Volume 32 (2) October 2025 ISSN 0216-423X (Print)
ISSN 2622-2667 (Online)

JABM
JOURNAL *of*
ACCOUNTING, BUSINESS and MANAGEMENT

Journal of Accounting, Business and Management (JABM) vol. 32 no. 2 (2025) 87-99

# Human Resource Indicators and Bank Performance: An Empirical Study on Banking Industry, Bangladesh

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**Abstract**

The study investigates the human resource indicators of selected banks that impact the bank's profitability performance. By using human resources impact indicators like the number of employees of a bank, the number of branches, deposit collection by per employee, operating profit earned by per employee, and salaries and allowances are given to per employee have impact on banks popular profitability indicator named return on assets. The study is employed on 20 private commercial banks of Bangladesh from according to the data available in between 2014 to 2018. The study's findings show that the number of employees of a bank, deposit collection by per employee, operating profit earned by per employee, and salaries and allowances given per employee are significantly impact the bank's profitability. However, the number of branches of a bank remains insignificant. The study noticed a significant contribution to existing literature related to the human resource context in the banking industry of Bangladesh specially quantifying the contribution of human resources in the profitability of banks. The research suggests policymakers to focus on branch banking to efficiently utilize human resources so that they impact the bank's profitability and sustainability.

**Keywords**: human resources, efficiency and performance, private commercial banks, banking industry, Bangladesh.

## I. INTRODUCTION

Modern competitive economies and technological advances are forcing business organizations to focus more and more on human capital as it is a strong indicator of financial performance (Hay et al., 2019). Thus, the results of human capital management describe the importance of efficient and skilled human resources available in a financial institution. Since banking institutions play a significant role in the economy, it requires potential human resources who are able to ensure maximum possible financial output. Therefore, it automatically demands appropriate action so that practitioners can easily detect strategic changes.

Just as investing in an employee is a major concern for good organizational performance, disclosing all employee information that describes profitability. In addition, it can attract stakeholders to consider a company's financial disclosure. In order to follow

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the accounting standards, most companies disclose this information in their financial statements. Given the importance of human resources, this requires extensive research so that stakeholders can examine the effectiveness of all employee-related disclosures and their impact on the company's financial performance (Junarsin, 2011; Khatab et al., 2011; and Rouf, 2011).

However, despite the importance, we have found very few writers who have discussed the subject. Therefore, through this research, we hope that stakeholders will be able to find out the effect of maximum financial benefits that can contribute to the profit of the selected bank. Our research included 20 scheduled commercial banks listed in the Dhaka stock exchange updated during 2014-2018.

To fulfill the purpose, this study is divided into three sections. First, we have studied important literatures on human resources and the measurement of bank profitability. Second, we have developed a research approach that considers return on assets (ROA) as an indicator of profit and employee-related costs and benefits as a human resource indicator. Finally, we have drawn conclusions and recommendations for further research.

## II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Proficient and talented manpower can oversee the financial risks that the banks have to take on a regular basis. The department of Human Resources is responsible for searching for such skilled and efficient persons and appointing them in the right positions in the banks. To measure the performance many researchers used ROA (Shumway, 2001; Chidambaran et al., 2008; Bauer et al., 2010; Gürbüz' et al., 2010; Ibrahim et al., 2010; Reddy et al., 2010; Bhagat et al., 2011; Chugh et al., 2011; Din & Javid, 2011; Fazlzadeh et al., 2011; Geletkanycz & Boyd, 2011; Herri, 2011; Junarsin, 2011; Khatab et al., 2011; Najid & Rahman, 2011; Prabowo & Simpson, 2011; Rouf, 2011; Valenti et al., 2011; Heenetigala & Armstrong, 2012; Karaca & Eksi, 2012; Uwuigbe & Olusanmi, 2012; and Ongore & Kusa, 2013).

A study by Ongore and Kusa,(2013) identified performance can be positive or negative, the final result depends on the efficiency of the organization. The study claims that the organization's plans should be measured based on the results. The measurement of performance can be categorized in financial measures (ROA), production measures (the total units of production, the total customers engaged, and the total errors number in the system), the client fulfillment measures, and employee satisfaction measures and so on. In the same way, Gul et al. (2011) used return on assets (ROA) to determine the financial performance of Pakistani commercial banks. The author stated ROA as the most acceptable indicators to measure the performance of banks. Similarly, Flamini et al. (2009) selected ROA to analyze the performance of bank rather than ROE, because ROE may not consider monetary use and the risk related with it. In this study, we stated ROA (dependent variable) as an indicator to evaluate the performance of Bangladeshi commercial banks. Finally, we assessed the relationship between number of employees, number of branches, deposit per employee, loan and advances per employee, operating profit per employee, salaries and allowances per employee and ROA.

To assess the effect of proving companies giving more attention in their working conditions for two reasons: first is to satisfy employees and second is to make more value for shareholders. Casalegno and Pellicelli (2008) conducted research on the human capital impact on the shareholder value creation. Primary data was collected from 105,000 employees from 446 companies reacted to a 57- question survey in the USA and secondary information was collected from McKinsey (2007). Selecting the factors

excellence of employee, development of employee, total rewards to employee, management of turnover, and communication skill of the employee. Applying Shareholders' value theory and Human Asset theory, the study found that the Execution of each representative has direct impact on shareholders' value so strong culture and key structure are more important in an organization. Other findings are Communication is vital as well as firms' climate and behavior. Many of the researchers revealed that remuneration is one of the critical variables in human resource management that contains a significant impact on the performance of organizations (Rodríguez & Ventura, 2003; Boselie et al., 2005; Katou & Budhwar, 2007; Simpson et al., 2013; and Stone & Dulebohn, 2013). In this research, we had found a positive relationship among salaries, allowances and operating profit per employee with overall bank performance.

Evaluating the relationship between bank branches and bank performances, Zardkoohi and Kolari (1994) concluded that the banks with larger branch work higher productively than the banks with branch. Similarly, Seale (2004) studied on the impact of the branch numbers of a financial institution on the few financial proportions, found that larger branch systems are for the most part related to higher noninterest income, lower interest costs, lower non-interest costs, and higher ROE. Moreover, Hester and Zoellner (1966) evaluated the impacts of assets and liabilities on the profits of banks and illustrated that even though per assets of branch numbers positively affected the profits of banks in 1957 but after that year no critical relationship was found, and in 1963, the previous impact adversely the last-mentioned conversely. They concluded that bank branch numbers don't critically impact their profits in this estimation. Likewise, Hirtle (2007) tested the impact of the branch network size on the bank profitability and the research found insignificant relationship. Besides, the author evaluated the impact of the size of branch-on-branch performance, appearing that banks with middle branch size may be at a possibly disadvantages compare to the banks that have either little- or large-sized branch. Finally, we cannot authoritatively attest that bank with bigger branch sizes can anticipate higher performance.

To examine the impact of bank deposits on bank profitability Haddawee and Flayyih, (2020) sampled all sorts of deposits of commercial banks and decide the deposit types that have a more significant impact on the profit of the bank. The study uncovered that there is a noteworthy impact of deposits on the indicators of profitability. The saving deposit has the biggest influences on the profitability. Moreover, the current deposits have the lowest contribution. Similarly, Trujillo-Ponce (2013) examined the components that decide the profitability of Spanish banks from 1999 to 2009. Finally, the research has highlighted that the liabilities of the Spanish banks are characterized by a high extent of client deposits which shows a positive impact on their productivity as measured both by ROA and ROE. Similarly, Trujillo-Ponce (2013) examined the components that decide the profitability of Spanish banks from 1999 to 2009. Finally, the research has concluded that a high extent of client deposits has a significant positive impact on the profitability of Spanish banks.

Examining the literature on the impact of human resources on bank performance, we found a significant gap that most researchers have studied the impact of human resource management practices on the bank performance. They mentioned human resource practices include employee's recruitment, selection, training, reward, participation, etc. (Huselid, 1995; Delaney & Huselid, 1996; Appelbaum et al., 2001; and Peña & Villasalero, 2010). But a few researchers have studied the impact of the number of employees, the number of branches, deposits per employee, loans and advances per employee, operating profit per employee and the effect of salaries and allowances per

employee on the bank's performance. This research will play an important role in filling this gap and will guide practitioners.

### 2.1. Hypothesis Development

To assess the effect of proving companies giving more attention in their working conditions for two reasons: first is to satisfy employees and second is to make more value for shareholders. Selecting the factors like choosing excellence, employee development, and the number of employees, total rewards, turnover management, and communication has an essential role in the organization's growth. Shareholders' value theory and human asset theory have an impact on the human capital and shareholder's value creation (Casalegno & Pellicelli, 2008). The study found that the execution of each representative has a direct impact on shareholders' value, so strong culture and key structures are more important in an organization. Other findings are that communication strongly impacts firms' climate and behavior.

**$H_1$**: there is a significant relationship between number of employees and bank performance.

Likewise, considering the impact of geographical deregulation on bank performances, Zou et al. (2011) illustrated that the banks with a greater number of branches have higher benefits and net interest margin. To justify the statement in Japan, Kondo (2015) found that expansion of management area have significant positive impacts on the lending-based income. Finally, they might enhance the productivity of the organizations, i.e., ROA and ROE.

**$H_2$**: there is a significant relationship between number of branches and bank performance.

In accordance with the (Gul et al., 2011) study, the effect of assets, credits, equity, deposits, financial growth, inflation, and market capitalization on profitability indicators such as return on assets (ROA), return on capital employed (ROCE), return on equity (ROE), and net interest margin (NIM). The study found that deposits have a significant positive impact on ROA and ROE.

**$H_3$**: there is a significant relationship between deposit per employee and bank performance.

In order to guarantee client dependability, the quality of meddling with clients must be made strides surprisingly since the scope of the item, cost and innovation differentiation are exceptionally constrained. The part of employees in such environment is of extraordinary importance as a result banks are giving particular target to the employee. It is the capacity of the bank employees that can provide quick and expected service to the customers which create operating benefit per employee and higher ROA for the bank. In this manner, it is fundamental to assess the benefit of banks in terms of their employee's efficiency. (Chaturvedi & Sharma, 2012) assesses the financial position of Punjab national bank and central bank of India in terms of their employees. The study found since of the execution of each employee the efforts of the chosen banks in expanding their viability in the selected research period from 2002 to 2011.

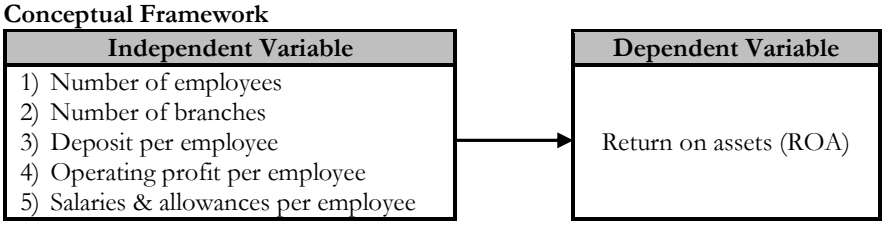
**$H_5$**: there is a significant relationship between operating profit per employee and bank performance.

According to Chompukum (2011), the performance of banks depends on financial remuneration, employees' satisfaction, and effective monitoring. Moreover, the Board of Directors has to motivate workers by rewarding them for their effort. Similarly, Al-Zahrani and Almazari (2014) stated, that there is a significant positive relationship between monetary performance and successful HRM practices from the research on

Saudi banks. Subsequently, the earlier researchers also show a positive effect of HRM practices on bank financial performance (Li et al., 1997; Quresh et al., 2010; Jelena et al., 2013; and Hussain & Shahzad, 2014).

**$H_6$**: there is a significant relationship between salaries & allowances per employee and bank performance.

**Figure 1**
**Conceptual Framework**




## III. RESEARCH METHODOLOGY

For this study, we used annual reports and corporate governance statements of sample banks from 2014-2018. Here we used 20 private limited banks which are listed on Dhaka stock exchange (DSE). We found most sample banks are A category only one bank found as Z category in Bangladesh, and these banks have selected randomly.

**Table 1**
**Sample Selection**

| Sl. No | Company Name | Company Symbol in DSE | Listing Year in DSE | Category in DSE |
|---|---|---|---|---|
| 1 | Social Islami Bank Limited | SIBL | 2000 | A |
| 2 | First Secutity Islami Bank Limited | FIRSTSBANK | 1984 | A |
| 3 | Al-Arafah Islami Bank Limited | ALARABANK | 1998 | A |
| 4 | AB Bank Limited | ABBANK | 1983 | Z |
| 5 | Brac Bank Limited | BRACBANK | 2007 | A |
| 6 | Bank Asia Limited | BANKASIA | 2004 | A |
| 7 | City Bank Limited | CITYBANK | 1986 | A |
| 8 | United Commercial Bank Limited | UCB | 1986 | A |
| 9 | Mutual Trust Bank Limited | MTB | 2003 | A |
| 10 | Dhaka Bank Limited | DHAKABANK | 2000 | A |
| 11 | One Bank Limited | ONEBANKLTD | 2003 | A |
| 12 | Shahjalal Islami Bank Limited | SHAHJABANK | 2007 | A |
| 13 | Mercantile Bank Limited | MERCANBANK | 2004 | A |
| 14 | Dutch Bangla Bank LImited | DUTCHBANGL | 2001 | A |
| 15 | NCC Bank Limited | NCCBANK | 2000 | A |
| 16 | Jamuna Bank Limited | JAMUNABANK | 2006 | A |
| 17 | Standard Bank Limited | STANDBANKL | 2003 | A |
| 18 | IFIC Bank Limited | IFIC | 1986 | A |
| 19 | Premier Bank Limited | PREMIERBAN | 2007 | A |
| 20 | Southeast Bank Limited | SOUTHEASTB | 2000 | A |

Source: Dhaka stock exchange, Bangladesh.

Insert Table 2 here.

Statistical Model:

$$ROA_{it} = \beta_0 + \beta_1 NU\_E_{it} + \beta_2 NU\_B_{it} + \beta_3 DE\_PE_{it} + \beta_4 OP\_PE_{it} + \beta_5 S\&A\_PE_{it} + \varepsilon_{it} \quad \text{..... 1}$$

Where, $\beta_0$= intercept; $\beta_1$, $\beta_2$, $\beta_3$, $\beta_4$, and $\beta_5$= variables' coefficients; $\varepsilon$= error term; subscript i= bank and subscript t= year.

**Table 2**
**Summary of the Operationalization of the Variables**

| | Acronym | Operationalization |
|---|---|---|
| **Dependent Variable:** | | |
| Return on Assets | ROA | The ratio of income to total assets |
| **Independent Variables:** | | |
| Number of Employees | NU_E | Total number of employees working on a bank |
| Number of Branch | NU_B | Total number of branches of a bank |
| Deposit per Employee | DE_PE | Ratio of total deposits to number of employees of a bank |
| Operating Profit per Employee | OP_PE | Contribution of every employee on operating profit of a bank |
| Salaries & Allowances per Employee | S&A_PE | Ratio of total salaries & allowances to number of employees of a bank |

## IV. RESULTS AND DISCUSSION

**Table 3**
**Descriptive Statistics**

| | ROA | NU_E | NU_B | DE_PE | OP_PE | S&A_PE |
|---|---|---|---|---|---|---|
| **Mean** | 0.9636 | 2819.19 | 120.33 | 71.0854 | 2.2739 | 0.9869 |
| **S. D.** | 0.4101 | 1477.14 | 25.002 | 22.594 | 0.7841 | 0.2220 |
| **Minimum** | 0.01 | 1350 | 77 | 19.5 | 0.89 | 0.45 |
| **Maximum** | 2.02 | 8195 | 187 | 129.42 | 4.25 | 1.35 |
| **Observations** | 100 | 100 | 100 | 100 | 100 | 100 |

Table 3 shows descriptive statistics for 100 observations of the dependent and independent variables. The table describes the mean value for the following variables such as return on assets, number of employees per branch, number of branches of banks, deposit ratio per employee, operating profit per employee, and salaries & allowances per employees are respectively 0.9636, 2819.19, 120.33, 71.0854, 2.2739 and 0.9869. Among variables, the highest standard deviation is 1477.149 denotes the number of employees of banks, and the lowest standard deviation is 0.22, which comes from the section of salaries & allowances per employees.

**Table 4**
**Correlation Analysis**

| | ROA | NU_E | NU_B | DE_PE | OP_PE | S&A_PE |
|---|---|---|---|---|---|---|
| **ROA** | 1.0000 | | | | | |
| **NU_E** | 0.1555 | 1.0000 | | | | |
| **NU_B** | -0.1572 | 0.6288 | 1.0000 | | | |
| **DE_PE** | -0.3961 | -0.7048 | -0.1050 | 1.0000 | | |
| **OP_PE** | 0.0122 | -0.1660 | 0.1717 | 0.5401 | 1.0000 | |
| **S&A_PE** | -0.0770 | -0.4109 | -0.1923 | 0.5385 | 0.0873 | 1.0000 |

The Pearson correlation matrix in Table 4 explains that "total number of branches of a bank" (-0.1572), "total deposit per employee ratio" (-0.3961), "contribution of per employee on operating profit of a bank" (-0.0122) and "the average salaries & allowances per employee of a bank" (-0.0770) have negative correlation with banks "return on asset". On the other hand, the variable "number of employee per bank" (0.1555) positively correlates with "return on asset".

Therefore, despite the number of employees available at the selected banks, they are not efficiently utilized which is significantly inconsistent with the bank's return on assets.

**Table 5**
**Test of Normality**

| Skewness / Kurtosis tests for Normality | | | | | |
|---|---|---|---|---|---|
| | | | | ----- Joint ----- | |
| **Variables** | **Obs.** | **Pr (Skewness)** | **Pr (Kurtosis)** | **Adj. Chi2(2)** | **Prob>Chi2** |
| **ROA** | 100 | 0.0983 | 0.5337 | 3.21 | 0.2014 |
| **NU_E** | 100 | 0.0000 | 0.0770 | 16.68 | 0.0021 |
| **NU_B** | 100 | 0.0789 | 0.3652 | 4.02 | 0.1341 |
| **DE_PE** | 100 | 0.1650 | 0.0269 | 3.96 | 0.1101 |
| **OP_PE** | 100 | 0.0183 | 0.6740 | 5.56 | 0.0621 |
| **S&A_PE** | 100 | 0.0607 | 0.1725 | 5.27 | 0.0717 |

Skewness/kurtosis tests are measured to find out the normality in the descriptive part of data, and which is significantly affected by the sample size of the population (Subat et al., 2020). Skewness/kurtosis tests for normality in Table 5 describe that all the variables follow normal distribution (>0.05) except the variables "number of employee per bank".

**Table 6**
**Pooled OLS Regression Analysis**

| Dependent Variable-ROA | | | | | | |
|---|---|---|---|---|---|---|
| **Variables** | **Coef.** | **Std. Err.** | **t-Statistics** | **P>\|t\|** | **Hypothesis** | **Status** |
| **NU_E** | -.872434 | .447854 | -1.95 | .054* | $H_1$ | Supported |
| **NU_B** | -.360017 | .638273 | -0.56 | .574 | $H_2$ | Not Supported |
| **DE_PE** | -1.2654 | .215529 | -5.87 | .000*** | $H_3$ | Supported |
| **OP_PE** | .287677 | .056309 | 5.11 | .000*** | $H_4$ | Supported |
| **S&A_PE** | .587962 | .189202 | 3.11 | .002*** | $H_5$ | Supported |
| **CONS_** | 8.76905 | 1.51477 | 5.79 | .000*** | | |
| **R-squared** | .3864 | | | | | |
| **Adj. R-squared** | .3527 | | | | | |
| **F-Stat (5,94)** | 11.84 | | | | | |
| **Prob.>F** | .0000 | | | | | |
| **Root MSE** | .3297 | | | | | |

Notes: *, **, and *** indicate level of significance at 10%, 5% and 1% respectively.

Pooled OLS regression method is used without comparing data between cross-sectional and time-series views (Hidayat & Abduh, 2012). Table 6 shows the result of Pooled OLS regression model for the dependent and independent variables. Adjusted R square value concludes the overall 35% variability of the constructed model.

The regression model concludes that the variables 'number of branches of a bank' are insignificant (>0.05) compared to the dependent variable, whereas the 'operating profit per employee' is significant at a 99% confidence interval. On the other hand, the rest of the variables are significantly related with the dependent variable at 5% and 10% level of significance.

Since the pooled OLS regression model doesn't discriminate the cross-sectional view of the data, it might create heterogeneity problems also. It doesn't make any assumptions of individual differences in each variable.

Insert Table 7 here.

According to Curto and Pinto (2011), the decision regarding instability among the regression coefficients can be found only when the OLS estimator strongly estimates the regressor correlated with all the explanatory variables. To broadly define his opinion, we

can consider that the constructed variables have multicollinearity problem which is a significant concern in a linear regression model (Belsley, 2006). So, to find out the multicollinearity problem, variance inflation factor (VIF) test is applied to the selected explanatory variables (Curto & Pinto, 2011; Al-Malkawi et al., 2018) where a the standard level is considered any number less than 10 (Belsley, 2006; Hapsari et al., 2016).

**Table 7**
**Variance Inflation Factor (VIF)**

| Variable | VIF | 1/VIF |
|---|---|---|
| **DE_PE** | 5.76 | 0.173692 |
| **NU_E** | 5.74 | 0.174353 |
| **NU_B** | 2.77 | 0.361133 |
| **OP_PE** | 1.78 | 0.563146 |
| **S&A_PE** | 1.61 | 0.621819 |
| **Mean VIF** | 3.53 | |

Considering the following discussion, we have applied VIF test for finding whether any multicollinearity problem exists in our constructed model which is shown in Table 7. We have found that all the explanatory variables available in our model are free from multicollinearity problem as VIF values of those variables are less than 10.

**Table 8**
**Result of Diagnostic Test**

| Dependent Variable ROA | | | |
|---|---|---|---|
| **Test** | **Hypothesis** | **Test Statistic** | **Probability** |
| **Heteroskedasticity; Breusch-Pagan Cook-Weisberg** | $H_0$: constant variance | $X^2$= .02 | .8814 |
| **Serial correlation; Wooldridge's serial correlation** | $H_0$: no first order serial correlation | F(1,19)= 19.787 | .0003*** |

Breusch-Pagan Cook-Weisberg's statistics are used to measure the heteroskedasticity problem of the model's variable related to one or more than one indicator variable. (Williams, n.d.) Breusch-Pagan Cook-Weisberg's result in Table 8 concludes no heteroskedasticity problem (P>0.05) in our developed model.

Wooldridge's serial correlation in Table 8 concludes that the model stands first-order serial correlation as the F-statistics is found as highly significant at 5% level of significance. Therefore, to check the major differences of serial auto correlation problem in the constructed model, the FGLS method is constructed in Table 8.

**Table 9**
**FGLS Regression for Correcting Panel Specific AR (1) Disturbance**

| Dependent Variable-ROA | | | | | | |
|---|---|---|---|---|---|---|
| **Variables** | **Coef.** | **Std. Err.** | **Z-Statistics** | **P>\|Z\|** | **Hypo-thesis** | **Status** |
| **NU_E** | -.872434 | .43421 | -2.01 | .045** | $H_1$ | Supported |
| **NU_B** | -.360017 | .61882 | -0.58 | .565 | $H_2$ | Not Supported |
| **DE_PE** | -1.2654 | .20896 | -6.06 | .000*** | $H_3$ | Supported |
| **OP_PE** | .287677 | .05459 | 5.27 | .000*** | $H_4$ | Supported |
| **S&A_PE** | .587362 | .18363 | 3.21 | .001*** | $H_5$ | Supported |
| **CONS_** | 8.76905 | 1.4686 | 5.97 | .000*** | | |
| **Wald Chi2 (6)** | 62.96 | | | | | |
| **Prob>Chi2** | .000 | | | | | |

Notes: *, **, and *** indicate level of significance at 10%, 5% and 1% respectively.

FGLS estimators can improve the efficiency of ordinary least square methods (Zou et al., 2017) because GLS estimators directly take account of heteroscedasticity,

cross-sectional and serial correlation estimators (Bai et al., 2021). Therefore, the FGLS Regression method is constructed in Table 6 to compare whether there is any significant gap in the Pooled OLS method.

FGLS estimators in Table 9 describe that "number of branches of a bank" is insignificant compare to return on asset and other variables are significant, which is exactly the same as the Pooled OLS estimator in Table 6. To conclude, it can be mentioned here that the OLS Regression method is strong enough to describe the relationship between dependent and independent variables.

## V. CONCLUSION

This study relates to finding out the results of human resource contribution in terms of a bank's profitability. We have chosen the banking sector of Bangladesh because this sector has employed a significant number of human resources over the last few years. The results conclude that the number of branches available is insufficient to meet the demand created to achieve the highest possible financial return. Also it is acknowledged that excessive focus on goal-oriented banking activities rather than efficient banking practices. Therefore, we suggest that practitioners pay more attention to staff efficiency and increase branch banking activities to ensure maximum financial returns.

However, the factors discussed in the following study are some limitations in our current study that are recommended to be included in future research. For example, the various qualitative characteristics of human resources (e.g., education, work experience, etc.) are significantly important for measuring an organization's financial performance, which is missing in the present study. Also, this study is limited to small sample size and short study time, which may be considered in subsequent studies.

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