@du.ac.bd

Received: July 17, 2019

Accepted: November 14, 2019

Online Published: January 30, 2020

doi:10.5539/ijbm.v15n2p165

URL: <https://doi.org/10.5539/ijbm.v15n2p165>

Abstract

In this study an Output-oriented DEA (Data Envelopment Analysis) model is used to measure operational efficiency of foreign branches of Bangladeshi banks as financial intermediary organization for borrowing funds from savers and lending those funds to others for making profit. Among 58 Bangladeshi banks there are only three Bangladeshi banks which have in total seven foreign branches in different foreign locations. A branch of bank can't be separated legally from its parent company and supervised by its home authorities as part of supervision of the banking group as a whole. By employing DEA model and using "Financial Intermediary Approach" this study found that as a financial intermediary organization between savers and borrowers these foreign branches of Bangladeshi banks are performing efficiently over the years. Among three banks Janata Bank Limited and AB Bank limited are performing most efficiently and Sonali Bank Limited is performing less efficiently relative to two other banks in operating their foreign branches as a financial intermediary organization for borrowing funds from savers and lending those funds to others for making profit.

Keywords: banks, efficiency, foreign branches, performance, data envelopment analysis

1. Introduction

In today's competitive world every single organization wants to be international to increase their coverage in new countries or territory and it is one of the key to success for financial institutions. Bank is one of the important financial institutions which have a lot of diversified activities to do to remain in operation. Today's globalized world international involvement become imperative for countries to develop their economic condition which have made the activities of banks more challenging and complicated. As a financial intermediary banks always try to satisfy their customer by providing diversified services. Without providing domestic services it became a routine work for bank to provide international services to their client for their satisfaction. For providing those services banks have established various foreign branches and subsidiaries in different foreign locations. A branch is legally inseparable from its parent, this means that a branch is mainly supervised by its home authorities as part of supervision of the banking group as a whole and are not usually separately capitalized. In Bangladesh among 58 Bangladeshi banks there are only 3 banks which have overseas branches. All those branches are situated in United Arab Emirates and in India. This study was conducted to evaluate the operational efficiency of foreign branches of Bangladeshi banks as a financial intermediary organization for borrowing funds from savers and lending those funds to others for making profit. Three Bangladeshi banks which have total 7 overseas branches in various foreign locations were selected for conducting this study. For evaluating their operational efficiency as a financial intermediary organization DEA (Data Envelopment Analysis) model was used which is now a renowned model for measuring operational efficiency of non-profit and service institution or organization. In this study "Financial Intermediary Approach" was used in DEA model to find out the efficiency in borrowing funds from savers and lending those funds to others for profit. DEA (Data Envelopment Analysis) is a benchmarking model which measure the efficiency of various units relative to the most efficient unit of the study from selected input and output. The ratio of output to input is called efficiency. In this study selected inputs are net expenditure and total deposits and selected outputs are total loans, interest and noninterest income to find out the efficiency of those foreign branches as a financial intermediary between savers and borrowers of banks. After considering all three Bangladeshi banks which have total 7 foreign branches in different foreign locations. This study conducted using year end data for 6 years of those branches by employing

output-oriented DEA model to measure the efficiency as a financial intermediary organization. In this study it has been found that as a financial intermediary the foreign branches of Bangladeshi banks are performing efficiently over the years. Janata Bank Limited and AB Bank limited are performing most efficiently in operating their foreign branches having efficiency score 1 over the years and among those three banks only Sonali Bank Limited is performing less efficiently relative to two other banks in operating their foreign branches as a financial intermediary organization.

2. Literature Review

In a working paper (Cerutti, Dell’Ariccia, & Peria, 2007) they found that banks are more likely to operate as branches in those countries that have higher corporate taxes and when they face lower regulatory restrictions on bank entry. In another study by (Focarelli & Pozzolo, 2015) they found that potential profit opportunities in the destination market is the key factor in determining the choice of banks on where to expand. Banks open their branches in those countries where expected rate of economic growth is higher and the banking system is on average less efficient. Branches are more preferable when foreign operations are smaller in size and do not have a retail orientation (Cerutti et al., 2007; Fiechter et al., 2011). Though banks want to expand their branches in host country but expanding their operation depends on their operational efficiency. There are huge amount of articles which focused on measuring the efficiency of those branches to evaluate whether they are performing at desired level. And DEA model is now most widely used benchmarking model to measure operational efficiency of service, financial and non-profit organization.

Emrouznejad and Yang (2017) in their study found that there has been an exponential growth in the number of publication related to the theory and application of DEA in journal until 2016. They found that DEA is an emerging topic and essential tool for measuring efficiency. Several traditional MS/OR journals including European journal of operational research, Journal of the operational Research Society, Journal of productivity analysis, Omegan and Annals of operation research are the most utilized journal for DEA publication. The application of Data Envelopment analysis in conjunction with financial ratios for bank performance by (Quey-Jen Yeh, 1996) found in his study that the application of DEA in conjunction with financial ratios help bank regulators not only to distinguish inefficient banks but also to get insight into various financial dimensions that somehow link to the banks financial operation decision. QUEY-JEN YEH in his study concluded that previous studies have used one of the three approaches like Operational and service efficiency approach, Profitability efficiency approach and financial intermediary approach. In first approach organization is viewed as service producing organization in second approach the profitability of institutions is measured in relation to various expenditure and in third approach efficiency as a financial intermediary are measured.

For evaluating the productive efficiency and performance of U.S commercial banks Barr, Killgo, Siems and Zimmel conducted a study by employing DEA model and they find a strong and consistent relationship between efficiency and their inputs and outputs as well as independent measure of bank performance. They also found a close relationship between efficiency and soundness as determined by bank examiner rating.

Hashibul and Hassan (2018) in their study found that the mean cost efficiency of Bangladeshi banking sector is 88.50% which is lower among the state-owned banks than conventional (private) commercial banks and Islamic Sariah banks and non-performing loans have a significant effect in reducing the overall cost efficiency among the banks.

Shoaib Ahmed, and Farhana (2013) after doing work on efficiency of commercial banks found that third generation local commercial banks are most efficient along with a foreign commercial bank operating in Bangladesh and competition among the second and third generation banks helped to increase their efficiency level.

Liquidity and profitability combined explain about 66.23% and 98.85% of the bank’s operational efficiency under Fixed Effect Regression Model and Panel Correlated Standard Error estimator respectively AKHTER(2018) and also suggest that after maintaining minimum liquidity, the bank should utilize their customer’s deposits and borrowings through making high-quality loan portfolio to ensure earnings for their shareholders.

3. Objective of the Study

This study conducted for measuring the operational efficiency of foreign branches of Bangladeshi Banks as a financial intermediary organization. In this study an output oriented DEA model was applied by using “Financial Intermediary Approach” to measure the efficiency in borrowing funds from savers and lending those funds to borrowers for making profit. This study also found which bank is most DEA efficient bank in operating their

overseas branches and which bank is less efficient relative to most DEA efficient bank.

4. Research Methodology

This study conducted by using DEA (Data Envelopment Analysis) model which is now most widely used model for measuring operational efficiency of non-profit, service and financial organization originally developed by Charnes, Cooper and Rhodes (1978). Though financial ratio is easy and convenient way to measure efficiency but its limitation is that it must be compared with benchmark ratios once at a time while taking other factors fixed where this model is free of that. DEA model is a benchmarking model which help to find out most efficient unit relative to other units and inefficient units where real improvements are possible. DEA model shows efficiency score or indirectly the ratio of output to input. The unit which producing more output per unit of input have greater efficiency score which range from 0 to 1. The best practice unit or efficient unit will have efficiency score $e=1$ and other relatively less efficient unit will have efficiency score less than 1. DEA provides peer groups or Efficiency Reference Set (ERS) against which the less efficient unit found to be most directly inefficient. ERS weight provided by DEA model is called Lambda (λ). This weight given by DEA model will make less efficient unit more efficient as possible than any other combination or weight provided by other. DEA model is linear programming technique which can accommodates multiple inputs and outputs and gives additional information like weight, input target, output target and by applying those informations the less efficient units will be able to be operated like most efficient unit or units. The mathematical model considering N units each is called (Decision Making Unit, DMU) converts I (inputs) into J outputs, where I can be larger, equal or smaller than J. developed by Charnes, Cooper and Rhodes is:

$$\text{Max } e^0 = \sum_{j=1}^J U_j^0 Y_j^0 / \sum_{i=1}^I V_i^0 x_i^0$$

Subject to $\sum_{j=1}^J U_j^0 Y_j^n / \sum_{i=1}^I V_i^0 x_i^n \leq 1; \quad n=1, \dots, N$
 $V_i^0, U_j^0 \geq 0; \quad i=1, \dots, I; \quad j=1, \dots, J$

Where, $Y_j^n x_i^n$ are positive known outputs and inputs of the n^{th} DMUs.

V_i^0, U_j^0 Are variable weight assigned by DEA model.

5. Data and Model Specification

The year-end data of foreign branches of Bangladeshi banks from 2012-2017 were used in this study. These data were collected from annual reports from those three selected banks and all of the data (loan, interest, noninterest income, net expenditure and total deposits) were in the currency where they are operating so these date need to be converted in one currency. In this study all data were converted to United States dollar (USD) to run the model. Janata Bank Ltd has its all four foreign branches in United Arab Emirates and Sonali Bank Ltd. has two branches in India and Arab Bangladesh Bank Ltd. has its branch in India. In this study all those branches were included to measure their efficiency. By applying output-oriented DEA model this study evaluated the operational efficiency of foreign branches of Bangladeshi banks as financial intermediary organization for borrowing funds from savers and lending those funds to others for making profit. The two outputs and two inputs model selected captures the essential measurement of financial intermediary efficiency between savers and borrowers of banks. For this model selected outputs are total loan, interest and noninterest income and inputs are net expenditure and total deposits. Here deposits are the sources of loanable funds to be invested in assets and they together show the efficiency of banks as a financial intermediary organization. The banks which are performing most efficiently in operating their foreign branches having efficiency score 1. The bank which is not producing desired level of output using their input relative to their peer bank by their overseas or foreign branches are productively less efficient having efficiency score lower than efficiency score of peer or efficient banks. In this study to find out the operational efficiency I used "Financial Intermediary Approach" which is used to find out whether banks are efficient enough for borrowing funds from savers and lending those funds to others for making profit.

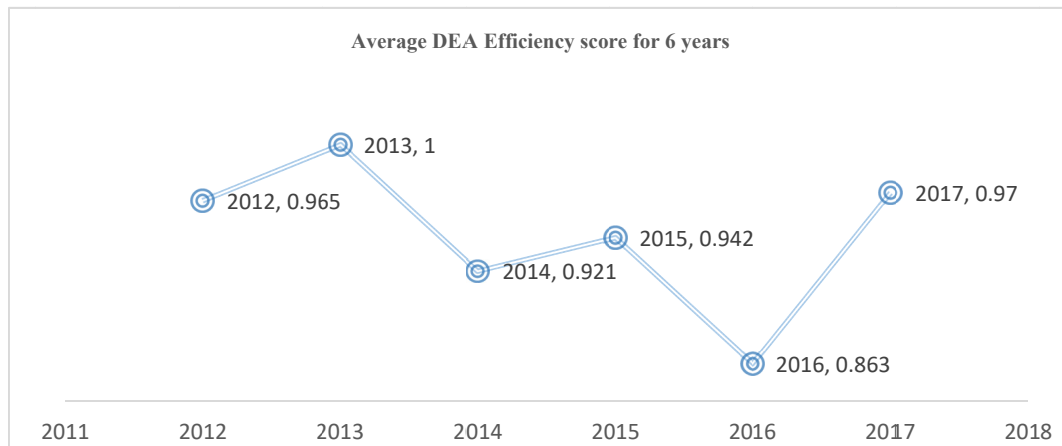
6. Empirical Result

The DEA efficient score given by Data Envelopment Analysis (DEA) model are summarized in table: 1 where banks represented alphabetically and each score is referred to by the year from 2012 to 2017. The average DEA score of each bank and each year are also reported. From table: 1 it can be concluded that as a financial intermediary organization the performance of foreign branches of Bangladeshi banks is satisfactory that means banks are efficient in borrowing funds from savers and lending those funds to others for making profit. Janata Bank Ltd. and Arab Bangladesh Bank Ltd. have efficiency score 1 showing that they are operating their foreign

branches efficiently. Among three banks only Sonali Bank Ltd. found less efficient bank in operating their overseas branches as a financial intermediary relative to two other banks. Janata Bank Ltd. and Arab Bangladesh Bank Ltd. remains most DEA efficient banks in operating their overseas branches from 2012 to 2017. From the table it also can be concluded that in 2013 all banks in operating their overseas branches were found most efficient including Sonali Bank Limited by having highest DEA efficient score 1. If we look at the average DEA score for all banks it can be seen that though average score falls in 2016 but for the rest of the five years all banks were in good position in operating their overseas branches. Only for having less efficient score by Sonali Bank Ltd. the average DEA score fall from most DEA efficient score 1. Among three banks both Janata Bank Ltd. and AB Bank Ltd. are efficient in operating their overseas branches and Sonali Bank Ltd. will also be able to operate efficiently if they increase their output level by keeping their input at same level given by DEA model.

Table 1. DEA efficient score of 3 banks in year 2012-2017

Banks Name	2012	2013	2014	2015	2016	2017	Average
Janata Bank Ltd.	1.000	1.000	1.000	1.000	1.000	1.000	1.000
AB Bank Ltd.	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Sonali Bank Ltd.	.894	1.000	.763	.836	.588	.911	.832
Average	.965	1.000	.912	.942	.863	.970	-



6.1 Findings and Analysis

By employing output-oriented DEA (Data Envelopment Analysis) model and using “Financial Intermediary Approach” for three Bangladeshi banks which have total 7 overseas branches in different foreign location it has been found that as a financial intermediary organization between savers and borrowers these banks are performing well in operating their overseas branches over the years. Janata Bank Limited and AB Bank limited are performing most efficiently in operating their foreign branches and among those three banks only Sonali Bank Limited is performing less efficiently relative to two other banks in operating their foreign branches as a financial intermediary organization. DEA model has also provided output target for less efficient bank relative to most DEA efficient banks. By achieving output target provided by DEA model keeping the input at same level in operating their overseas branches Sonali Bank Ltd. will be able to operate efficiently like other most DEA efficient bank derived from DEA model. If Sonali Bank Ltd want to be efficient like other banks in operating their foreign branches it can increase their output level by keeping input at the same level or it can reduce input level keeping the output at same level. As Janata Bank Ltd. and AB Bank Ltd. are performing well in operating their foreign branches so they can open other new branches in other foreign countries. Janata Bank Ltd. has all its branches in UAE and other banks have their branches only in India so if they open other branches in those countries from where Bangladesh earn huge amount of remittance it will create a brand image for those banks.

7. Conclusion

From this study it can be concluded that, Bangladeshi banks are performing well in operating their foreign branches in different foreign location. To become more efficient these branches should utilize their deposits in most attractive investment sector to earn more profit or should focus in reducing their expense at desired level. Among those 3 banks as Sonali bank Ltd. is less efficient so this bank should focus on achieving the desired level of output keeping the input level at same level to become efficient like other banks. As Janata Bank Ltd. and AB bank Ltd. are operating efficiently so they should open other branches in different foreign country to build strong brand image of their banks.

References

- Akhter, N. (2018). The Impact of Liquidity and Profitability on Operational Efficiency of Selected Commercial Banks in Bangladesh: A Panel Data Study. *Global Journal of Management and Business Research*, 18(7), 12-24.
- Ali, E., Yang, G. L. (2017). A survey and Analysis of the First 40 Years of Scholarly Literature in DEA: 1978-2016. *Socio-Economic Planning Sciences*, 61, 4-8. <https://doi.org/10.1016/j.seps.2017.01.008>
- Boubacar, H. (2012). An Empirical Study on Multinational Banks Decision to Go Abroad. *Academy of Banking Studies*, 1(11), 1-5.
- Cerutti, A., & Martinez, P. (2007). How Banks Go Abroad: Branches or Subsidiaries? *Policy Research Working Paper*, October 2005. World Bank Group. <https://doi.org/10.1016/j.jbankfin.2006.11.005>
- Finn, R. F. (2017). Economic Interpretations of DEA. *Socio-Economic Planning Sciences*, 61, 9-15. <https://doi.org/10.1016/j.seps.2017.03.004>
- Hashibul, H. Md., & Hassan, M. (2018). Cost efficiency of Banking Sector of Bangladesh: Evidence Using the Stochastic Frontier Analysis. *Asian Journal of Empirical Research*, 8(6), 208-224. <https://dx.doi.org/10.2139/ssrn.3183196>
- Heinz, A., Mohsen, A., Ali, E., & Rajiv, B. (2018). Recent developments on the Use of DEA in the Public Sector. *Socio-Economic Planning Sciences*, 61, 1-114. <https://doi.org/10.1016/j.seps.2017.06.001>
- Lin, T. Y., & Chiu, S. H. (2013). Using Independent Component Analysis and Network DEA to Improve Bank Performance Evaluation. *Economic Modelling*, 32, 608-616. <https://doi.org/10.1016/j.econmod.2013.03.003>
- Quey-Jen, Y. (1996). The Application of Data Envelopment Analysis in Conjunction with Financial ratios for Bank Performance Evaluation. *The Journal of the Operational Research Society*, 47(8), 980-988. <https://doi.org/10.2307/3010406>
- Richard, S., Barr, K. A. K., Thomas, F. S., & Sheri, Z. (1999). Evaluating the Productive Efficiency and performance of U.S commercial Banks. *Managerial Finance*, 28(8), 3-25. <https://doi.org/10.1108/03074350210767988>
- Sherman, H. D., & Zhu, J. (2006). *Service productivity Management, Improving Service Performance Using Data Envelopment Analysis*. Boston, MA: Springer.
- Shoaib, A., & Farhana, F. L. (2013). Efficiency of Commercial Banks in Bangladesh-a Data Envelopment Analysis. *European Journal of Economics Finance and Administrative Sciences*, 56, 130-152.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).