

# An Empirical Study on Effect of Productivity on Profitability in Some Selected Private Commercial Banks (PCBs) in Bangladesh

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## Abstract

The study is based on a total number of 15 PCBs operating in Bangladesh. The study is the outcome of mainly secondary data. These data were collected from the annual reports of the selected banks. A few primary data regarding factors influencing productivity of the banks were collected on the basis of a structured questionnaire using direct interview method. For the empirical analysis, five financial years ranging from 2007–2011 was selected. The main objective of the study was to critically examine the impact of productivity on profitability covering the specific objects like determinants of productivity performance and analyzing productivity performances. The main findings of the study are: (i) the significant factors affecting productivity have been: change in deposit structure, change in liability structure, lack of skilled employee, policy of Bangladesh Bank, lack of accountability, lack of proper responsibility & accountability. (ii) It is seen that the productivity performances in terms of DPE, LAPE, EAPE, and BPE have been satisfactory in most of the banks during the study period. In case of other productivity measure, almost 50% of the banks have been good. (iii) There is a strong relationship between productivity and profitability which is proved from the analysis of correlation coefficient. (iv) It is further found that ROI of the selected banks has been influenced by EPE, DPE, LAPE, IPE, LAIPE, EAPE, BPE and EXPE to the extent of 81%. Therefore, it can be concluded that these variables need to be improved for the improvement of profitability of the selected banks.

**Keywords:** productivity, profitability, mean weighted score, responsibility and accountability, price recovery

## 1. Introduction

Productivity is a vital indicator of economic performance of an economic system. Productivity is not an end in itself. In fact, it is a mechanism for improving the material quality of life. Productivity is fundamental to progress throughout the world. It is at the heart of economic growth and development, improvements in standards of living and quality of life.

The concept and definition of productivity as applied in manufacturing industries cannot be applied as such in banking industry because it is primarily a service industry. In the field of banking, the various products are accounts, drafts, exchange remittances, cheques, traveler's cheques, credit cards, debit cards, services for guarantees, various kinds of loans like housing loan, education loan, car loan etc. Identification and measurement of output in banking is very difficult exercise as it is not possible to bring various services to measure output.

As in banking industry in India, volume of business became progressively imperative to secure more resources for meeting social objectives while maintaining viability of operations, business level may be preferred as being more representative of productivity (Singh & Jagwant, 1990) This statement is also true in case of banking industry in Bangladesh.

Productivity helps firms, industries and nations to achieve sustainable competitive advantage. Industry is a thrust area for countries in their quest for competitiveness. It must be noted that banks which have maintained the momentum of continuous growth, and profitability showed better ratio of manpower effectiveness. Each element has crucial sub-components which serve as building blocks for productivity. The Government policies effectively support competitiveness if they are structures around productivity driven reform mechanism, cost deflating tariff structure and technology and industry vision (Rao, 1994).

C. B. Rao has proposed a productivity competitiveness model particularly for Indian environment. The model comprises of three elements viz.

I. Government Policies.

II. Industry Strategies.

III. Management Methods.

Competitive market conditions and liberalized economic and industrial policies demand more strident attention to productivity improvement and restructuring of industries. Continuous up gradation of technical knowledge, discovery of new ways for productivity improvement and flexible redeployment of skills in new activities are vital for the competitive age. Similarly introduction of systems of employee participation such as quality circles and TQM system would be necessary to keep the employees on the leading edge of their skills and motivation.

Measuring the output of banks is the starting point of the empirical research on productivity measurement, as well as the estimation of cost and economies of scale and the study of the efficiency of banks. However, there is no consensus among researchers regarding the definition of bank output (Triplett, 1991; Berger & Humphrey, 1992). This fact is connected with the intangible, multiple and interdependent nature of the services that banks provide to their customers. In particular, banks provide a wide range of services which are often difficult to separate and price independently, while other services are provided without any explicit charge.

### *1.1 Statement of the Problem*

The new millennium has witnessed its challenges and opportunities in various fields of economic still the beginning of the 1990s, has been pushed into the choppy water of intense competition. The modern banking activity is marked by itineraries into un-chartered horizons mingled with risks and heavy competition. Immediately after nationalization, the Public Sector Banks spread their branches to remote areas at a rapid pace. Their main objective was to act on behalf of the government to fulfill economic obligations towards the common man. They acted over enthusiastically in penetrating into far-flung and remote corners of the country. On the other hand, private and foreign banks did not make such moves. Instead, they pursued profit making as the salient objective for their operations

A profitable banking sector is better able to withstand negative shocks and contributes to the stability of the financial system. Important changes in the operating environment, particularly after the Asian financial crisis, are likely to affect bank profitability. Empirical analysis finds that both bank-specific as well as macro-economic factors are important determinants in the profitability of banks. With regard to macro-economic factors, real GDP growth, inflation and real interest rates have a positive impact.

The banking sector of this country still has to go a long way in achieving productivity heights. From a comparative study of productivity situation in some countries (1988–1995), it has been revealed that Hong Kong registered the highest level of productivity followed by Korea & Taiwan while the trend in Bangladesh appeared much below as compared to the 16 countries. (Rab, 1997) In Bangladesh, productivity both in agriculture and industry sector appeared below the base year (1985) during the period from 1988–1989 to 1991–1992. In another study, it has been shown that the productivity of labor in Bangladesh is roughly one-fifth of the female workers employed in Japan. (Qureshi, 1970) This low level of productivity is a serious bottleneck to the rapid industrialization of Bangladesh. Low productivity has characterized investments in general and the industrial sector in particular. Poor productivity coupled with other problems resulted in several hundred sick industries. (Rab, 1993).

So the economy is trapped in the hand of vicious circle of poverty. This vicious circle of poverty can be broken at the productivity front. Achieving productivity gain has acquired a new sense of urgency in this period of timid economic growth in Bangladesh where rapid population growth, reduction in export prices of raw materials, growing indebtedness and inflation cloud the future. Therefore, it becomes a social obligation of the organization, both public and private and both business and non-business to increase productivity. (Habibullah, 1991). Increased productivity can offset the impact of some of these problems and at the same time can help the process of economic development. Because, all the productivity gains or benefits ultimately results in the overall economic growth of a country. (Missir, 1990). The planners, policy makers and economists of the country have also recognized this fact. According to their opinions, banking sector can contribute a lot to the economic growth of the country by increasing productivity, national income and employment opportunity. But unfortunately, productivity improvement has remained a low priority area in the economic planning of Bangladesh (Kabir, 1998).

In Bangladesh, private sector banks have emerged in the financial market with latest technology, skilled

manpower, new products and services. This has given birth a cut-throat competition in the banking sectors between PCBs, and NCBs. The productivity and hence profitability of PCBs in Bangladesh are specially the areas of series concern because of the significant role that the variables occupy in the economy of the country. These have been substantiated by review of literature made latter on. In view of these, the present study has been undertaken aiming at conducting a comparative study on the productivity and profitability of PCBs and NCBs in Bangladesh.

### *1.2 Objectives & Hypothesis of the Study*

#### 1.2.1 Objectives of the Study

- i. To analyze the factors influencing productivity performances in the selected banks.
- ii. To analyze the productivity performances in the selected banks during the study period 2007 to 2011.
- iii. To examine the impact of productivity performance on the profitability performance.

#### 1.2.2 Hypothesis

On the basis of the objectives of the study, the following two hypotheses have been developed:

Ho1: There is no relationship between productivity and profitability of the selected banks.

Ha1: There is relationship between productivity and profitability of the selected banks.

Ho2: Productivity measures have no positive impact on the profitability measures of the selected banks.

Ha2: Productivity measures have positive impact on the profitability measures of the selected banks.

## **2. Literature Review**

The researchers have extensively gone through the available literature relating to productivity and profitability of banks published in and outside the country. This is done aiming at making theoretical framework for the study as well as finding the rationale of the study. The study reviews the existing literature on productivity and profitability of commercial Banks which are cited bellow:

Shakoor (1989) in his paper titled “Measurement of Productivity in Commercial Banks in Bangladesh” examined that productivity of NCBs in Bangladesh had a further improvement during 1072–1986. It declined a little during, 1978 to 1980 with an improvement during 1981–1982 but again deteriorated during 1983 to 1985 although there was an improvement during 1986. A total of 14 indicators of which six were related to employee productivity, six with reference to branch productivity and one was concerned with working fund and one with reference to ratio of deposits to cash.

Bhattacharjee (1990; 1991) in his article entitled ‘Productivity Measurement in the Nationalized Commercial Banks of Bangladesh: A Multivariate Analysis’ examined various measures of Productivity under five broad heads viz., resource productivity, employee productivity, labor inputproductivity, business productivity and Net business productivity. The study uncovered that variations in growth rates in productivity measures were found to be associated with variations in policies pertaining to structure, process and leadership variables as well as variations in deposit mix, credit mix and service packages offered by Banks.

Sharker (1991), produced an article entitled. Productivity in Commercial Banks: Concepts and issues in the context of Bangladesh. The highlights of the paper included: (i) Concepts productivity in general and Suitability of application of productivity measurement technique to banking industry. (ii) Concepts of input and output in banks (iii) Measurement of banking inputand output (iv) Type of productivity measurement for commercial banks, (v) Requisite forproductivity computation in the banks.

Bhattacharjee and Saha (1991) conducted a study titled. An Evaluation of Performance of NCBs in 13angladesh’ with a principle objective of evaluating the profitability performance of NCBs made by the measurement of performances of NCBs on the basis of five set of indicators namely general banking business including net profit, social profitability measures. The study revealed that almost all the performance measures showed upward trends. Of course, there were inter-bank and intra-bank variations in performance measures during the period, 1973 to 1987.

Amandeep (1993) in her study, on profitability of commercial banks attempted to examine the trends in profits and profitability of twenty NCBs operating in India, with the help of trend analysis, ratio analysis and concentration indices of the selected parameters. The study aimed at identifying the various factors and empirical testing as to which of the identified factors had significantly contributed towards bank profitability in either direction.

Sarkar et al. (1998) found that the foreign banks were more profitable and efficient than Indian banks and amongst the Indian Banks; private banks were superior to the public sector banks. They also concluded that the non-traded private sector banks are not significantly different from the public sector banks with respect to profitability and efficiency, a result consistent with the property right hypothesis.

Chowdhury (1988) conducted a study entitled 'Impact of Denationalization and Privatization on the profitability and productivity of commercial Banks of Bangladesh' evaluating productivity and profitability of commercial banks. In this study, profitability (measured through Gross profit as a percentage of volume of working Fund) and two productivity dimensions (Total productivity and man power productivity) were analyzed. The study came up with the conclusion that though absolute profit level of the commercial banks increased after denationalized and privatization, but it could not help to improve the profitability and productivity of the commercial banks.

Choudhury (1990) studied the impact of denationalization and privatization on the profitability and productivity of the commercial banks in Bangladesh. He concluded that though absolute profit level of the commercial banks did increase after denationalization and privatization but it could not help improve the profitability and productivity of the commercial banks.

Loqman and Muhiuddin (1992) in their study entitled: "Performance Evaluation in Term of Profitability and Productivity of interest-free Banking System: A case study on Islami Bank Bangladesh Limited (IBBL)" revealed that the performance of Islamic Bank Bangladesh Ltd in terms of productivity and profitability had not been satisfactory since its inception in comparison with those other commercial banks in Bangladesh. However, the financial performance of IBBL had been up to the mark during the last two years of the study period i.e., 1990 and 1991.

Azad (2000) conducted a study on 'Banking Structure in Bangladesh: Regulatory Framework and the Reforms'. This paper makes a review of the historical evolution, strength and competitive performance of the banking structure in Bangladesh. It analyses the impact of post-reform regulatory framework and the efficiency of the restructured banking sector in terms of institutional dependence and financial intermediation, deposit mobilization and advance deployment, productivity and profitability, and the growth rate of the financial system.

Jahan and O'Neill (2003) in their study on Banking and Industrial Development: A case study of Bangladesh examined the difficulties hampering efficient functioning of the banking system in promoting economic and industrial development in Bangladesh. The findings include: a) legal environment in which banks function is relatively poor. b) Despite financial sector reform programmed of the government there is a lack of credit discipline. c) Loan sanctioning is dictated by political decisions and d) loan taking entrepreneurs are not genuinely serious in utilizing the loan for purposes for which these are granted. Banking system in Bangladesh is not properly equipped with trained manpower to perform its job.

Miyakawa, Inni & Shoji (2011) in their study entitled; Productivity of banks & its impact on capital investment of client firms; proposed some measures of banks productivity namely risk adjusted profit, operating cost per employee etc. They also explained the impact of productivity on ROA (Profitability) & found positive significant correlation between these two.

Batchelor (2005) in his PhD thesis, entitled; A comparable Cross System Bank Productivity Measure; found that Islamic Banking operations were more productive than conventional banking system.

### **3. Methodology and Research Design**

The methodology followed in the present study has been discussed under the main points given below:

#### *3.1 Selection of Sample*

At present a total number of 47 Banks has been operating in Bangladesh out of which 4 are in the public sector and the remaining is in the private sector. Of the private commercial banks, 15 were selected for the study purpose all of which have been local banks. The foreign private banks and the public sector banks have been kept beyond the study sample because of different environment, rules & regulations of these banks than those of local private banks.

The study is based on a total number of 15 Private Commercial Banks (PCBs) operating in Bangladesh. These banks were selected on the basis of purposive sampling because of easy access to the requisite data. For primary data, an opinion survey was conducted on a total number of 30 respondents, taking 02 executives in the rank and status of Manager in Charge of Deposits and Accountant in Charge of Profitability of the banks. These respondents were also selected purposively keeping in mind the main objective of the study. The names of the selected banks are: i. AB Bank Ltd. (ABBL) ii. One Bank Ltd.(OBL) iii. Ultra Bank Ltd. (UBL) iv. National

Bank Ltd. (NBL) v. The City Bank Ltd. (CBL) vi. Islami Bank Bangladesh Ltd.(IBBL) vii. United Commercial Bank Ltd.(UCBL) viii. Eastern Bank Ltd.(EBL) ix. NCC Bank Ltd. (NCCBL) x. Prime Bank Ltd. (PBL) xi. Southest Bank Ltd.(SBL) xii. Dhaka Bank Ltd.(DBL) xiii. Al-ArafaIslami Bank Ltd.(AAIBL) xiv. ShahjalalIslami Bank Ltd. (SIBL)xv. Dutch Bangla Bank Ltd. (DBBL).

### 3.2 Data collection Methods

#### 3.2.1 Secondary Data

The major secondary data used in the study have been total deposits, total number of employees, total loans and advances, total investments, total assets, total income, total expenditures, total equity capital, total loans and advances per employee, total investment per employee, total business per employee, total income per employee, total expenditure per employee, equity capital per employee, earning assets per employee, total deposits per employee, loans & advances and investment per employee and return on investment etc of the selected banks. These were collected by the researchers from the Annual Reports and Annual Accounts Statements and Websites of the banks. Again, the main measures of profitability of the banks have been ROI, ROTA, ROCE, and EPS etc. But in this study, only ROI has been used in order to examine the impact of productivity on profitability of the selected banks.

#### 3.3 Primary Data

The main primary data used in the study have been the factors influencing productivity of the banks. These were collected by the researchers with the help of a structured questionnaire from the selected respondents on the basis of direct interview method.

#### 3.4 Period of Study

For the empirical analysis of the study, a period of 05 financial years ranging from 2007 to 2011 was selected. The secondary data of these 05 financial years have been easily available to the sources of data.

#### 3.5 Methods of Data Analysis

Since primary data used in the study were few limiting to opinions of the respondents as to the factors influencing productivity performances; these data were processed and analyzed manually. In this case, frequency table, graphs and diagrams have been used. The secondary data were processed and analyzed using computer SPSS program. The Pearson Correlation technique and Multiple Correlation & Regression model have been used for the study in order to show the relationship between the dependent variable & independent variables, association of strength between these variables & to show the extent of the influence of the independent variables on the dependent variable. In order to test the hypothesis of the study, t test, F test and ANOVA have been applied in the study. For the study purpose, Return on Investment has been take as the dependent variable, while Deposits per employee, loans & advances per employee, Investment per employee, Business per employee, total expenditure per employee, equity capital per employee and ratio of loans & advances and investments to deposits, total assets per employee have been taken as the independent variables.

## 4. Analysis of Findings

### 4.1 Factors Influencing Productivity Performances of Selected Banks

Identification of Determinants that Influence the productivity of sample banks based on mean weighted scores:

The researchers have collected opinions of thirty bankers on 5 point Likert Scale in order to identify the factors that influence the productivity in the selected Banks. The study has identified the variables undertaken for the study as most significant and on the basis of mean score of opinions taken of 5 point Likert scale as follows:

Table 1. Identification of variables that influence the productivity of samplebanks based mean weighted scores

Variables	Factor Variables	Weighted Mean scores
More Significant		
X1	Change in deposit structure	4.6400
X2	Change in liability structure	4.4400
X6	Lack of skilled employee	4.2400
X 4	Policy of Bangladesh Bank	4.2000
X7	Lack of Accountability	4.2000
X11	Adverse environment factor	4.2000
X13	Lack of proper responsibility & accountability	4.2000

Less Significant		
X3	Burden	3.9200
X5	Inadequate remuneration of employees	3.9200
X9	Use of obsolete plan and technology	3.9200
X8	Shortage of adequate equity capital	3.8800
X10	Absenteeism of workers from jobs	3.8800
X12	Obstacle in introducing product diversification	3.8800
X14	Management inattention limited markets of products	3.5200

Note: Data Have Been Compiled By Researchers.

It is evident from the above table that seven variables have been found influencing the productivity of Bank more significantly on weight mean basis. These are change in deposit structure. Change in liability structure, Lack of skilled employees, policy of Bangladesh Bank, Lack of accountability, adverse environmental factor, Lack of proper responsibility & accountability. It has also identified seven other variables as less significant on the same basis. Burden, Inadequate remuneration of employees, Use of obsolete plan and technology, Shortage of adequate equity capital, Absenteeism of worker from jobs, Obstacle in introducing product diversification, Management Intention limited markets of products are less significantly influencing the productivity. These findings are manifestation of reflecting the scenarios of banks productivity.

#### 4.2 Average Productivity Performances

The following table 02 depicts average productivity performances in the selected banks during FY 2007–2011. In this study, we have analyzed eight (08) types of productivity performances as exhibited in the table.

Table 2. Average productivity performances measurement (PM) in the selected banks

<i>PM</i>	EPE	DPE	LAPE	IPE	LAIPE	EAPE	BPE	ExPE
<i>ABL</i>	1.24	43.67	36.73	7.47	1.02	55.35	6.28	3.86
<i>OBL</i>	1.67	37.56	28.93	5.51	1.09	41.86	4.82	3.34
<i>UBL</i>	0.47	16.99	27	4.42	2.19	20.47	1.99	1.32
<i>NBL</i>	0.95	18.81	18.37	5.13	1.34	30.69	3.79	2.28
<i>CBL</i>	0.78	25.32	19.51	4.39	0.94	31.31	3.13	2.12
<i>IBBL</i>	0.65	24.87	22.75	1.36	0.97	28.46	2.38	1.72
<i>UCBL</i>	0.7	33.85	28.25	4.49	0.97	39.63	3.75	2.47
<i>EBL</i>	2.65	54.93	54.48	9.39	2.91	76.89	8.62	5.47
<i>NCCBL</i>	7.17	37.04	34.25	6.32	1.1	45.01	5.14	3.33
<i>PBL</i>	2.25	55.8	48.32	10.99	1.06	67.36	3.55	1.25
<i>SBL</i>	3.16	62.05	52.72	11.39	1.03	73.4	22.58	5.35
<i>DBL</i>	5.46	62.99	55.22	7.99	1	79.47	8.86	6.54
<i>AAIBL</i>	1.96	31.76	28.11	0.76	0.91	40.39	3.56	2
<i>SIBL</i>	2.45	34.73	29.79	1.79	1.03	44.08	3.23	2.29
<i>DBBL</i>	0.64	38.28	29.25	5.24	0.91	45.64	4.98	3.52

Source: Annual Reports of Selected Banks.

It is revealed from the table 02 that average EPE during 2007–2011 was the highest in case of NCCBL followed by DBL, SBL, EBL, SIBL, PBL, AIBL, OBL, ABL, NBL, CBL, UCBL, IBBL, DBBL & UBL. The average DPE was the highest in case of DBL followed by SBL, PBL, EBL, ABL, DBBL, OBL, NCCBL, SIBL, UCBL, AAIBL, CBL, IBBL, NBL and UBL. The average LAPE was the highest in case of DBL followed by EBL, SBL, PBL, ABL, NCCBL, SIBL, DBBL, OBL, UCBL, AAIBL, UBL, IBBL, CBL and NBL. The average IPE was the highest in case of SBL followed by PBL, EBL, DBL, ABL, NCCBL, OBL, DBBL, NBL, UCBL, UBL, CBL, SIBL, IBBL and AAIBL. The average LAIPE was the highest in case of EBL followed by UBL, NBL, NCCBL, OBL, PBL, SBL, SIBL, ABL, DBL, IBBL, UCBL, CBL, DBBL and AAIBL. The average EAPE was the highest in case of OBL followed by DBL, EBL, SBL, PBL, ABL, DBBL, NCCBL, SIBL, AAIBL, UCBL, CBL, NBL,

IBBL and UBL. The average BPE was the highest in case of SBL followed by DBL, EBL, ABL, NCCBL, DBBL, OBL, NBL, UCBL, AAIBL, PBL, SIBL, CBL, IBBL and UBL. Finally, the average ExPE was the highest in case of DBL followed by EBL, SBL, ABL, DBBL, OBL, NCCBL, UCBL, SIBL, NBL, CBL, AAIBL, IBBL, UBL and PBL. All these figures indicate that the average DPE, LAPE, EAPE, BPE has been satisfactory in case of most of the banks. In case of other productivity measures, almost 50% of the selected banks have been good. But in case of other banks, these measures were not remarkable during the study period.

#### 4.3 Impact of Productivity Performances of Banks

Before examining the impact of productivity on profitability, firstly it is essential to examine the relationship between these two.

##### 4.3.1 Productivity and Profitability Relationship

Profitability refers to profit earning capacity of an enterprise. It is one of the best measurements of evaluating of overall performance of an enterprise. But measurement of productivity alone cannot identify the causes of productivity changes. Profitability may be changed due to productivity or price cost movement. Therefore it is necessary to segregate profitability into productivity and price recovery. Considering the relationships among 3ps (Productivity, Profitability and Price recovery) profitability is defined as the product of productivity and price recovery. The following figure demonstrates this relationship:

Table 3. Productivity and profitability relationship

Output Value= Output Quantity x Unit Price
Profitability = Productivity x Price Recovery
Input Value= Quantity Used x Unit Cost

Where:

Profitability= Output Value, Productivity= Output Quantity, Price Recovery=Unit Price

Quantity used input value unit cost.

##### 4.3.2 Relationship between Productivity and Profitability

The Relationship between productivity and profitability has also been examined using co-efficient of correlation.

Table 4. Correlation-coefficient

	ROI	EPE	DPE	LAPE	IPE	LAIPE	EAPE	BPE	ExPE	
Pearson Correlation	ROI	1.000								
	EPE	-.016	1.000							
	DPE	.273	-.187	1.000						
	LAPE	.895	.053	.295	1.000					
	IPE	.206	.221	.601	.303	1.000				
	LAIPE	.100	.736	-.414	.163	.191	1.000			
	EAPE	.247	.125	.356	.160	.343	.077	1.000		
	BPE	.141	.037	.263	.111	.276	.020	.128	1.000	
	ExPE	.314	.157	.513	.329	.460	.124	.337	.414	1.000
	ROI	.	.445	.009	.000	.038	.197	.016	.114	.003
Sig.(1- tailed)	EPE	.445	.	.054	.325	.028	.000	.143	.376	.090
	DPE	.009	.054	.	.005	.000	.000	.001	.011	.000
	LAPE	.000	.325	.005	.	.004	.081	.085	.171	.002
	IPE	.038	.028	.000	.004	.	.051	.001	.008	.000
	LAIPE	.197	.000	.000	.081	.051	.	.256	.431	.145
	EAPE	.016	.143	.001	.085	.001	.256	.	.136	.002
	BPE	.114	.376	.011	.171	.008	.431	.136	.	.000
	ExPE	.003	.090	.000	.002	.000	.145	.002	.000	.
	N	ROI	75	75	75	75	75	75	75	75

Table 4 shows that r between EPE and ROI, DPE and ROI, LAPE and ROI, IPE and ROI, LAIP and ROI, EAPE and ROI, BPE and ROI and ExPE and ROI has been -0.16, .273, .895, .206, .100, .247, .141 and .314 respectively. Considering the significant values, it can be said that, r between DPE & ROI, LAPE & ROI, IPE & ROI, EAPE & ROI and ExPE & ROI have been significant at 0–10% level. Thus it is seen that null hypothesis: relationship between productivity and profitability of these selected banks has been rejected. Therefore, there exists relationship between productivity and profitability of the selected banks.

#### 4.3.3 Impact of Productivity Measures on ROI-Profitability Measure

Impact of productivity measures on ROI-Profitability measure has been examined on the basis of regression analysis.

Table 5. Exhibits the results of regression model

##### a. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	Durbin-Watson
1	.911(a)	.830	.810	.90064	.830	40.388	8	66	.000	1.416

a Predictors: (Constant), EPE, DPE, LAPE, IPE, LAIPE, EAPE, BPE, ExPE.

b Dependent Variable: ROI.

##### b. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	262.084	8	32.761	40.388	.000(a)
	Residual	53.536	66	.811		
	Total	315.620	74			

a Predictors: (Constant), EPE, DPE, LAPE, IPE, LAIPE, EAPE, BPE, ExPE.

b Dependent Variable: ROI.

It is revealed from the table that adjusted R square equals to .810 which implies that all the eight independent variables (predictors) have influenced or explained the dependent variable ROI to the extent of 81%. These signify that the productivity measures have highest positive impact on profitability in terms of ROI in case of the selected banks during the study period 2007–2011. Thus it is seen that null hypotheses: productivity has no impact on profitability of the selected banks has been rejected. Therefore, productivity measures have positive impact on profitability of the selected banks.

## 5. Conclusion

Productivity is at the heart of growth and development of the organizations through improving their performances. This is more true in case of banking industry in Bangladesh. The most significant factors influencing the productivity performance of the selected banks demand special attention of the bank authority. The measures of productivity as mentioned in the study should be of great concern for the bank management since they have positive impact on the bank profitability. Hence, the respective bank authority in particular should give due emphasis on productivity performances of the banks since they have direct influence on their profitability.

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## Appendix

### Appendix 1. Requisite data on selected banks (FY from 2007–2011)

Year/ Bank	Particular	2007	2008	2009	2010	2011	Average
ABBL	Equity capital per employee (EPE)	0.43	1.24	1.31	1.6	1.6	1.236
	Deposits per employee (DPE)	30.94	38	42.57	49.03	57.79	43.666
	Loan & Advance per employee (LAPE)	23.72	31.44	36.31	43.97	48.211	36.73029
	Investment per employee (IPE)	5.15	6.32	8.39	7.25	10.218	7.465559
	Loan & Advance and Investment to Deposits (LAID)	0.93	0.99	1.05	1.07	1.07	1.022
	Earning Assets per employee(EAPE)	36.84	46.59	54.77	66.23	72.337	55.35338
	Business per Employees (BPE)	4.92	6.37	7.38	8.59	4.1361	6.279224
	Total Expenditure per Employee (ExPE)	2.99	3.98	4.41	4.9	2.9985	3.855708
	ROI	13.86	12.42	13.49	12.35	12.98	13.02
OBL	EPE	1.32864	1.512224	1.4995	1.64956	2.3622	1.670434
	DPE	31.3095	32.06674	37.887	40.7971	45.756	37.56325
	LAPE	25.1228	24.98719	30.284	30.4034	33.874	28.93427
	IPE	4.58696	4.324796	6.5342	5.87991	6.2185	5.508869
	LAIPE	1.8	0.9	0.97	0.89	0.88	1.088
	EAPE	35.12	36.9546	43.468	47.077	46.7	41.86387
	BPE	4.58696	4.997672	5.6054	6.14354	2.7556	4.817824
	ExPE	3.39898	3.708964	3.9894	3.72173	1.8874	3.341299
	ROI	15.07	14.74	13.5	12.84	13.2	13.87
UBL	EPE	0.11479	0.229862	0.4853	0.73452	0.7986	0.472608
	DPE	12.5391	14.61939	18.045	20.1925	19.565	16.9922
	LAPE	83.0688	10.68498	11.988	14.9209	14.343	27.0011
	IPE	4.1588	0.341772	6.8374	5.69926	5.0833	4.424122
	LAIPE	6.95	0.95	1.04	1.02	0.99	2.19
	EAPE	15.2071	16.81358	21.861	24.9697	23.523	20.47492
	BPE	1.44419	1.816456	2.2473	2.68792	1.7386	1.986904
	ExPE	1.02244	1.153049	1.4834	1.7477	1.2178	1.324881
	ROI	11.37	11.72	11.59	11.56	11.95	11.638
NBL	EPE	0.49671	0.684326	0.9615	1.28181	1.3463	0.954132
	DPE	19.7208	21.99306	2.5946	29.7708	19.995	18.81491
	LAPE	14.9984	18.14578	2.2024	26.7295	29.77	18.36913
	IPE	3.19079	3.710997	4.1605	7.26119	7.3051	5.125719
	LAIPE	0.922	0.993	2.55	1.14	1.07	1.335
	EAPE	23.2434	19.0833	31.058	39.1435	40.908	30.68717
	BPE	2.95354	3.249178	3.7182	5.40732	3.6106	3.78777
	ExPE	2.04276	2.107782	2.5703	2.80941	1.8545	2.27694
	ROI	12.13	12.94	11.87	11.91	12.1	12.19
CBL	EPE	0.59669	0.65234	0.6481	0.14451	1.8382	0.775963
	DPE	20.3616	21.50621	25.736	25.1099	33.908	25.32434
	LAPE	13.4545	16.43792	17.94	22.4682	27.258	19.51171
	IPE	3.79257	4.361032	4.3672	4.64581	4.7913	4.391569
	LAIPE	0.84	0.97	0.87	1.07	0.93	0.936
	EAPE	24.4877	27.27555	31.546	33.854	39.38	31.30861

	BPE	2.91662	3.186724	3.3168	4.02905	2.2105	3.131955
	ExPE	2.28579	2.348615	2.3861	2.50168	1.0807	2.120589
	ROI	12.28	13.29	12.97	12.97	13	12.902
IBBL	EPE	0.47037	0.505693	0.6443	0.7163	0.9005	0.647439
	DPE	20.5771	21.31989	25.479	28.209	28.748	24.8665
	LAPE	17.9291	20.35011	22.384	25.4348	27.66	22.75153
	IPE	2.5159	0.801639	1.1647	1.18553	1.1241	1.358365
	LAIPE	0.993	0.992	0.924	0.943	1.001	0.9706
	EAPE	23.6746	24.56944	29.026	31.9438	33.107	28.46418
	BPE	2.18966	2.578482	2.6496	2.9113	1.5926	2.384317
	ExPE	1.72189	1.851229	1.9698	2.09431	0.9627	1.719985
	ROI	13.17	12.54	12.36	11.5	12.47	12.408
UCBL	EPE	0.14225	0.130454	0.1192	1.06245	2.0414	0.699155
	DPE	20.1218	23.77182	33.914	49.3329	42.105	33.84908
	LAPE	17.8716	19.3918	26.916	40.7766	36.311	28.25334
	IPE	2.62512	3.192408	4.0777	6.56545	5.9649	4.485109
	LAIPE	1.01863	0.950041	0.9139	0.95964	1.004	0.969253
	EAPE	23.873	28.32068	39.478	56.6649	49.825	39.63227
	BPE	2.87916	3.424956	4.1623	5.88438	2.3993	3.75002
	ExPE	1.91912	2.312827	2.7989	3.81981	1.52	2.474125
	ROI	12.72	12.58	12.92	12.95	13.5	12.934
EBL	EPE	1.5	1.817824	2.8526	3.00206	4.083	2.651082
	DPE	43.6116	54.61	56.217	57.99	62.218	54.92939
	LAPE	44.8725	51.98165	54.511	60.2333	60.78	54.47568
	IPE	8.54493	6.97903	10.064	10.0997	11.271	9.391813
	LAIPE	1.22	1.07	9.875	1.21	1.15	2.905
	EAPE	61.7087	71.55701	79.853	84.3299	87.015	76.8927
	BPE	7.72319	9.68021	9.8857	10.777	5.0496	8.623137
	ExPE	5.0058	6.554391	6.48	6.24563	3.0658	5.470329
	ROI	13	14.29	29.13	13	13.5	16.584
NCCBL	EPE	1.42	1.63	1.52	27.77	3.51	7.17
	DPE	28.38	33.5	36.02	41.89	45.43	37.044
	LAPE	26.57	33.09	33.682	38.9827	38.938	34.25252
	IPE	5.09512	4.662143	6.4652	6.76942	8.6136	6.321099
	LAIPE	1.1161	1.126937	1.1143	1.09195	1.0468	1.099205
	EAPE	34.5715	40.97571	44.076	51.5129	53.923	45.01181
	BPE	4.28374	5.298571	6.2386	6.26264	3.6118	5.139077
	ExPE	2.83659	3.61	4.141	3.7349	2.3127	3.327042
	ROI	14.3	14.17	11.97	13.02	12.63	13.218
PBL	EPE	1.625	1.833656	1.9279	2.70033	3.1803	2.253424
	DPE	50.3657	56.75113	58.002	58.2132	55.669	55.80021
	LAPE	41.2029	48.45648	48.401	51.9715	51.559	48.31817
	IPE	9.07	14.89555	10.81	9.57644	10.593	10.98903
	LAIPE	0.99816	1.116313	1.0208	1.05728	1.1151	1.061548
	EAPE	56.8486	71.20374	67.682	71.4338	69.614	67.35643
	BPE	2.94	3.725338	4.4447	4.52595	2.0922	3.545628
	ExPE	1.11357	1.931/1551	1.5765	1.68443	0.624	1.249612
	ROI	14.16	14.03	13.6	12.47	13.5	13.552
SBL	EPE	2.0448	2.316816	2.4408	4.29696	4.7229	3.164453
	DPE	49.7079	55.82047	68.951	66.7886	68.981	62.0498
	LAPE	43.1577	48.96913	55.276	57.3168	58.892	52.72236
	IPE	7.58333	9.991877	15.228	11.3627	12.777	11.38859
	LAIPE	1.02078	1.056261	1.0225	1.02831	1.039	1.033385
	EAPE	57.6801	65.94801	80.368	81.7998	81.204	73.39996
	BPE	7.76882	83.26807	9.7732	6.61562	5.4753	22.5802
	ExPE	5.15591	5.879773	6.4815	5.77557	3.4537	5.349287
	ROI	14.47	14.23	13	12.08	13	13.356
DBL	EPE	1.83948	2.153675	6.4935	9.01713	7.8125	5.463258
	DPE	57.9441	63.4588	65.929	61.0848	66.538	62.99091
	LAPE	47.5291	55.34298	57.262	57.3408	58.634	55.22169
	IPE	7.10107	8.061247	9.3723	7.61317	7.8125	7.992055
	LAIPE	0.94281	0.99914	0.9815	1.06334	0.9986	0.997078
	EAPE	68.3032	79.21715	84.163	81.2804	84.364	79.46565
	BPE	8.58264	10.13363	10.434	9.46709	5.6719	8.857843
	ExPE	6.19263	7.312918	9.3409	6.00361	3.8688	6.543762
	ROI	13.19	13.84	13.41	13.19	13.5	13.426
AAIBL	EPE	1.11293	1.285051	1.3881	2.73349	3.2922	1.962354
	DPE	22.2095	29.22006	29.363	34.2805	43.705	31.7557
	LAPE	18.5463	27.59796	27.881	31.3162	35.206	28.10945
	IPE	0.08591	0.081708	1.159	1.27294	1.2168	0.763253
	LAIPE	0.83885	0.947283	0.989	0.95066	0.8334	0.911829
	EAPE	29.1332	36.3584	39.025	43.2525	54.166	40.3871
	BPE	2.85232	4.098422	4.0748	4.39626	2.3642	3.557218

	ExPE	1.11293	2.637883	2.7253	2.06429	1.4525	1.998586
	ROI	14.27	12.78	11.5	11.97	11.95	12.494
	EPE	0.87444	1.612392	2.7886	2.75046	4.2399	2.453156
	DPE	27.1689	32.69164	32.734	41.2983	39.744	34.72741
	LAPE	23.7205	26.98127	27.544	33.7753	36.906	29.78534
	IPE	0.74888	1.32853	1.3575	2.80755	2.6969	1.787884
SIBL	LAPE	0.90064	0.865964	0.8829	0.88582	1.6071	1.028499
	EAPE	32.7653	42.16427	41.429	50.7993	53.229	44.07742
	BPE	1.78475	2.321326	3.9544	4.66667	3.4067	3.226764
	ExPE	1.45291	1.714697	2.8124	3.15746	2.2995	2.287402
	ROI	14.03	14	14.03	14.03	14.5	14.118
	EPE	0.25602	0.81367	0.8403	0.72385	0.5645	0.639674
	DPE	53.3714	41.96583	37.977	30.1285	27.942	38.27702
	LAPE	37.2662	33.9284	27.121	24.4872	23.426	29.24584
	IPE	7.48923	4.845403	5.4174	3.9819	4.4488	5.236535
DBBL	LAPE	0.83857	0.923937	0.8568	0.94492	0.9976	0.912362
	EAPE	62.5741	49.3751	45.648	36.62	33.982	45.63981
	BPE	8.06971	5.92026	4.9955	3.83786	2.0725	4.979176
	ExPE	6.24715	4.344996	3.484	2.31886	1.1812	3.515247
	ROI	13.85	13.62	12.96	11.55	11.82	12.76

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