Print ISSN: 2288-4637 / Online ISSN 2288-4645
doi:10.13106/jafeb.2021.vol8.no6.0437

The Efficiency of Human Resources Management During the Disruption and Pandemic Era: An Empirical Study of Indonesian Islamic Banks

M. Arief MUFRAINI[1], Murodi MURODI[2], Ahmad Tibrizi Soni WICAKSONO[3], Fauziah FAUZIAH[4], Faizul MUBAROK[5]

Received: February 20, 2021 Revised: April 20, 2021 Accepted: May 02, 2021

Abstract

Human resources are the main factor ensuring the efficiency of the company, especially in the middle of the disruption era and the Covid-19 pandemic. This research adopts the human resource efficiency approach to measure the performance of Indonesian Islamic banks that interact with each other within contextual issues of mega-merger policy in 2020. Samples were taken from twelve full-fledged Indonesian Islamic Banks from 2014 to 2019. The efficiency frontier analysis results show that most Islamic banks within the period of research are operating more on variable returns to scale basis, and only one bank has consistently been able to increase the output of financial intermediation performance proportionally for each additional input of human resources cost. The pooled regression test results on the three bank performance models show that allocation of human resource funds in Islamic banks tends to have more effect on increasing operational profits rather than the distribution of funds to the public through financing mechanisms or investment in Islamic securities. Based on verified models, more innovation in training employees and investing in training costs are needed for employees to have a deeper understanding of the nature of risk-profit of financing and investment activities of Sharia/Islamic banks. Highly skilled employees ensure the future promising performance of Islamic banks to deal with new global-normal.

Keywords: DEA, Panel Regression, Human Resources, Islamic Banking, Efficiency

JEL Classification Code: C23, G21, H21, O15

1. Introduction

Disruption brings drastic changes in the world of doing business and finance, it is newborn aspects for dynamic humanly financial life skill, ways that may overtly be applied in the future but forcedly should be started into practice for the present (Motlokoa et al., 2018; Tahir & Sajjad, 2013). Extraordinary changes caused by COVID-19 have enforced companies around the globe to accelerate the transition to digital business processes. Human resource management is at the heart of these transformations helping organizations to navigate in the vague present and unforeseeable future. HRM needs to manage people in companies during the crisis to enable business continuity and ensure work-life balance. Humans have always been complex and having to manage people has always been tricky. Now, the digital age has added even more complexity to human resource management, like the transparency of social media, the persistence of software updates, and the remoteness of international teams (Joshi et al., 2013; Muafi et al., 2017; Ozkan et al., 2017; Tampubolon, 2015; Yalama, 2013).

Asri (2017) stated that the competency of human resources in managing the Islamic banking Islamic business in Indonesia is still low. This means that the recruitment of employees adds cost to companies compared to the results obtained. of Islamic Banking. Thus to increase the scale of

[1]First Author and Corresponding Author. Lecturer, Faculty of Economics and Business, Universitas Islam Negeri Syarif Hidayatullah Jakarta, Indonesia [Postal Address: Jl. Ir. H. Juanda No. 95, Ciputat, South Tangerang, Banten, 15412, Indonesia]
Email: ariefmufraini@uinjkt.ac.id
[2]Lecturer, Faculty of Da'wah and Communication Sciences, Universitas Islam Negeri Syarif Hidayatullah Jakarta, Indonesia. Email: murodi@uinjkt.ac.id
[3]Lecturer, Faculty of Economics, Universitas Islam Negeri Maulana Malik Ibrahim Malang, Indonesia.
Email: tibrizisony@uin-malang.ac.id
[4]Researcher, Badan Litbang dan Diklat, Kementerian Agama RI, Indonesia. Email: fauziahmz2606@gmail.com
[5]Lecturer, Faculty of Economics and Business, Universitas Islam Negeri Syarif Hidayatullah Jakarta, Indonesia.
Email: fayzmubarok@uinjkt.ac.id

the Islamic banking business in Indonesia, the recruitment of new employees should be accompanied by an increase in the cost of training and education per worker. Training and education lead to improved profitability and/or more positive attitudes toward profit orientation, improves job knowledge and skills at all levels of the organization, improves the morale of the workforce, and helps the employees identify with organizational goals. Islamic banking needs to conceptually deconstruct human resource quality by seizing new methods to dealing with conditions (Miah & Uddin, 2017). The Islamic banking industry needs qualified human resources who have multi-knowledge and multi-skills. Qualified human resources are needed by the Islamic banking industry to manage the banks to improve the profit of the Islamic banking industry (Yusuf, 2015). For banking, the importance of human resource management has grown manifold because of the nature of the banking industry, which is mainly service-based. The management of people in the organization along with handling the financial and economic risks at the wider level is the most potent challenge in front of the Islamic banking industry in any given time frame.

Joshi et al. (2013), Poh et al. (2018), and Sharma and Mani (2012) stated that the role of financial and physical assets owned by a firm is losing its importance in an economy that is dominated by the service sector. Intangible assets that create value for the firm are quickly gaining importance. As a result every organization now finds logic in measuring, valuing, and reporting its intangibles, as they also have become one of the important performance indicators and a strategy to gain competitive advantage. Globalization, deregulation, and advances in information technology during the last 15 years have brought about significant changes in the operating environment for the banks (Khaldi & Hamdouni, 2011; Yalama, 2013). Zuhroh et al. (2015) stated that human capital is getting very much importance in this knowledge era. The banking sector, in general, offers an ideal area of intellectual capital research because the business nature of the banking sector is intellectually intensive. The share of intangibles as a proportion of the total assets showed a tremendous increase in recent years (Octrina & Mariam, 2021). Furthermore, Albertazzi and Gambacorta (2009) stated that efficient human resource cost management has a positive relationship with workers' ability to carry out the bank function. Banks need to increase the amount of capital accompanied by efforts to enrich human resource capacity (Bhuiyan et al., 2017; Elahi & Shahaei, 2010; Khan, 2013; Nienhaus, 2013).

Chan (2009) stated that there is a significant impact of intellectual capital on the performance of a particular organization. El-Seoudi et al. (2012) Islamic HRM suggests that employees are not just a servant, they are valuable assets, and they should be considered as a source of powerful and dynamic workforce assets. Indeed, Islamic human resources management practices emphases on the development of employee's individual skills, abilities, attitudes, and job knowledge to contribute to accomplishing organizational objectives (Masum et al., 2016). Dewa and Zakaria (2012) and Nabi et al. (2017) conveyed that training is another vital for the employees' motivation human resources management aspect. Islamic banks that promote quality, training and development programs must be planned, have a broad application, be group-oriented, and must place emphasis on the quality of work-life rather than only on productivity issues. Islamic banks that want to promote a culture of continuous improvement need to invest heavily in training and education. A cultural change is something difficult and not something that takes place overnight. (Aktar et al., 2012; Al-Tamimi, 2018; Amin et al., 2019; Iqbal, 2013). Regular training would improve the quality of human capital (Imran & Tanveer, 2015; Muafi et al., 2017; Rowland et al., 2017).

Abusharbeh and Nazzal (2018) stated motivation aims to empower and liberalize people to enhance their entrepreneurial abilities to recognize the interactions between humans and their abilities to work. (Almahdi, 2017; Olubusayo et al., 2014). Shantha (2019) stated that every organization considers employees as a valuable asset for the organization. Employees play a major and valuable role in a company's success. Today's business world is very competitive in nature. It changes suddenly and makes more changes to organizations. Therefore, the organization should have well-performed employees to face those challenges in the competitive business world. To achieve this purpose, the organization should have to give effective training to their employees. Employees can enhance their knowledge, skills, and attitudes through effective training. (Motlokoa et al., 2018; Tahir & Sajjad, 2013).

Based on those various research findings and the phenomenon of open competition among Islamic banks and conventional banks for such disruption era and early pandemic strikes, this study aims to analyze the efficiency of input and output variables of Islamic banking human capital cost that might boost the performance of the intermediary function.

2. Literature Review

Human capital management is a set of practices related to people resource management. These practices are focused on the organizational need to provide specific competencies and are implemented in three categories: workforce acquisition, workforce management, and workforce optimization. (Hall, 2015; Mestieri et al., 2017; Ngwakwe & Masuluke, 2018). Macky and Johnson (2000) stated that business owners need employees that are able to get the job done because employee performance is critical to the overall success of the company. Business leaders need to understand the key benefits of employee performance so that they can develop

consistent and objective methods for evaluating employees (Sillup & Klimberg, 2010). To keep employees satisfied, boost morale, and remain competitive, employers need to be aware of the need for continual employee training and education. One of the most important reasons to offer further training and education to employees is to ensure that work skills stay current (Cermeli, 2004; Kreitner et al., 2007).

Prajogo and Oke (2016) examine the effect of human capital (HC) on service innovation advantage (SIA) and business performance (BP) in service sector firms, and how external environmental factors influence these relationships. The overall findings of this study show that HC is positively related to the creation of value or SIA which in turn results in rent generation for firms. The results further show that the effect of SIA on BP is influenced by environmental dynamism and competitiveness with dynamic environments enhancing the effect while competitive environments weakening it. Mestieri et al. (2017) conveyed that it is crucial for Islamic banking to combine the education, experience, and talents of employees to produce effective and efficient performance (Isnurhadi et al., 2021; Obeidat, 2016). Human capital is not solely the people in organizations— it is what those people bring and contribute to organizational success. Human capital is the collective value of the capabilities, knowledge, skills, life experiences, and motivation of an organizational workforce. Sometimes human capital is called intellectual capital to reflect the thinking, knowledge, creativity, and decision-making that people in organizations contribute. (Abosede et al., 2018; Sowunmi et al., 2015).

With the new normal of the pandemic strike, banking should place the safety and health of employees above business interests. Banks need to prepare a workplace setting that meets health protocol standards and rearrange job functions that can be done remotely or even transferred to third parties. Ideally, banks also provide reminders to employees to always pay attention to and follow standard health protocol procedures at work and personal activities outside the company (Srairi, 2010). Within talented human resources, banking performance will be better off. To improve banking efficiency, human development is also necessary. It is hoped that the improvement of the quality of human capital will also contribute to the efficiency of Islamic banking

Majeed and Zanib (2016) explain that optimal and efficient resource management affects Islamic banking's efficiency (Tampubolon, 2015). Obeidat (2016) explained that competency development and training aim to increase employee knowledge, skills, and professionalism. Development is not limited to operational factors and product innovation but also emphasizes moral values to carrying out the intermediation function based on Sharia principles. Saruchi et al. (2019) stated that Islamic banking's financial performance in South Asia, Southeast Asia, North Europe, South Africa, and the Middle East is very dependent on the level of human resource efficiency. Therefore, managers improve employee capabilities through training, education, and participation in competency tests. Shawtari et al. (2015) believed that efficiency is a condition that needs to be achieved by every financial institution.

The measurement of efficiency in this research was introduced by Fitzsimons (2015), it is adopted from the theory of financial intermediation developed by Gurley and Shaw (1955). The theory stated that to improve the performance of financial intermediaries, management must provide a sufficient budget to have the necessary training and income compensation for the employee. Iimi (2003) stated that cost efficiency is an indication that banks are experiencing growth; the balance between input and output will encourage banks to achieve efficient financial management (Gurley & Shaw, 1955; Zuhroh et al., 2015). In other words, Islamic banking as a financial intermediation institution must be able to manage cost allocations efficiently and generate optimal profits through proper monetary transactions in the form of financing and securities investment (Allen & Santomero, 1998). The following are the theoretical frameworks in this study described in Figure 1.

As an institution that maintains economic stability, banks are expected to manage input and output efficiently to be able to withstand shocks arising from the economic crisis. If banks do not have an adequate level of flexibility, then small shocks that arise will significantly affect bank stability in maintaining the return rate on financing (Adjei-Frimpong et al., 2015; Cevik et al., 2016; Diallo, 2018).

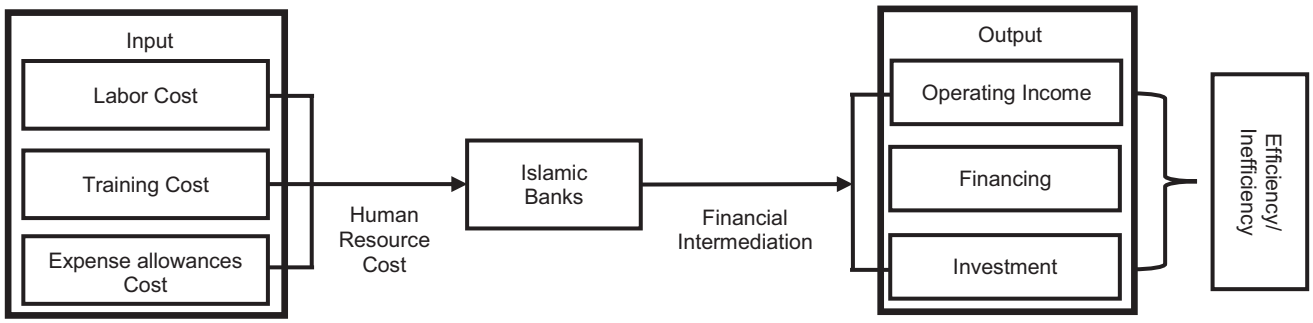

Figure 1: Theoretical Framework Intermediation Approach on Efficiency of Human Resource Cost

3. Research Methods and Materials

The efficiency analysis approach introduced by Debreu (1951) and Koopmans (1951) is used in this research. Efficiency is one of the banking performance benchmarks based on the description of the ratio of input and output (Le, 2020; Shadkam & Bijari, 2015; Zeitun et al., 2013). Data envelop analysis (DEA) aims to identify the most efficient unit by measuring the value of the Decision-Making Unit (DMU). DEA analysis was carried out based on input orientation through an intermediation approach by considering the constant returns to scale (CRS) model within the concept of technical efficiency (TE) developed by Banker et al. (1984). This study also calculated the variable returns to scale (VRS) model along with the concept of pure technical efficiency (PTE) introduced by Banker et al. (1984). This researcher also considers the concept of scale efficiency (SE) to test the average productivity level to reach the optimal scale (Novickytė & Droždz, 2018; Taib et al., 2018). This study also confirms the relationship of all input variables to each output variable through the panel data regression. The following is the panel data regression equation model:

Model 1:

$$LOG\_F_{it} = \beta_0 + \beta_1 LOG\_TC_{it} + \beta_2 LOG\_LC_{it} + \beta_3 LOG\_EAC_{it} + \varepsilon_{it} \quad (1)$$

Model 2:

$$LOG\_I_{it} = \beta_0 + \beta_1 LOG\_TC_{it} + \beta_2 LOG\_LC_{it} + \beta_3 LOG\_EAC_{it} + \varepsilon_{it} \quad (2)$$

Model 3:

$$LOG\_OI_{it} = \beta_0 + \beta LOG\_TC_{it} + \beta_2 LOG\_LC_{it} + \beta_3 LOG\_EAC_{it} + \varepsilon_{it} \quad (3)$$

Where i is banking, t is time, LOG_F is financing, LOG_I is an investment, LOG_OI is operating income, LOG_TC is training cost, LOG_LC is labor cost, and LOG_EAC is expansion allowance cost. This study involved twelve full-fledged Islamic banks across Indonesia year 2014–2019.

4. Results and Discussion

The results of testing the level of efficiency are shown in Table 1. Based on the TE approach's average value results,

Table 1: Efficiency Scale

Efficiency Scale		B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	Mean	SD
2014	TE	1.00	1.00	0.77	0.89	0.68	0.76	1.00	0.88	1.00	0.94	1.00	0.43	0.86	0.17
	PTE	1.00	1.00	1.00	1.00	1.00	0.78	1.00	0.95	1.00	0.95	1.00	0.52	0.93	0.14
	SE	1.00	1.00	0.77	0.89	0.68	0.97	1.00	0.93	1.00	0.99	1.00	0.81	0.92	0.10
2015	TE	0.74	1.00	0.96	0.92	0.75	0.45	1.00	0.69	1.00	1.00	1.00	0.98	0.87	0.17
	PTE	1.00	1.00	1.00	1.00	1.00	0.56	1.00	0.73	1.00	1.00	1.00	1.00	0.94	0.14
	SE	0.74	1.00	0.96	0.92	0.75	0.80	1.00	0.94	1.00	1.00	1.00	0.98	0.92	0.10
2016	TE	0.69	0.88	1.00	1.00	0.61	0.48	1.00	0.75	1.00	1.00	1.00	1.00	0.86	0.18
	PTE	1.00	1.00	1.00	1.00	1.00	0.51	1.00	0.78	1.00	1.00	1.00	1.00	0.94	0.14
	SE	0.69	0.88	1.00	1.00	0.61	0.94	1.00	0.96	1.00	1.00	1.00	1.00	0.92	0.13
2017	TE	0.92	0.88	1.00	0.99	0.71	0.58	1.00	0.84	0.41	0.86	1.00	0.74	0.82	0.18
	PTE	1.00	1.00	1.00	1.00	1.00	0.64	1.00	0.88	0.86	0.89	1.00	0.76	0.91	0.11
	SE	0.92	0.88	1.00	0.99	0.71	0.90	1.00	0.96	0.48	0.96	1.00	0.97	0.89	0.15
2018	TE	0.99	1.00	1.00	0.88	0.66	0.83	1.00	1.00	0.27	0.90	1.00	0.77	0.85	0.21
	PTE	1.00	1.00	1.00	1.00	1.00	0.83	1.00	1.00	1.00	0.97	1.00	0.87	0.97	0.05
	SE	0.99	1.00	1.00	0.88	0.66	0.99	1.00	1.00	0.27	0.94	1.00	0.88	0.88	0.21
2019	TE	0.53	1.00	1.00	0.78	0.57	0.58	1.00	1.00	1.00	1.00	0.72	0.78	0.76	0.25
	PTE	1.00	1.00	1.00	1.00	1.00	0.67	1.00	1.00	1.00	1.00	0.72	0.97	0.88	0.22
	SE	0.53	1.00	1.00	0.78	0.57	0.86	1.00	1.00	1.00	1.00	0.99	0.81	0.85	0.17

Note: B1–B12 are codes for the names of bank.

it is known that most of the samples have a high inefficiency value, fluctuates around 0.76–0.87. Meanwhile, through the PTE and SE approaches, it is known that the inefficiency values reach 0.88–0.97 and 0.85–0.92. Then, based on the individual interbank approach through the concept of TE, PTE, and SE, it is seen that only one bank (B7) was able to manage funds consistently and efficiently during the 2014–2019 period, followed by B11 (2014–2018), B3 (2016–2019), B9 (2014–2016 and 2019), B2 (2014–2016 and 2018–2019), B10 (2015–2016 and 2019), B8 (2018–2019), B1 (2014) and B12 (2016).

Majeed and Zanib (2016) stated that the efficiency frontier estimation aims to explain the operating system's efficiency. If the bank is estimated to operate on a CRS basis, there will be an increase in output proportionally with the addition of input. If the bank is estimated to operate on a VRS basis, this indicates Islamic banks may operate with an increase of output, which is greater than the addition of input, which is called increasing return to scale (IRS), or Islamic banks may operate based on an increase of output that is less than the addition of input, which is called decreasing return to scale (DRS) (Sufian et al., 2014).

The following is the analysis of the efficiency frontier's estimation as described in Table 2. Islamic banks operated more on VRS (DRS or IRS) than the CRS basis. The only bank that is consistent on a CRS basis is B7. However, there was a significant change in 2016, shifting is obvious on the average Islamic bank operating to more like on CRS. Furthermore, in the emerging disruption era 2017–2019, the efficiency frontier estimation shows that most Islamic banks returned to their DRS and IRS (VRS) operations and only four banks stay on CRS operation in the early strikes of pandemic (in 2019). This means that most Islamic banks have not been able to increase output proportionally with the addition of input. Sufian et al. (2014) explained that a bank that operates efficiently is an institution that makes significant cost savings but still optimizes profits. The growth of the Islamic banking industry might be followed by the increase of various cost components, and competition might require additional costs to overcome various kinds of shortcomings or digitalizing, causing Islamic banks to operate in a DRS manner. Employees of the bank should be able to develop their digital skills, because the disruption era forces Islamic banks to be highly digitalized, for which Islamic banks need more skillful employees, otherwise threaten employees would be laid off due to the crisis related to the pandemic.

This study also tested the efficiency of the input variables' influence on each output variable by using three measurement models based on panel data regression. The testing results in the first stage of the three models are described in Table 3. The test results of the chow test show that the three models used in the study have insignificant effects within the probability values of 0.8522 (Model 1), 0.0726 (Model 2), and 0.9982 (Model 3. Furthermore, the test results of

Table 2: Estimation of Efficiency Frontier

Banks	2014	2015	2016	2017	2018	2019
B1	CRS	DRS	DRS	DRS	DRS	DRS
B2	CRS	CRS	IRS	IRS	CRS	CRS
B3	DRS	DRS	CRS	CRS	CRS	CRS
B4	DRS	DRS	CRS	DRS	DRS	DRS
B5	DRS	DRS	DRS	DRS	DRS	DRS
B6	DRS	DRS	IRS	IRS	DRS	DRS
B7	CRS	CRS	CRS	CRS	CRS	CRS
B8	IRS	IRS	IRS	IRS	CRS	CRS
B9	CRS	CRS	CRS	IRS	IRS	DRS
B10	IRS	CRS	CRS	IRS	IRS	CRS
B11	CRS	CRS	CRS	CRS	CRS	DRS
B12	DRS	DRS	CRS	DRS	DRS	DRS

Note: B1–B12 are codes for the names of bank.

Table 3: Estimation Model Determination

Chow Test				
Effect Test	**Statistic**	**d.f**	**Prob.**	**Result**
Model 1	0.3922	5.59	0.8522	Common Effect
Model 2	2.1432	5.59	0.0726	Common Effect
Model 3	0.0512	5.59	0.9982	Common Effect
Hausman Test				
Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. d.f.**	**Prob.**	**Result**
Model 1	2.6636	3	0.4464	Random Effect
Model 2	2.5200	3	0.4716	Random Effect
Model 3	0.2078	3	0.9763	Random Effect
Lagrange Multiplier Test				
Test Summary	**Breusch-Pagan**		**Result**	
	Statistic	**Prob.**		
Model 1	27.1258	0.0000*	Random Effect	
Model 2	8.4139	0.0037*	Random Effect	
Model 3	57.7988	0.0000*	Random Effect	

Note: *Indicates significance at level 0.05.

the Hausman test show that there is an insignificant effect on the three models used through the probability level of 0.4464 (Model 1), 0.4716 (Model 2), and 0.9763 (Model 3). The random effect is assumed to be the second approach. Based on Baltagi (2005), the Lagrange multiplier test was carried out to decide the best approach among the common effects or random effects used in the three models' equation. The results of the Lagrange multiplier test are based on the probability level and the significance value of 0.0000 (Model 1), 0.0037 (Model 2), and 0.0000 (Model 3). Base on the results, the random effect is the best approach used in the three equation models.

In the next stage, correlation matrix testing is carried out to show the multicollinearity value of the independent variables, and the correlation tolerance limit <0.8 (Abdul-Rahman et al., 2017). The results of the correlation matrix test are shown in Table 4. Based on the results it shows that all independent variables have a correlation value <0.8, hence, all equations used in this study do not have a multicollinearity relationship.

Furthermore, to avoid heteroscedasticity of the equations, panel data regression testing was carried out by interpreting cross-section weights on the three models used (Gujarati & Porter, 2009), as shown in Table 5. The test results in Model 1 show that partially the LOG_EAC variable has a significant negative effect on LOG_F with a probability level of 0.0094, then the LOG_LC variable partially indicates a significant relationship to LOG_F with a probability of 0.0000.

The simultaneous test results show that the three independent variables in the Model 1 equation have a significant effect of 0.0000 with an *R*-Squared value of 0.7556, meaning that the allocation of human resource costs to Islamic banking financing has a significant effect of 75.5%. The attention of Islamic bank management to provide more training, workshops, and incentives continuously change the mindset of employees. Good financing performance does not only gives benefit for the company but also has a positive impact on the sense of employees' belonging to the company. It directly empowers the ability of employees to achieve targets (Almahdi, 2017; Joshi et al., 2013; Muafi et al., 2017; Ozkan et al., 2017).

Equation Model 2 shows that partially only the LOG_LC variable significantly affects LOG_I with a probability level of 0.0000. Besides, it is known that all independent variables together significantly affect the LOG_I variable of 0.0000 with an R-Squared value of 0.5550, meaning that all input variables used in this study affect 55.5% performance of investment activities. Providing regular training will increase Intellectual capital for all employees. Management of Islamic investment instruments requires good quality of human resources. Also, Bhuiyan et al. (2017) stated that human resource investment has an essential role in the performance of return on investment. This is reflected in almost all investment companies that focus on allocating their funds to human capital rather than physical capital (Joshi et al., 2013).

Table 4: Correlation Matrix

Variables	LOG_EAC	LOG_LC	LOG_TC
LOG_EAC	1.000000	0.678759	0.387280
LOG_LC	0.678759	1.000000	0.585653
LOG_TC	0.387280	0.585653	1.000000

Table 5: Panel Data Regression of Random Effect

Model	Variable	Coefficient	Std. Error	*t*-statistic	Prob.	*R*-squared	*F*-statistic	Prob. (*F*-statistic)
Model 1 (LOG_F)	LOG_EAC	–0.141391	0.052781	–2.678831	0.0094*	0.7556	65.9602	0.0000*
	LOG_LC	0.999941	0.110125	9.080075	0.0000*			
	LOG_TC	0.061170	0.037499	1.631248	0.1077			
	C	5.785004	1.856568	3.115967	0.0027*			
Model 2 (LOG_I)	LOG_EAC	0.047197	0.093209	0.506356	0.6143	0.5550	26.6074	0.0000*
	LOG_LC	0.887401	0.141870	6.255047	0.0000*			
	LOG_TC	–0.043989	0.040299	–1.091579	0.2791			
	C	4.596010	2.268217	2.026266	0.0469*			
Model 3 (LOG_OI)	LOG_EAC	0.020020	0.025776	0.776687	0.4402	0.9271	271.5649	0.0000*
	LOG_LC	0.840750	0.060000	14.01251	0.0000*			
	LOG_TC	0.062298	0.012566	4.957490	0.0000*			
	C	4.086634	1.027844	3.975928	0.0002*			

Note: *Indicates significance at level 0.05.

Based on the test results in Model 3, the variables LOG_LC and LOG_TC have a partially significant effect on LOG_OI with a probability level of 0.0000 and 0.0000. Furthermore, the simultaneous test results show that all independent variables in Model 3 have a significant effect of 0.0000 with an R-Squared value of 0.9271. All input variables have a strong influence, with a significance level of 92.7% on Islamic banking's operating income. Consistently, training for the employee has a significant influence on the profitability of the bank. Giving rewards through incentives and providing opportunities for employees to develop themselves is the most appropriate and safe step to gradually increase profits. The better, the company's intellectual capital, the better employee performance will be (Kulchmanov & Kaliannan, 2014).

The test results on the three models indicate that all input variables have the closest relationship towards operating income (Model 3), meaning that the allocation of human resource funds in Islamic banks tends to have more effect on increasing operational profits rather than the distribution of financing or placement of investment in Islamic securities. Operating income is part of an intermediary function of the banks that gives direct benefits for the banks and customers (Jiang & He, 2018).

Human resources in Islamic banking must also have digital banking capabilities, innovation, creativity, mentoring, and business consulting (Roziq et al., 2019). Products and services must convert into digital banking. The process should be gradual and carried out continuously (Roziq et al., 2019). However, not all products and services are adequate for digitalization. There are core businesses that still require a human element. Several functions involve a human element, and their existence cannot be replaced by digital banking.

5. Conclusion

The competency of human resources in managing the Islamic banking Islamic business in Indonesia is still low. This means that the recruitment of employees adds cost to companies compared to the results obtained. Individually in 2014–2019, there was only one Islamic bank that consistently achieved efficient values. The proportional increase of output along with the increase in input is still not happening for Islamic banks since the emergence of the disruption era and especially in the early strikes of the pandemic in 2019 - the year when the Indonesian banking policy of mega-merger took place. The test results on the three models show that all input variables in the form of labor cost, training cost & expense allowances cost have the most vital relationship to operating income (Model 3) rather than to financing or investment activities. The pooled regression test results on the three bank performance models show that allocation of human resource funds in Islamic banks tends to have more effect on increasing operational profits rather than the distribution of funds to the public through financing mechanisms or investment in Islamic securities. Finding skillful employees for the disruption era is a cost burden. Based on verified models, more innovation in training employees and investing in training costs are needed for employees to have a deeper understanding of the nature of risk-profit of financing and investment activities of Sharia/Islamic banks. Highly skilled employees ensure the future promising performance of Islamic banks to deal with new global-normal.

References

Abdul-Rahman, A., Said, N. L. H. M., & Sulaiman, A. A. (2017). Financing structure & liquidity risk: Lesson from Malaysian experience. *Journal of Central Banking Theory and Practice*, *6*(2), 125–148. https://doi.org/10.1515/jcbtp-2017-0016

Abosede, J., Eze, B., & Sowunmi, M. (2018). Human resource management and banks' performance in Nigeria. *Izvestiya Journal of Varna University of Economics*, *2*, 117–130. http://journal.ue-varna.bg/uploads/20181122103600_12805846685bf68690bb983.pdf

Abusharbeh, M. T., & Nazzal, H. H. (2018). The impact of motivations on employees performance: A case study from Palestinian commercial banks. *International Business Research*, *11*(4), 142. https://doi.org/10.5539/ibr.v11n4p142

Adjei-Frimpong, K., Gan, C., Ying, L., Hu, B., & Cohen, D. (2015). Efficiency and productivity change in the banking industry: Empirical evidence from New Zealand banks. *Investment Management and Financial Innovations*, *12*(1), 19–25. https://businessperspectives.org/images/pdf/applications/publishing/templates/article/assets/6286/imfi_en_2015_01_Adjei-Frimpong.pdf

Aktar, S., Sachu, M. K., & Ali, M. E. (2012). The Impact of rewards on employee performance in commercial banks of Bangladesh: An empirical study. *IOSR Journal of Business and Management*, *6*(2), 9–15. https://doi.org/10.9790/487X-0620915

Al-Tamimi, K. A. M. (2018). Impact of financial incentives on performance of employees in Jordanian Commercial banks and its reflections on Jordanian economy: A field study. *International Journal of Management Sciences and Business Research*, *7*(1), 2226–8235. http://www.ijmsbr.com39

Albertazzi, U., & Gambacorta, L. (2009). Bank profitability and the business cycle. *Journal of Financial Stability*, *5*(4), 393–409. https://doi.org/10.1016/j.jfs.2008.10.002

Allen, F., & Santomero, A. M. (1998). The theory of financial intermediation. *Journal of Banking & Finance*, *21*, 1461–1485. https://doi.org/10.1016/S0378-4266(97)00032-0

Almahdi, H. K. (2017). Moral incentives vehicle of job performance in Saudi Arabian banks. *Journal of Management Policies and Practices*, *5*(2), 17–23. https://doi.org/10.15640/jmpp.v5n1a3

Amin, F. B., Amri, A., & Majid, M. S. A. (2019). Does staff performance mediate the effects of motivation, discipline, and allowance-based performance on the performance of regional planning development agencies? *IOSR Journal of Business and Management (IOSR-JBM)*, *21*(1), 52–58. https://doi.org/10.9790/487X-2101045258

Asri, M. (2017). Effect of human resource on the financial performance of Islamic banks in Indonesia. *IOSR Journal of Business and Management (IOSR-JBM)*, *19*(12), 32–35. https://doi.org/10.9790/487X-1912013235

Baltagi, B. H. (2005). *Econometric analysis of panel data* (3rd ed.). New York: John Wiley and Sons.

Banker, R. D., Charnes, A., & Cooper, W. W. (1984). Some models for estimating technical and scale inefficiencies in data envelopment analysis. *Management Science*, *30*(9), 1078–1092. https://doi.org/10.1287/mnsc.30.9.1078

Bhuiyan, M. Z. H., Uddin, M. M., Ahmad, A., & Hoque, N. (2017). Does investment in human resource development affect financial performance? Empirical evidence from the banking sector of Bangladesh. *IIUC Studies*, *14*(2), 35–54. https://doi.org/10.3329/iiucs.v14i2.39879

Cermeli, A. (2004). Strategic human capital and the performance of public sector organizations. *Scandinavian Journal of Management*, *20*(4), 375–392. https://doi.org/10.1016/j.scaman.2003.11.003

Cevik, N. K., Dibooglu, S., & Kutan, A. M. (2016). Real and financial sector studies in central and Eastern Europe: A review. *Czech Journal of Economics and Finance*, *66*(1), 2–31.

Chan, K. H. (2009). Impact of intellectual capital on organizational performance: An empirical study of companies in the Hang Seng Index (Part 2). *Learning Organization*, *16*(1), 22–39. https://doi.org/10.1108/09696470910927650

Debreu, G. (1951). The coefficient of resource utilization. *Econometrica*, *19*(3), 273–293. https://doi.org/10.2307/1906814

Dewa, N., & Zakaria, S. (2012). Training and development of human capital in the Islamic banking industry. *Journal of Islamic Economics, Banking, and Finance*, *8*(1), 95–108. https://ibtra.com/pdf/journal/v8_n1_article5.pdf

Diallo, B. (2018). Bank efficiency and industry growth during financial crises. *Economic Modelling*, *68*(6), 11–22. https://doi.org/10.1016/j.econmod.2017.03.011

El-Seoudi, A. W. M., Mohamad, M. N., Nor, A. H. M., Nasohah, Z., Alias, M. N., & Ghani, N. A. R. N. (2012). Human resources in the Islamic Banks. *Journal of Economic Theory*, *6*(2), 66–69. https://doi.org/10.3923/jeth.2012.66.69

Elahi, K., & Shahaei. (2010). Examines the impact of intellectual capital on the performance of Bank Sepah in Tehran. *Journal of Business and Management*, *3*(5), 73–90. http://www.iosrjournals.org/iosr-jbm/papers/Vol19-issue12/Version-1/E1912013235.pdf

Fitzsimons, P. (2015). Human capital theory and education. In: M. A. Peters (Ed.), *Encyclopedia of educational philosophy and theory* (pp. 532-537). Springer Singapore. https://doi.org/10.1007/978-981-287-532-7

Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). New York: McGraw-Hill/Irwin.

Gurley, J. G., & Shaw, E. S. (1955). Financial aspects of economic development. *The American Economic Review*, *45*(4), 515–538. https://www.jstor.org/stable/1811632

Hall, B. W. (2015). *The new human capital strategy, improving the value of your important investment*. New York: American Management Association.

Iimi, A. (2003). Efficiency in the Pakistani banking industry: Empirical evidence after the structural reform in the late 1990s. *The Pakistan Development Review*, *42*(1), 41–57. https://doi.org/10.30541/v42i1pp.41-57

Imran, M., & Tanveer, A. (2015). Impact of training & development on employees performance in banks of Pakistan. *European Journal of Training and Development Studies*, *3*(1), 22–44. www.eajournals.org

Iqbal, M. (2013). Islamic finance: An attractive new way of financial intermediation. *International Journal of Banking and Finance*, *10*(2), 4. http://e-journal.uum.edu.my/index.php/ijbf/article/view/8472

Isnurhadi, I., Adam, M., Sulastri, S., Andriana, I., & Muizzuddin, M. (2021). Bank capital, efficiency, and risk: Evidence from Islamic Banks. *Journal of Asian Finance, Economics, and Business*, *8*(1), 841–850. https://doi.org/10.13106/jafeb.2021.vol8.no1.841

Jiang, H., & He, Y. (2018). Applying data envelopment analysis in measuring the efficiency of Chinese Listed banks in the context of the macroprudential framework. *Mathematics*, *6*(10), 184. https://doi.org/10.3390/math6100184

Joshi, M., Cahill, D., Sidhu, J., & Kansal, M. (2013). Intellectual capital and financial performance: An evaluation of the Australian financial sector. *Journal of Intellectual Capital*, *14*(2), 264–285. https://doi.org/10.1108/14691931311323887

Khaldi, K., & Hamdouni, A. (2011). Islamic financial intermediation: Equity, efficiency, and risk. *International Research Journal of Finance and Economics*, *65*(October), 145–160.

Khan, M. M. (2013). Developing a conceptual framework to appraise the corporate social responsibility performance of Islamic banking and finance institutions. *Accounting and the Public Interest*, *13*(1), 191–207. https://doi.org/10.2308/apin-10375

Koopmans, T. C. (1951). *An analysis of production as an efficient combination of activities.* New York: Wiley & Sons.

Kreitner, R., Kinicki, A., & Cole, N. (2007). *Fundamentals of organizational behavior: Key concept, skills, & best practices*. New York, NY: McGraw-Hill.

Kulchmanov, A., & Kaliannan, M. (2014). does money motivate employees? An empirical study of the private and public financial sector in Kazakhstan. *International Journal of Business and Management*, *9*(11), 214–223. https://doi.org/10.5539/ijbm.v9n11p214

Le, T. T. D. (2020). Determinants of retail banking efficiency: A case of Vietcom Bank branches in the Mekong-Delta region.

Journal of Asian Finance, Economics, and Business, *7*(7), 439–451. https://doi.org/10.13106/jafeb.2020.vol7.no7.439

Macky, K., & Johnson, G. (2000). *The strategic management of human resources in New Zealand*. New York, NY: Irwin/ McGraw-Hill.

Majeed, M. T., & Zanib, A. (2016). Efficiency analysis of Islamic banks in Pakistan. *Humanomics*, *32*(1), 19–32. https://doi.org/10.1108/H-07-2015-0054

Masum, A. K. M., Azad, M. A. K., & Beh, L. S. (2016). The role of human resource management practices in bank performance. *Total Quality Management and Business Excellence*, *27*(3–4), 382–397. https://doi.org/10.1080/14783363.2014.1002762

Mestieri, M., Schauer, J., & Townsend, R. M. (2017). Human capital acquisition and occupational choice: Implications for economic development. *Review of Economic Dynamics*, *25*, 151–186. https://doi.org/10.1016/j.red.2017.02.001

Miah, M. D., & Uddin, H. (2017). Efficiency and stability: A comparative study between Islamic and conventional banks in GCC countries. *Future Business Journal*, *3*(2), 172–185. https://doi.org/10.1016/j.fbj.2017.11.001

Motlokoa, M. E., Sekantsi, L. P., & Monyoloc, R. P. (2018). The impact of training on employees' performance: The case of the banking sector in Lesotho. *International Journal of Human Resource Studies*, *8*(2), 16. https://doi.org/10.5296/ijhrs.v8i2.12812

Muafi, S., Purwohandoko, M., & Salsabil, I. (2017). Human capital in Islamic bank and its effect on the improvement of a healthy organization and employee performance. *International Journal for Quality Research*, *11*(4), 849–868. https://doi.org/10.18421/IJQR11.04-08

Nabi, M. N., Islam, M. M., Dip, T. M., & Al Hossain, M. A. (2017). Impact of motivation on employee performances: A case study of Karmasangsthan bank limited, Bangladesh. *Arabian Journal of Business and Management Review*, *7*(1), 1–8. https://doi.org/10.4172/2223-5833.1000293

Ngwakwe, C., & Masuluke, M. (2018). Relationship between human capital investments and firm's net profit. *Journal of Accounting and Management*, *VIII*(1), 37–46. https://www.hrvatski-racunovodja.hr/jam/2018/jam-year2018-vol08-no01-art03.pdf

Nienhaus, V. (2013). *Human resource management of Islamic banks: Responses to conceptual and technical challenges*. Hoboken, NJ: John Wiley & Sons.

Novickytė, L., & Droždz, J. (2018). Measuring the efficiency in the Lithuanian banking sector: The DEA application. *International Journal of Financial Studies*, *6*(2), 37. https://doi.org/10.3390/ijfs6020037

Obeidat, Z. M. (2016). Human capital investment and training in the Islamic banking industry in Jordan Jordan Islamic bank for finance and investment. *European Scientific Journal, ESJ*, *12*(10), 90. https://doi.org/10.19044/esj.2016.v12n10p90

Octrina, F., & Mariam, A. G. S. (2021). Islamic bank efficiency in Indonesia: Stochastic Frontier Analysis. *Journal of Asian Finance, Economics, and Business*, *8*(1), 751–758. https://doi.org/10.13106/jafeb.2021.vol8.no1.751

Olubusayo, F. H., Stephen, I. A., & Maxwell, O. (2014). Incentives packages and employees' attitudes to work: A Study Of Selected Government Parastatals In Ogun State, South-West, Nigeria. *International Journal of Research in Business and Social Science*, *3*(1), 63–74. https://doi.org/10.20525/ijrbs.v3i1.87

Ozkan, N., Cakan, S., & Kayacan, M. (2017). Intellectual capital and financial performance: A study of the Turkish banking sector. *Borsa Istanbul Review*, *17*(3), 190–198. https://doi.org/10.1016/j.bir.2016.03.001

Poh, L. T., Kilicman, A., & Ibrahim, S. N. I. (2018). On intellectual capital and financial performances of banks in Malaysia. *Cogent Economics and Finance*, *6*(1), 1–15. https://doi.org/10.1080/23322039.2018.1453574

Prajogo, D. I., & Oke, A. (2016). Human capital, service innovation advantage, and business performance: The moderating roles of dynamic and competitive environments. *International Journal of Operations and Production Management*, *36*(9), 974–994. https://doi.org/10.1108/IJOPM-11-2014-0537

Rowland, C. A., Hall, R. D., & Altarawneh, I. (2017). Training and development: Challenges of strategy and managing performance in Jordanian banking. *EuroMed Journal of Business*, *12*(1), 36–51. https://doi.org/10.1108/EMJB-01-2016-0001

Roziq, A., Sulistiyo, A. B., Hisamuddin, N., & Mawardi, A. A. K. (2019). Intermediary function, capital structure, risk and finance, the performance of Islamic bank in Indonesia. *International Journal of Scientific and Technology Research*, *8*(10), 1259–1265. https://repository.unej.ac.id/handle/123456789/103159

Saruchi, S. A., Zamil, N. A. M., Basiruddin, R., Rasid, S. Z. A., & Ahmad, N. F. G. (2019). Empirical linkage of intellectual capital and performance of Islamic banks. *International Journal of Engineering and Advanced Technology*, *8*(5), 677–684. https://doi.org/10.35940/ijeat.E1095.0585C19

Shadkam, E., & Bijari, M. (2015). The optimization of bank branches efficiency using response surface method and data envelopment analysis: A case of Iran. *The Journal of Asian Finance, Economics, and Business*, *2*(2), 13–18. https://doi.org/10.13106/jafeb.2015.vol2.no2.13.

Shantha, A. (2019). The impact of training on employees' performance in the banking sector: With special reference to the bank of Ceylon in Sri Lanka. *IOSR Journal Of Humanities And Social Science*, *24*(6), 34–42. https://doi.org/10.9790/0837-2406013442

Sharma, E., & Mani, M. (2012). A comparative analysis of human capital efficiency of public and private banks in India. *Research Journal of Finance and Accounting*, *3*(1), 2222–2847. https://core.ac.uk/download/pdf/234629244.pdf

Shawtari, F. A., Saiti, B., Abdul Razak, S. H., & Ariff, M. (2015). The impact of efficiency on discretionary loans/finance loss provision: A comparative study of Islamic and conventional banks. *Borsa Istanbul Review*, *15*(4), 272–282. https://doi.org/10.1016/j.bir.2015.06.002

Sillup, G. P., & Klimberg, R. (2010). Assessing the ethics of implementing performance appraisal systems. *Journal of Management Development*, *29*(1), 38–55. https://doi.org/10.1108/02621711011009063

Sowunmi, S. O., Eleyowo, I. O., Salako, M. A., & Oketokun, F. O. (2015). Human resource development as a correlate of performance of the banking industry in Ogun State, Nigeria. *Journal of Economics and International Finance*, *7*(5), 112–126. https://doi.org/10.5897/jeif2015.0656

Srairi, S. A. (2010). Cost and profit efficiency of conventional and Islamic banks in GCC countries. *Journal of Productivity Analysis*, *34*(1), 45–62. https://doi.org/10.1007/s11123-009-0161-7

Sufian, F., Ashif, S. M. A., & Kamarudin, F. (2014). Technical efficiency of single versus dual banking sectors: A comparative analysis of India and Pakistan. *International Journal of Financial Services Management*, *7*(3/4), 219. https://doi.org/10.1504/ijfsm.2014.065575

Tahir, A., & Sajjad, S. (2013). Assessing the impact of training on employees' performance in commercial banks in urban Lahore. *Lahore Journal of Business*, *2*(1), 95–109. https://doi.org/10.35536/ljb.2013.v2.i1.a4

Taib, C. A., Ashraf, M. S., & Razimi, M. S. B. A. (2018). Technical, pure technical and scale efficiency: A non-parametric approach of Pakistan's insurance and takaful industry. *Academy of Accounting and Financial Studies Journal*, *22*(1), 1–11.

Tampubolon, N. (2015). *Roadmap of Indonesian Islamic banking 2015–2019*. https://www.ojk.go.id/en/Documents/Pages/Islamic-Finance-OJK-2015/1.nelson.pdf

Yalama, A. (2013). The relationship between intellectual capital and banking performance in Turkey: Evidence from panel data. *International Journal of Learning and Intellectual Capital*, *10*(1), 71–87. https://doi.org/10.1504/IJLIC.2013.052079

Yusuf, B. (2015). Human resources development of Sharia banking: Phenomenological approach. *Al-Iqtishad: Journal of Islamic Economics*, *7*(2), 241–250. https://doi.org/10.15408/ijies.v7i2.1701

Zeitun, R., Abdulqader, K. S., & Alshare, K. A. (2013). On the relative efficiency of conventional and Islamic banks: a DEA-window approach. *International Journal of Financial Services Management*, *6*(3), 236. https://doi.org/10.1504/ijfsm.2013.058070

Zuhroh, I., Ismail, M., & Maskie, G. (2015). Cost efficiency of Islamic banks in Indonesia: A stochastic frontier analysis. *Procedia - Social and Behavioral Sciences*, *211*, 1122–1131. https://doi.org/10.1016/j.sbspro.2015.11.150