



Efficiency & Profitability of Islamic Banking in Pakistan

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ABSTRACT

This research aims to compare the efficiency and profitability of Islamic Banks (IBs) and Islamic branches of Conventional banks (IBBs) for the period of 2015-2024 by using a non-parametric linear program Data Envelopment Analysis (DEA) in Pakistan. Technical Efficiency, Pure Technical Efficiency and Scale efficiency is measured to find out the performance and trends of physical resources, managerial skills and size of DMUs (Decision making units). Inputs (Total assets, Number of employees and operating cost) and outputs (net profit, deposits and ROE) are developed on the basis of intermediation-Cost Revenue approaches. The finding of this study shows that Full-fledged Islamic banks (IBs) are performing better in term of efficiency and profitability due to institutional autonomy, Strategic management orientation and scale efficiency. It also emphasizes the need to provide the Islamic windows/branches with strategic and operational independence to serve as similar to Islamic Banks in Pakistan.

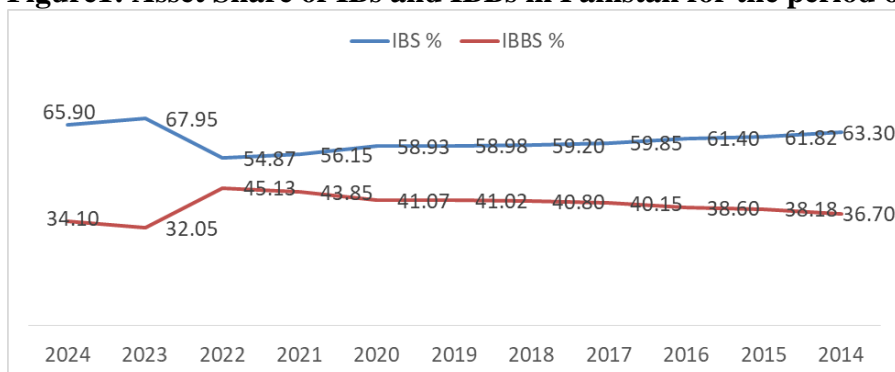


Introduction

The development of an economy is directly related with the banking sector of that economy (Milojević & Redzepagic, 2021). Banking is used by economies since ancient civilization like Mesopotamia in replacement of grains and silver during trade. However, with the passage of time structure of banking was improved during 12th to 15th century (Challoumis & Eriotis, 2025). First formal bank was introduced in late 16th century. In 19th century, Muslim economists introduced banking with Islamic laws and Sharia (Hotori, Wendschlag, & Giddey, 2022). The origin of this banking was trade and business done in the era of last Prophet (PBUH). The basic difference of

Conventional Banking and Islamic bank is Riba-Interest which is prohibited in Islamic laws (Malik, Ul Haq, & Khan, 2024). However, Financial system is also required for a Muslim economy where profit and risk are shared as per Islamic Laws and Sharia (Anjum, 2022). The Industry of Islamic Banking is growing in term of size day by day and its growth is systematic. Islamic banking's assets increased from USD 1.3 trillion in 2012 to USD 1.76 trillion in 2018 and expected to be reach about USD 2.175 trillion by 2024 (Hassan, Aliyu, Saiti, & Abdul Halim, 2021). Many economists suggest to adopt structure and rules of Islamic laws based on zero interest rate for stable growth after the global financial crises (Fitria & Maulana, 2025). Furthermore, During and after the financial crises of 2008, High Return on Assets ROA was observed in Islamic Banks as compare to conventional banks (Albaity & Rahman, 2021). Some research's also shown that Islamic banks are less efficient and profitable due to their working structure of selling non-debt instruments, relying on central bank and have enough liquid cash in hand. They are earning less margin of profit due to these restrictions (Wicaksono, Syihabuddin, Salleh & Huda, 2024). Full-fledged Islamic Banking and Islamic branches of conventional banks are dual appearance of the Islamic banking system which can be attributed to the goal of offering service differentiation to serve the needs of a client of various religious affiliations and socioeconomic backgrounds (Foglie, 2023). As Islamic banks has a competition in market for their approaches and structure with a well-established banking model. In contrast to that Islamic Windows were facilitated by their parent bank i-e Conventional Bank. Islamic banks have to work on two dimensions, first is Shariah and other is Stability. However, Islamic windows operate through standard metrics which sometimes does not follow hundred percent Islamic law. The clients of Islamic banks are more focused on sharia and religion than valuable features and smooth facilities (Kamaruddin, Safab & Mohd, 2008). This twofold Islamic banking industry has split the Muslims customers into two tiers. In Pakistan, Islamic Banking was introduced in 2004 by Meezan bank and Islamic windows were also introduced at the same time (Ali, 2014). Asset shares of Islamic banks and Islamic branches of Conventional banks was observed in last decade and it is found that till 2022 it is closely related to each other. Suddenly, Asset shares of Islamic banks rise to 67.95% in 2023 which was 54.87% in 54.87% and share of IBBs turns to 32.05% in 2023 from 45.13%. (Figure-1) State Bank of Pakistan bulletin 2024. Although both banks are providing Islamic services to the customer, still there is a considerable difference between the asset size. There are enough studies in which effectiveness of Islamic banks and conventional banks was compared however no study is there to investigate the performance of Islamic banks (IB) and Islamic branches (IBB) of conventional banks specially in Pakistan. All previous studies have either worked on conventional banks & Islamic banks individually or comparison of these two. This paper adds the literature on efficiency and profitability analysis of full-fledged Islamic banks and Islamic branches of conventional banks in Pakistan.

Figure1: Asset Share of IBs and IBBs in Pakistan for the period of 2014 to 2024



Literature Review

Many researches have been done on their efficiency, effectiveness and profitability since Islamic banks have started their operations, and also the comparison of IB's (Islamic Banks) and CB's (Conventional banks) (Péran & Sdiri, 2024). Efficiency Analysis of Islamic banks in MENA countries were executed in 2007-2012 by using DEA technique. Inefficiency was found while measuring scale efficiency which was due to inefficient pure technical efficiency. They further elaborate the banks in two subsamples. GCC and Non GCC countries and it was discovered that GCC Islamic banks efficiency is stable even in global financial crises of 2007-08. Ellouz (2024). Economic growth and performance of Islamic banks of five different countries was measured by using CAMEL model & GMM technique and quarterly data for the period of 2014-2018. The findings shows that Profitability has endogenous effect by ROE which also effect financial and economic growth (Abdelmoneim & Yasser, 2023). Moreover, Morshed and (2024) used ratio analysis for efficiency comparison of Islamic banks and Conventional banks. Khokhar, Hassan, Khan, Amin, and Center (2020) revealed the high profitability and unpredictable earning of IB's by using SFA (Stochastic Frontier Analysis) in a study of Malaysia either they have less variety of products as compare to CBs. Chokri et al. (2018) has used 10 Islamic and conventional banks from ten different countries for the period of 2012-2014 by using regression model and found mixed results. ROA and ROE were used to regress the data and performance is positively correlated with CTA (Total Equity to total assets). Furman (2025) assessed efficiency of 19 public, private and foreign CB's conventional banks and IB's Islamic Banks in Pakistan for the period of 2017-2021 by using two approaches. A non-parametric DEA technique Data Envelopment Analysis and Ratio analysis. Capital and fund are treated as inputs whereas, Deposits, Investment portfolio and lending are taken as output. Technical, pure technical and scale efficiency is measured by using inputs and outputs. The findings show that CBs perform better than IB's in both techniques. Another study was there for profitability of Islamic banks and conventional banks of Pakistan by using logistics regression which is unusual option for this type of analysis from 2007 to 2016. Return on assets (ROA) was converted into a binary format, giving profitable banks a value of "1" and non-profitable banks a value of "0," The results showed that interest ratio, bank size, and operating efficiency all had a big impact on bank profitability and ROA was positively correlated with bank size and adversely correlated with interest ratio and operating efficiency (Iqbal & Khan, 2025).

Data Envelopment Analysis (DEA) analysis of profitability has gained more and more popularity over the past few years, especially in banking and financial services. In recent developments, profitability is specifically included as an aspect of efficiency in response to the necessity to look beyond minimizing costs and resource placement to the capacity of banks to make sustainable profits. This transition is pointed out in multiple works. An example of this was by Eken, Kale, and Analysis (2010) who compared a DEA model based on production with a model based on profitability of Turkish branch banks. Even though the production model described the generation of loans and deposits, the profitability model measured directly the effectiveness with which branches converted inputs (e.g. staff and expenses) to profits, revealing the versatility of DEA as a profit benchmarking tool. On the same note, Kweh, Lu, Tone, and Liu (2024) adopted this model in 287 banks in the United States with the dynamic network DEA model. Their results showed that DEA can explain several inputs and outputs at a time, thus estimating both the resource management efficiency and the profitability efficiency. This method, in contrast to basic financial ratios, allows a researcher to determine the best performers and how resources are turned into profits in diverse banking institutions. In another study of efficiency of foreign banks with Pakistan banks for the period of 2006-2017 by using DEA analysis (Technical and pure technical), domestic

banks were found more efficient in term of scale. Such findings suggest the strong correlation of profit with efficiency (Zhu et al. 2021).

Methodology

This research used Comparative analysis of full-fledged Islamic banks (IB's) with Islamic branches of conventional banks IBB's for the period of 2015-2024. Quantitative approach and secondary data are used. Data is collected from state bank of Pakistan website and bank website. Six Islamic Branches of conventional banks (Table-1) are selected to compare it with Islamic banks. IBB's are selected on the basis of wider network of branches and same asset size of banks. The framework combines descriptive analysis by using efficiency and profitability metrics and DEA (Data Envelopment Analysis) by using cost revenue-intermediation approach in its inputs and outputs to measure the efficiency and profitability of banks.

Table 1: List of Banks

Islamic Banks	Islamic Branches of Conventional Banks
Al Baraka Bank (Pakistan) Limited	Allied Bank Limited
Bank Islami Pakistan Limited	Bank Al Habib Limited
Dubai Islamic Bank Pakistan Limited	Habib Bank Limited
Faysal Bank Limited	Habib Metropolitan Bank Limited
Meezan Bank Limited	Bank Alfalah Limited
MCB Islamic Bank Limited	United Bank Limited

Data Analysis

The framework for assessing the efficiency and profitability of full-fledged Islamic banks and Islamic branches of conventional banks in Pakistan over the period 2015 to 2024 combines descriptive analysis and efficiency measurement by Data Envelopment Analysis. EViews is used for data analysis.

Descriptive Analysis

Mean, Median and standard deviation of selected banks described the trends of financial operations of IBs (Islamic banks) and IBBs branches of conventional banks in Pakistan. These statistics helps the researcher to identify the differences and uncommon events in the data during the period. They roughly tell banks' profitability and efficiency in comparison. Profitability metrics are defined by ROA, ROE and NFM while CIR, ATR and NPF are measured as the part of efficiency metrics (Blasig, 2017; Qureshi, Abbas, & Accounting, 2019; Salami, Adeyemi, & Society, 2015).

Table 2: Descriptive Analysis

Profitability Metrics	Formulas
Return on Assets (ROA)	$\text{Net Income} / \text{Total Assets} \times 100$
Return on Equity (ROE)	$\text{Net Income} / \text{Shareholders' Equity} \times 100$
Net Financing Margin (NFM)	$\text{Net Interest Income} / \text{Earning Assets} \times 100$
Efficiency Metrics	
Cost to Income Ratio (CIR)	$\text{Operating Expense} / \text{Operating Income} \times 100$
Asset Turnover Ratio (ATR)	$\text{Net Sales} / \text{Total Assets}$
Non-Performing Financing Ratio (NPF)	$\text{NPL} / \text{Total Loans} \times 100$

DEA Analysis

Data Envelopment Analysis is one of the non-parametric way of measuring efficiency and profitably by DMU (Decision Making Units) for financial sector like banking (Charnes, Cooper, & Rhodes, 1978). It offers dimension for efficiency measurement by converting inputs into outputs other than ratio analysis (Asmild, Paradi, Reese, & Tam, 2007). Data Envelopment Analysis is also effective to investigate profitability by using Total Assets, Net Profit, Operating Cost as inputs. It also helps the researcher to identify the efficiency and profitability by using TE (technical efficiency), PTE (pure technical efficiency) and SE(scale efficiency), which gives evidence on whether reduced profitability is restricted by scale inefficiency or managerial inefficiency (Eken et al., 2010).

Weighted average of output to weighted average of inputs is the ratio obtained for efficiency in Data Envelopment analysis. (Esmaeeli, Amiri, & Taghizadeh, 2023) Initially CRS (Constant return to Scale) assumption was used in which increase or decrease in output was the result of relative increase or decrease in inputs but it was not same of different sizes of banks. Dalei, Joshi, and Engineering (2020) introduce Variable Returns to Scale (VRS) which explains Pure technical and scale efficiency of Decision-Making Unit (DMU) which is each sample bank. Hadad, Friedman, Rybalkin, and Sinuany-Stern (2013) and Li, Liang, Cook, and Zhu (2019) disclosed that some conditions of similarity need to be fulfilled by all DMU for making DEA and should generate comparable outputs and perform similar activities. Li et al. (2019) state that the sample size must be not less than what you get by multiplying the number of inputs and outputs which indicates that the sample must not be less than twice the total number of inputs plus outputs.

Three kinds of efficiency are supported by DEA model. Technical efficiency (TE) communicates how well DMU are workings by using physical resources like deposits, expenses, loan, income and expenses etc. This approach refers to CRS. Pure Technical efficiency (PTE) reflects the managerial performance only which is also known as VRS assumption. How effectively and efficiently managers and staff using their resources to attain the optimal utilization. Scale efficiency measures how bank is operating in optimal size of operations. It is calculated as ratio of TE to PTE (Ab-Rahim, Kadri, & Ismail, 2013; Bahrini, 2017; Mokhtar, 2008).

Further DEA model based on production approach, intermediation approach and Cost-Revenue approach from which researcher has to choose one according to DMU. Production approach is suitable for measuring efficiency of services only by using input and output like labor, capital, number of transaction or accounts, employee quantities and services. This type of approach is more appropriate for manufacturing and healthcare sector (Boďa, Zimková, & Restructuring, 2021). On the other hand, the intermediation approach is useful for financial intermediaries like banks and uses savers, borrowers, capital and labor as input and outputs (Fukuyama & Weber, 2015). The Cost-Revenue approach is its third approach which is used to measure profitability as well as efficiency and input and outputs used are net profit, operating cost, ROA Return on Asset and ROE Return on Equity. In view of above approaches and limitation to the data of financial institutions like Banks, we use intermediation (asset) and cost-revenue approach, suggested by (Gulati, Kumar, & Management, 2017).

Table 3: DEA Approach

Inputs	Outputs
Total Assets	Net Profit

Total Operating Cost	Total Deposits
Number of Employees	Return on Equity

The study used Total Assets, Total Operating Cost and Number of Employees as inputs, as they are fundamental to a bank's operations. This means that the inputs describe the size of the organization, how it is managed financially and the capabilities of its team. Conversely, the outcomes selected are Net Profit, Total Deposits and Return on Equity (ROE), each reflecting the bank's financial position, customer trust and shares returned to its stockholders. They allow us to fully understand how a bank performs regarding its earnings, share of the market and investment earnings. It is useful in this research because DEA is able to deal with different inputs and outputs at the same time and gives accurate results when sample size is small, as usual in specialized banking sector studies. The efficacy of DEA for measuring banks' efficiency has been proven in previous works by (Uddin, Akhtar, Qamar, Al Mughairi, & Quantity, 2025). Consequently, DEA gives this research a foolproof method to measure and compare the effectiveness of different banking methods within the same environment, understanding what needs to be improved for better results (Gulati et al., 2017).

The DEA in EViews by modelling each banks efficiency problem as a linear program using what is known as the approach of financial intermediation. DEA is non-parametric, A-type of efficiency approach using the LP to measure the effectiveness of each unit by determining the optimal combination of input and output elements (Alrafadi, Kamaruddin, Yusuf, & Science, 2014; Pasha, 2024). In particular the study types an EViews program (subroutine) that informs EViews the DEA objective (minimize θ inputs or maximize outputs) and the required constraints and tell EViews to use the Optimize command to solve the problem (Thomsen, Sandager, Logerman, Johanson, & Andersen, 2013). The optimize command in EViews is able to process any user-specified objectives and identify those values of the controls (weights) which optimize it.

Therefore, EViews will find the efficiency frontier solution to each DMU and display a technical efficiency value (θ or ϕ) in the range of 0 to 1. These efficiency scores (as well as slack/multiplier values in case they are required) we save as series in EViews, to be analyzed further. The alternative of an input or output orientation merely swaps which side of the LP is to be minimized or maximized according to standard DEA theory. All in all, the study adopt the suggested procedure of the DEA implementation: the study select the input/outputs using the intermediation and cost-revenue methodology and implement DEA linear programs solving them by the EViews optimization engine as described in the literature (Thomsen et al., 2013).

Results

Descriptive analysis is a statistical method used to summarize, describe, and interpret data. It helps detect patterns, trends, and outliers. It would help to compare Islamic Banks (IBs) and Islamic Branches of Conventional Banks (IBCBs) in Pakistan between 2015 and 2024, focusing on profitability, efficiency, and risk measures.

Descriptive Analysis of Islamic Banks and Islamic Branches of Commercial Banks

The study compares 120 samples of full-fledged Islamic Banks and Islamic Branches of Conventional Banks in Pakistan for profitability and efficiency. Islamic Banks perform better with

an average Return on Assets (ROA) of 0.95, compared to 0.68 of IBCBs. However, negative minimum values were recorded in both groups, indicating some years of net losses. Return on Equity (ROE) is a crucial profitability indicator, with Islamic Banks performing exceptionally well with a mean of 14.75 compared to IBCBs' 10.25. However, IBCBs have significantly lower ROEs, reaching a low level of -11.03, indicating higher equity-related performance risks. This trend aligns with Rizwan and Rabeea's (2021) findings that Islamic banks in Pakistan showed better earnings and asset quality between 2015-2019. The Net Financing Margin for financing activities reveals similar results for Islamic Banks (IBs) and Islamic Banks (IBCBs), with corresponding standard deviations of 0.65 and 0.74, respectively. Despite IBs having a narrow edge, performance diversity is more diverse among IBCBs. The Cost to Income Ratio (CIR), an indicator of operational efficiency, shows a lower value for Islamic Banks, with a mean CIR of 4.20 compared to IBCBs' 7.90 which is inconsistent with the studies of (Haider, Raza, Jameel, Pervaiz, & Review, 2019; Zarifi & Kakar, 2024). Islamic Banks (IBCBs) have an abnormal minimum CIR value of -33.89, indicating data aberrations or unusual income cost events. Their cost efficiency performance is inconsistent, with a large standard deviation of 13.42 compared to 5.65. The Asset Turnover Ratio (ATR) shows better performance in IBs, with a mean of 39.75 compared to 36.58. The Non-Performing Financing Ratio (NPF) of Islamic Banks is lower than conventional banks' branches, indicating better asset quality preservation. This greater variation in NPF to IBCBs (standard deviation of 3.90 compared to 2.35 in IBs) supports the relative blistered and credit risk issues in IBCBs. Historical parallels also show lower NPLs in Islamic banks, indicating enhanced risk management.

Table 4: (Descriptive analysis of IBs and IBBs for the period of 2015-2024)

		Islamic Banks			Islamic Branches of CB		
Variables	N	Min.	Mean	Std. Deviation	Min.	Mean	Std. Deviation
ROA	120	-0.32	0.95	0.72	-0.51	0.68	0.65
ROE	120	-3.68	14.75	9.1	-11.03	10.25	8.76
NFM	120	1.84	3.12	0.65	1.02	2.98	0.74
CIR	120	0.32	4.2	5.65	-33.89	7.9	13.42
ATR	120	13.19	39.75	11.82	15.16	36.58	10.25
NPF	120	1.34	4.5	2.35	0.73	7.12	3.9

Conclusively, the descriptive statistics show that full-fledged Islamic Banks in Pakistan have better records compared to Conventional Banks, are more profitable, cost-efficient, and less at risk of credit issues. These results suggest operational and managerial benefits of full Islamic banking models, but further inferential testing is needed for statistical significance.

DEA Analysis

The intermediation-Cost revenue framework of data envelopment analysis (DEA) involving inputs like deposits, labor, and physical capital to produce output in terms of loans, investments, and profits. This approach considers financial flows, performance measurements like deposits, operating costs, and profits, making it easier to analyze the entire financial institution. This method is particularly suitable for Islamic banks, where funding is based on profit sharing rather than interest-based methods. The intermediation method is a common method for determining bank efficiency and Cost Revenue approach is used to measure profitability.

Intermediation-Cost Revenue Approach – DATA ENVELOPMENT ANALYSIS (DEA) Results (2015-2024)

Table 5: Intermediation-Cost Revenue Approach - (2015-2024)

Years	Panel A Efficiency Measure of IBs				Panel B Efficiency Measure of IB's of CBs				Panel C Efficiency Measure of both banks			
	Min	Max	Mean	S.D	Min	Max	Mean	S.D	Min	Max	Mean	S.D
2015												
TE	0.742	1	0.87	0.064	0.622	1	0.75	0.064	0.714	1	0.826	0.056
PTE	0.816	1	0.928	0.056	0.676	1	0.788	0.056	0.756	1	0.868	0.056
SE	0.781	1	0.865	0.042	0.651	1	0.735	0.042	0.721	1	0.805	0.042
2016												
TE	0.793	1	0.931	0.069	0.653	1	0.791	0.069	0.733	1	0.871	0.069
PTE	0.733	1	0.861	0.064	0.603	1	0.731	0.064	0.673	1	0.801	0.064
SE	0.81	1	0.898	0.044	0.69	1	0.778	0.044	0.74	1	0.826	0.043
2017												
TE	0.724	1	0.82	0.048	0.6	1	0.69	0.048	0.664	1	0.76	0.048
PTE	0.762	1	0.888	0.063	0.642	1	0.768	0.063	0.76	1	0.848	0.044
SE	0.88	1	0.962	0.041	0.74	1	0.822	0.041	0.82	1	0.902	0.041
2018												
TE	0.767	1	0.903	0.068	0.647	1	0.783	0.068	0.712	1	0.838	0.063
PTE	0.832	1	0.952	0.06	0.692	1	0.812	0.06	0.772	1	0.892	0.06
SE	0.727	1	0.849	0.061	0.6	1	0.719	0.061	0.667	1	0.789	0.061
2019												
TE	0.858	1	0.95	0.046	0.718	1	0.81	0.046	0.798	1	0.89	0.046
PTE	0.794	1	0.882	0.044	0.664	1	0.752	0.044	0.734	1	0.822	0.044
SE	0.754	1	0.868	0.057	0.634	1	0.748	0.057	0.718	1	0.802	0.042
2020												
TE	0.738	1	0.858	0.06	0.608	1	0.728	0.06	0.678	1	0.798	0.06
PTE	0.783	1	0.879	0.048	0.663	1	0.759	0.048	0.704	1	0.818	0.057
SE	0.822	1	0.912	0.045	0.682	1	0.772	0.045	0.762	1	0.852	0.045
2021												
TE	0.783	1	0.875	0.046	0.663	1	0.755	0.046	0.733	1	0.829	0.048
PTE	0.842	1	0.944	0.051	0.702	1	0.804	0.051	0.782	1	0.884	0.051
SE	0.732	1	0.87	0.069	0.602	1	0.74	0.069	0.672	1	0.81	0.069
2022												
TE	0.832	1	0.93	0.049	0.692	1	0.79	0.049	0.772	1	0.87	0.049
PTE	0.76	1	0.876	0.058	0.63	1	0.746	0.058	0.7	1	0.816	0.058
SE	0.764	1	0.876	0.056	0.644	1	0.756	0.056	0.73	1	0.846	0.058
2023												
TE	0.703	1	0.837	0.067	0.6	1	0.707	0.067	0.643	1	0.777	0.067
PTE	0.742	1	0.87	0.064	0.622	1	0.75	0.064	0.714	1	0.826	0.056
SE	0.816	1	0.928	0.056	0.676	1	0.788	0.056	0.756	1	0.868	0.056
2024												
TE	0.79	1	0.876	0.043	0.67	1	0.756	0.043	0.692	1	0.82	0.064
PTE	0.793	1	0.931	0.069	0.653	1	0.791	0.069	0.733	1	0.871	0.069
SE	0.733	1	0.861	0.064	0.603	1	0.731	0.064	0.673	1	0.801	0.064

In DEA analysis, all the efficiencies ranges are from 0 to 1. If TE (Technical Efficiency) which is measured under CRS is near to 1 than performance of bank is efficient while using its physical

resources. If PTE (Pure technical efficiency) is near to 0 than the bank is considered inefficient to use its managerial resources under VRS. However, if it is near to 1 like 0.99 or 0.98 than banks are efficiently using their managerial resources. SE (Scale efficiency) is measured by using TE and PTE which explain the optimal size of banking operation. If the result is less than 1 its means that scale inefficiency is there and bank can optimize its operation by IRS (increasing return to scale) or DRS (Decreasing return to scale).

There is relative increase in TE from 0.87 to 0.931 in IBs and 0.75 to 0.791 in IBBs in 2016 which depict that banks are efficiently operating but little efficiency can be added to achieve the scale at 1. An extensive decline is there in 2017 in both TE of banks which reflect inefficiency of both banks in its operations. From 2018 to 2022, again an increasing trend in IBs and IBBs of Pakistan is there which shows that efficiency of banks increased in term of resources, profit and deposits. In 2023, a sudden decline was there in IBs and IBBs of Pakistan but performance is increased in 2024 in both banks. Conclusively, IBs perform more efficiently than IBBs in the whole period with reference to their deposits, profit, capital and labor which also enhance the profitability of Islamic banks. Managerial efficiency of banks which is measured by PTE is 0.928 for IBs which was quite efficient as compare to IBBs which is 0.75 in 2015. PTE for IBBs has a slight increase in 2020 from 0.752 to 0.759 which is again less than the IBs which is 0.882 in 2019 and 0.879 in 2020. The results found that Islamic banks are efficiently dealing their management resources as the most least PTE throughout the period is 0.861 which is higher than the highest score of PTE i.e 0.812 in 2018 for IBBs. Furthermore, the study found a significant decrease in Total Effectiveness (TE) in both segments, with Islamic Banks showing a positive managerial performance with some scale inefficiency. Islamic Branches of Conventional Banks (IBBs) were less efficient, particularly in SE (0.735), indicating a structural issue with scale of operation. Islamic Banks saw a significant increase in TE (0.931), but marginally dropped PTE (0.861) and SE was moderate (0.898). IBs has to face scale inefficiency throughout the period because of structural limitations, lack of dependence or non-optimal resources of allocation.

During the 10-year duration, the Islamic Banks beat Islam Branches of Commercial Banks (IBBs) on all the intertemporal efficiency dimensions: TE, PTE, and SE measured on the intermediation and cost Revenue basis. TE which also reflect the profitability of Islamic banks are good enough as compare to Islamic bank branches. With respect to managerial efficiency (PTE) as well as better fit to optimal scale of operations (SE) the Islamic Banks portrayed significantly high results. The findings of this study are quite consistent with the claims of Usman, Hussain, Khalid, Sheikh, and Rafiullah (2023) and Mustafa, Atta, Zahoor, and Zunaira (2022) according to which the Pakistani Islamic banks have a high level of technical efficiency when using Islamic banks in terms of the DEA framework specifically corresponding to the principles of the Islamic financial system. Moreover, the evidence provided by Abbas and Qaiser (2021) portrays the optimistic effect that an effective governance system like independent management and Shari a supervision has on the effectiveness of Islamic banks, especially scale level optimization (Muhiuddin, KM, Jahan, & Nusrat, 2020). Comparatively however, the performance of IBBs lagged behind across a group of banks in terms of being efficient on their scale a failure that is indicative of the structural and administrative limitations that is seen as a common pitfall in the literature on Islamic windows research (Ali et al., 2023; Iqbal, Muhammad, Kunst, & Robert, 2022).

Conclusion

The study aims to compare and evaluate the efficiency and profitability of full-fledged Islamic banks with the Islamic branches of conventional bank in Pakistan through DEA analysis for the period of 2015-2024. Cost revenue and intermediation approaches are used to detect profitability

and efficiency of selected DMUs in Data Envelopment model however profitability and efficiency metrics were developed by using ROA, ROE, NFM, CIR, ATR and NPF. Institutional autonomy, Strategic management orientation, scale efficiency and operational abilities have edge to Islamic banks to perform well as compare to Islamic branches of CBs. In continuation to these IBs played important role in extending Islamic Shria services and its operations. Structural Hierarchy is one of the limitations to IBBs in its managerial inefficiency. The paper is useful for regulators, bank managers and policy makers who are required to make reforms in operational ability and independence of Islamic banking windows of CB to make them strengthened in future. The results of this paper provide evidence-based decision making for researchers to conduct more studies with gaps in new dual banking model of Islamic banks. Advance techniques like SFA or panel regression can be used in future for studies along with large scale of banks for robust analysis.

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