

Estimation of Labour Use Efficiency of Assam Gramin Vikash Bank: A Non-parametric Approach

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Abstract

Banking sector is the backbone of the Indian financial system. Thus, it is utmost important to measure the efficiency of this sector. As labour is the prime component of any organisation where the ultimate profitability is dependent on labour, it is important to assess how the labour is being utilized by the management. In this context, the present study attempts to assess the labour use efficiency of one of the RRBs of Northeastern region that is Assam Gramin Vikash Bank at its Silchar region. For measuring the labour use efficiency of the branches under study of AGVB, non-parametric Data Envelopment Analysis (DEA) technic is used. For selection of inputs and outputs production approach is applied. The findings of the study reveals that there exists cost saving potentialities at the branches to the tune of 24 percent following the benchmark. Further, it is seen that maximum branches are overstaffed. Moreover, it is found that total observed labour cost is higher than the optimum labour cost for the study period except for the year 2018 where a variation is observed.

Keywords: Labour, Assam Gramin Vikash Bank, Non-Parametric Approach, Data Envelopment Analysis, Production Approach.

Introduction

Financial system is the backbone of any developing country like India where majority of the population resides in rural areas. As such it is important to cover them for the overall development of the country. Financial inclusion is the drive given by the Government of India for covering the people of those far flung areas of the country under the ambit of financial services at an affordable cost. In this aspect, Regional Rural Banks (RRBs) are providing greater potentialities as the branches of RRBs are located mainly in rural areas. Thus, measuring performance of RRBs has become more important under the current context. Out of four factors of production labour is utmost important for any organisation as the full utilization of other three factors of production i.e. land, capital and organisation is dependent on labour. Further, labour cost constitutes a significant portion of the total expenditure incurred by bank branches. Thus, it is important to assess how management of the bank is utilizing its labour for attaining the organizational goal. In this context, the present study attempts to assess the labour use efficiency of Assam Gramin Vikash Bank, the only RRB in the state of Assam. For measuring the labour use efficiency, the present study uses state of the art non-parametric Data Envelopment Analysis (DEA) technic. For selection of inputs and outputs the present study takes help of production approach. The study area confines to all the forty eight branches operating under Silchar region of the bank. The study period ranges from 2010-11 to 2017-18 i.e. eight financial years. The data has been collected predominantly from the secondary sources like annual reports of the bank, published financial documents, etc.

Inception of Assam Gramin Vikash Bank

Assam Gramin Vikash Bank incepted on 12th January 2006 by amalgamation of four erstwhile RRBs operating in the state of Assam viz. Pragjyotish Gaonlia Bank, Lakhimi Gaonlia Bank, Cachar Gramin Bank and Subansiri Gaonlia Bank. At present the bank has 473 branches covering all the thirty three districts of Assam after amalgamation with Langpi Dehangi Rural Bank of Karbi Anglong on 1st April 2019. The sponsorship of AGVB is now vested with Punjab National Bank (PNB) since 1st April 2020 after merger of United Bank of India with PNB. Right now AGVB is the only RRB operating in the state of Assam with its large network of branches.

Review of Literature

Existing research base on bank efficiency mainly focused on bank level efficiency studies. Very few studies have been identified at branch level. However, in the present study a brief review on labour use efficiency is done to get acquainted with the existing research base on the subject.

Earlier studies on labour use efficiency found out that the labour use efficiency is better in foreign banks as compared to private and public sector banks which were identified by Jaffry, Ghulam & Cox in 2006. In other studies, it is seen that there exists cost saving potentialities to increase in labour use efficiency to the tune of 12 percent which was especially because of the technical inefficiency (Battese et al. 2000). While studying in national context, it is seen that banks were using their labour as an input less efficiently in respect to its interest margin. Moreover, difference has been observed in labour use efficiency across the different bank groups operating in India (Shanmugam & Lakmanasamy, 2000). In other way, while studying the labour cost efficiency of a large public sector bank in India, Das, Ray & Nag in 2009 concluded that to increase in labour use efficiency the labour costs in respect of cost of clerical cadre has to be reduced following the best practice. However, the study conducted by Herwadkar, S. in 2019 contradicts the earlier research base where the findings of their study revealed that the labour use efficiency in Indian banks improved during the study period 2005 to 2018. They further stated that increase in economies of scale increases the labour use efficiency.

Research Gap

The literature on bank efficiency is enriched with studies from time to time at branch level as well as bank as a whole. Very few studies can be identified on labour use efficiency of bank. Moreover, no such studies have been identified on labour use efficiency of AGVB so far as literature has been reviewed.

Research Objective

1. To assess the levels of labour use efficiency of the branches under study of AGVB at its branch level.

Research Methodology

Data and Variables

For assessing the labour use efficiency, the present study uses non-parametric Data Envelopment Analysis technic with its BCC (Banker, Cooper and Charnes) model. For selection of inputs and outputs, the production approach is used. Other statistical tools like mean, regression, etc is also used for the present study. The study area includes all the forty eight branches operating in Silchar region of the bank, which is one of the regions out of nine regions of the bank. The study period is confined to eight years ranging from 2010-2011 to 2017-2018. However, for having a strong panel data set, four branches have been excluded from the list as they were incepted after 2012. The selected inputs are number of officers, number of clerk and number of sub-staff. The selected outputs are deposit, advance and non-interest income. The selected input prices are salary of officers, salary of clerk and salary of sub-staff. The data for the present study are collected mainly from secondary sources.

Data Envelopment Analysis (DEA) is a non-parametric technic evolved in 1978 by Charnes, Cooper and Rhodes for measuring relative efficiency of service sector units using constant return to scale. Later on, Banker extended the scope of DEA to variable returns to scale in 1984. It is a non-parametric technic for measuring relative efficiency of those sectors where efficiency cannot be measured in absolute terms like banking sector where the services provided by the bank branches cannot be quantified in absolute terms. Other advantage of using DEA in measuring efficiency is that it can be used where multiple inputs and outputs are available. In DEA the scores of efficiency ranges from 0 to 1, where efficiency score 1 indicates best practice unit. The relative efficiency of other units is measure considering the best practice or the set benchmark.

For selection of input and output the present study uses production approach where the bank is consider as a producer of services viz. deposit, advance, interest income, non-interest income etc. to its customers using its inputs like labour and capital.

Result and Analysis

Table 1 depicts that the mean LUE score of the branches under study is 76 percent, which implies that there remain cost saving potentiality to the tune of 24 percent following the best practice. Year wise LUE score reveals a declining trend at the initial period of the study following by a decreasing trend and again a sharp increase in the last year of the study period. The highest LUE score is seen in the year 2018 which is mainly because of reduction in number of labour due to retirement/relinquishment compared to new recruitment.

Table 1: Year wise Labour Use Efficiency of Branches under Study of AGVB (2011-2018)

	2011	2012	2013	2014	2015	2016	2017	2018	Mean (2011-18)
Mean LUE	0.80	0.82	0.74	0.70	0.69	0.75	0.67	0.96	0.76

Source: Own calculation using rDEA i386 3.6.0 based on data relating to Financial Statements of AGVB (2010-2011 to 2017-18)

Figure 1 presents mean LUE scores of the branches under study. It depicts the fact that the LUE score increased initially but then followed a decreasing trend while again increased in the last year of the study period. Further, the straight line trend equation of LUE of AGVB with respect to time is given below:

$$Y = - 8.586 + 0.004x$$

The trend equation shows that the regression co-efficient of LUE of AGVB is positive which indicates that LUE has been increasing over the study period. However, this increase in LUE is not statistically significant at 5 percent.

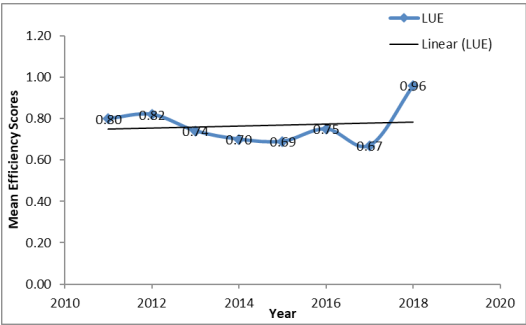


Fig 1: Year wise Mean LUE Scores of the Branches under Study

Table 2 reveals the total number of observed and optimum labour as an input for each category of labour selected for the present study. It can be seen that in each category of labour the observed number of labour are more than the optimum number of labour. The highest difference shows in officer cadre. It implies that the selected branches are mostly over-staffed.

Table 2: Observed and Optimum number of Each Category of Labour

Category of Labour	Observed	Optimum	Difference
Officer	792	550	242
Clerk	480	420	60
Sub-staff	269	162	107
Total	1541	1132	409

Source: Own calculation using rDEA i386 3.6.0 based on data relating to Financial Statements of AGVB (2010-2011 to 2017-18)

Table 3 Over-staffing and Under-staffing of the Branches under Study

Table 3 succinctly presents the observed and optimum number of total labour employed in the branches under study of AGVB for the study period. It is observed that maximum branches are over-staffed while few branches are understaffed and few of them are optimally staffed.

Tmable 3: Year-wise and Branch-wise Observed and Optimum Number of Labour

	2011		2012		2013		2014		2015		2016		2017		2018	
Branch id	Observed	Optimum	Observed	Optimum	Observed	Optimum	Observed	Optimum	Observed	Optimum	Observed	Optimum	Observed	Optimum	Observed	Optimum
1	9	9	10	10	10	10	10	10	8	8	10	10	8	8	6	6
2	3	2	3	2	3	3	4	3	4	3	4	3	2	3	3	3
3	4	3	4	4	4	4	5	3	5	3	4	4	5	3	6	3
4	4	3	4	3	4	4	6	4	6	3	6	4	6	3	4	3
5	3	2	3	2	3	3	5	2	3	2	4	2	4	2	4	2
6	3	4	3	4	4	4	5	4	5	4	5	4	5	4	5	4
7	3	2	3	2	3	3	4	3	4	2	4	3	3	2	4	2
8	4	3	4	4	4	3	4	3	5	3	4	3	5	2	5	2
9	4	2	4	3	5	3	4	3	4	3	5	3	4	2	4	2

10	4	3	4	3	6	4	6	4	7	7	6	5	4	4	3	4
11	2	3	2	3	2	3	3	4	4	4	3	3	3	3	3	3
12	3	2	3	2	4	3	4	3	5	3	4	3	4	2	5	2
13	4	2	4	2	3	3	4	2	6	3	4	2	4	2	2	2
14	4	3	4	3	4	4	5	4	5	3	6	4	6	3	4	3
15	4	2	4	3	3	3	4	3	4	3	4	3	3	3	3	2
16	3	2	3	2	4	3	6	2	5	3	4	3	5	3	4	3
17	6	3	6	4	7	4	7	4	7	3	5	5	5	4	7	7
18	5	5	5	5	7	7	7	6	8	8	9	9	6	6	7	7
19	4	4	4	5	4	5	5	5	7	4	4	4	5	4	4	5
20	6	6	6	6	6	6	7	5	8	6	9	10	8	5	8	6
21	2	3	2	3	4	3	3	3	3	3	3	3	3	3	2	3
22	3	2	3	2	3	3	4	2	4	2	4	3	4	3	4	2
23	3	2	3	2	3	3	4	2	5	2	5	3	4	2	4	2
24	5	3	5	4	5	5	6	4	5	4	5	5	5	4	4	4
25	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	2
26	4	3	4	3	4	4	5	3	4	3	4	4	5	3	4	3
27	6	3	6	4	8	4	5	4	6	4	4	4	4	4	5	3
28	4	2	4	3	5	3	4	3	4	3	6	3	4	3	3	2
29	8	5	9	5	11	6	10	6	9	5	7	7	7	5	6	4
30	3	2	3	2	3	3	3	3	4	3	3	3	4	2	4	2
31	4	2	4	2	4	3	4	2	5	3	4	3	5	2	4	2
32	3	2	3	2	4	3	4	3	3	3	4	3	3	3	3	2
33	3	2	3	2	3	3	4	3	4	3	4	3	4	2	3	2
34	3	2	3	2	4	3	4	2	4	2	4	3	5	2	4	2
35	4	3	4	3	5	4	6	3	6	3	7	4	6	3	4	3
36	3	2	3	2	4	3	4	3	5	3	4	3	5	2	4	2
37	3	3	3	4	4	4	4	4	6	4	5	4	5	3	4	3
38	3	2	3	2	4	3	4	3	4	4	4	4	3	3	4	3
39	3	2	3	2	3	3	2	3	2	2	2	2	2	2	3	2
40	3	2	3	2	2	3	3	2	3	2	3	2	3	2	2	2
41	3	2	3	2	5	3	4	2	4	3	4	2	3	2	4	2
42	5	4	6	4	6	6	6	5	5	4	7	5	4	4	4	4
43	2	3	2	3	3	3	6	5	5	3	4	4	5	2	4	2
44	3	3	3	3	4	3	4	3	4	2	3	3	4	3	3	2

Source: Own calculation using rDEA i386 3.6.0 based on data relating to Financial Statements of AGVB (2010-2011 to 2017-18)

Note: Green color represents optimum staffed, yellow color represents under staffed and white color represents overstaffed

Figure 2 diagrammatically represents the optimum and observed labour cost of the branches under study of AGVB for the study period. It is seen that the observed costs of labour is more than the optimum costs of labour of the branches under study from the financial year 2011 to 2017. However, a variation is observed in the year 2018, where the optimum labour cost is higher than the observed labour costs. It simply means that the total labour cost of the branches decrease in the year 2018. The reason behind decrease in labour cost may be because of reduction in number of labour in the year 2018 as has been identified in the earlier table 3.

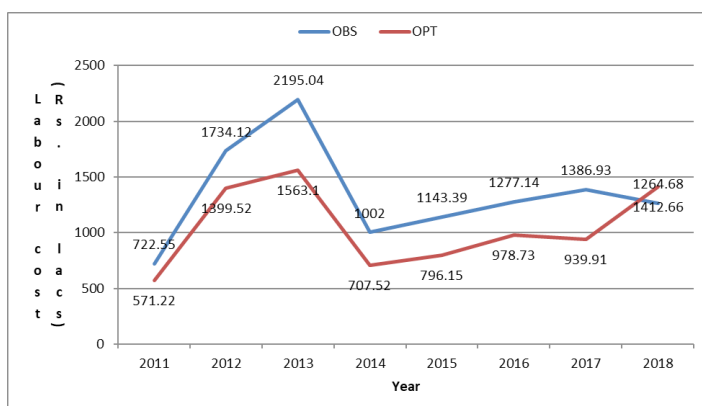


Fig 2: Comparison of Optimum and Observed Cost of Labour of the Branches under Study (2011-2018)

Conclusion

The present study is expected to enrich the existing research base on labour use efficiency of bank at a branch level. The findings of the present study reveals the fact that there exists cost saving potentialities of the selected bank branches following the best practice. Here, it can be said that to be in efficient frontier the branches can emulate the working pattern of branch id 1 which is the best performing branch in relative efficiency measurement of the selected branches under study. As maximum of the branches are having surplus labour than its requirement as it can be identified from the present study, the reallocation of the

labour among the branches where there is shortage of labour can be a solution to the problem. Further, the management of the bank can consider the opening up of new branches for reallocation of the labour as well. As the present study finds out that the surplus in labour is mainly in officer cadre, thus reduction of labour in this particular category will be a solution for labour cost reduction of the branches for efficient labour use at its desired level. Thus, the management of the bank has to consider these aspects for better utilization of its prominent resource that is labour for overall efficiency and profitability of the organisation. Thus, the present study leaves ample scope of research in this direction.

The present study suffers from certain limitations like only one technic that is DEA is used for measuring labour use efficiency instead of so many other techniques which are available. Moreover, the present study considers branches under only one region that is Silchar region out of nine regions of the bank.

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