



Evaluating Efficiency of Waqf Institutions: an Intermediation Approach Using Data Envelopment Analysis (DEA)

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Abstract

Objective – This paper attempts to analyze the efficiency of waqf institutions in Malaysia by using Data Envelopment Analysis (DEA) method under output-orientation using Variable Return to Scale (VRS) assumptions. Waqf is a voluntary charity that cannot be disposed of and the owner cannot be transferred once it is declared as waqf assets. Waqf institutions play an important role in helping the development of Muslims ummah through wealth distribution. State Islamic Religious Councils (SIRCs) in Malaysia are the sole trustee that manage and develop waqf assets. Based on selected input and output, the intermediary approach assumes that cash waqf received as output while total expenditure of SIRCs as input. Under this approach, SIRCs act as an intermediary between waqif (giver) and beneficiaries.

Design/methodology – Four State Islamic Religious Councils (SIRCs) were selected as decision-making units (DMU) from 2011 to 2015. Efficiency was measured using Data Envelopment Analysis (DEA) method under output-orientation using Variable Return to Scale (VRS) assumptions.

Results – The result indicates that changes in average technical efficiency for every year is contributed by both pure technical and scale. However, the inefficiency of Malaysian waqf institutions is mostly contributed by pure technical efficiency aspects rather than scale. 2012 showed the highest average technical efficiency with 73.9% as most of the institutions operated in the optimum level of input to produce output. Thus, the result suggests that both technical and scale efficiency should be improved to achieve the most efficient and productive level of performance in order to fulfill objectives of the institutions as an intermediary between waqif and beneficiaries.

Originality/Value – Empirical studies in waqf theme is still very limited hence this study is contributing in the provision of empirical evidence for the efficiency evaluation of waqf institutions.

Keywords: Waqf, Data Envelopment Analysis, Intermediary Approach.

1. Introduction

Waqf is not compulsory in Islam but it is encouraged since its benefit is perpetuated to the ummah. Waqf in Arabic word means to hold, stop or prevent. According to (Kahf, 2003), there are three types of waqf, namely for religious, philanthropy and family purposes. Due to its perpetuity nature, waqf is a long-lasting charity. Waqf can be used as poverty alleviation measures (Sadeq, 2002; Saifuddin, Kayadibi, Polat, Fidan, & Kayadibi, 2014) and provide basic needs to the poor who don't have access to health and education facilities. The benefits of waqf are not only restricted to assist the Muslim but also the whole community. Thus, maintaining an excellent performance is important to ensure waqf assets are well managed.

In Malaysia, waqf is managed and administered by 14 State Islamic Religious Councils (SIRC) which act as trustees or intermediaries between waqif and beneficiaries. However, many waqf properties, especially land, were left idle and undeveloped (Bakri, 2014). Thus, this affects the potential benefit received by the beneficiaries and may reduce public confidence towards waqf institutions.

Efficiency measurement is determined by the ability of the organization or individuals to increase their funds to fulfill their mission and objectives (Alfirevic, Pavicic,

& Najev-Cacija, 2014). Organisations measure efficiency because it improves the bottom line by decreasing the operational cost and improves productivity. Managers can estimate and forecast their costs and budgets accurately for their upcoming projects based on the previous data (Averson, 1998). Hence, Data Envelopment Analysis (DEA) was chosen to measure the efficiency of waqf institutions in Malaysia using the input and output selected. Input and output obtained from annual reports and unpublished data provided by SIRC's waqf officers.

Thus, this paper analyses and measures efficiency of SIRC's waqf institutions for four selected states (States A, B, C, D) for five years from 2011 to 2015. The remainder of the paper is structured as follows: Section 2 reviewed previous studies on DEA. Section 3 discussed the method being used. Section 4 is the discussion of the results and section 5 concluded the paper.

2. Review of Past Studies

DEA was developed to measure the efficiency of a set of units named Decision Making Units (DMU) with a proposed model called the CCR model (Charnes, Cooper, & Rhodes, 1978). By using the linear programming approach, DEA measures the efficiency of the DMU in utilizing their input and output. Besides the CCR model, Banker, Charnes, and Cooper (BCC) model is another version of DEA which is commonly used in measuring efficiency. The main difference between CCR and BCC model is the treatment return to scale. The CCR model is based constant returns to scale (CRS) while BCC model is more flexible and allows variable returns to scale (VRS). Initially, this method is used to measure the performance of the public sectors such as government and not-for-profit organization (Bowlins, 1998).

A few studies have employed DEA in measuring the efficiency of non-profit organisations such as Husain, Abdullah, & Kuman (2000); Sarker & De (2004); and Norazlina Abd Wahab & Rahman (2012). Husain et al. (2000) used DEA to measure the efficiency of the public sector by using multiple inputs and multiple outputs. He reported that out of 46 service units, only 11 service units score above 50 percent on the efficiency scores. The study illustrated the ability of DEA to identify efficient and inefficient service units. Another study by Sarker & De (2004), measured the efficiency of resource usage for a different type of tenure and farm size. From the study, it was found that the small farm is more efficient as compared to a large farm.

Sufian (2011) studied the efficiency of the Korean Banking sector by using three approaches; intermediation, operating and production approach. The study found that from the three approaches, operating approach shows the higher level of TE while the low level of TE shows by the bank under the intermediation approach. The study also found that the inefficiency of the bank is highly contributed to scale rather than pure technical under operating approach. Meanwhile, in value-added approach, the scale inefficiency exceeded the pure technical inefficiency but in contrast with the intermediation approach where the inefficiency is largely from pure technical rather than scale.

Kamau (2011) investigated intermediation efficiency and productivity of the banking sector in the post-liberalization period in Kenya. Data were collected within 1997-2009 for all local banks which later divided into two sectors namely public and private banks. The study used three inputs and two outputs to measure efficiency in the intermediation approach. The finding indicates that most of the banks in Kenya performed well as the efficiency score was not less than 40% at any one point.

Wahab & Rahman (2012) investigated the efficiency of zakat institutions in Malaysia and employed a production approach. Under this approach, it is assumed that zakat institutions act as producer of zakat collection and zakat payers through dakwah and promotions and distributed the funds to beneficiaries according to the 8 pillars. By using 14 zakat institutions as DMUs the result shows that the average technical efficiency of zakat institutions was 80.6%. It is also found that pure technical inefficiency

cy has dominated the scale inefficiency in determining the efficiency of zakat institutions in Malaysia.

Meanwhile, in a study by Shree & Kumar (2015), they examined the efficiency of private sector banks in India for the year 2012 to 2013 by adopting the intermediation approach with nine banks as DMUs. By using cross efficiency ratio, Federal bank was identified as the most efficient bank in India with a maximum score of 0.99.

3. Research Method

The Model

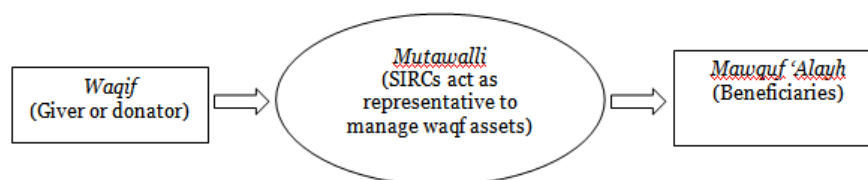
This study applied Data Envelopment Analysis (DEA), using output-orientation DEA frontier seek output quantities that can be proportionally expended without altering the input quantities used. For this study, BCC Model was applied as it is more flexible and allows variable returns to scale (VRS).

The result from the VRS assumption will indicate the technical efficiency (TE) score, pure technical efficiency (PTE) score and scale efficiency (SE) score of each DMU. Both PTE and SE allows insight into the source of inefficiencies of DMU (Gulati, 2011). The PTE measure is obtained by estimating the efficient frontier under the assumption of variable returns to scale. It is a measure of technical efficiency without scale efficiency and purely reflects the managerial performance to organize the inputs in the production process. Thus, PTE measure purely related to the managerial performance of the organization. While SE was obtained by dividing the technical efficiency by pure technical efficiency. The result of SE gives the ability of the organization to choose their optimum size of resources which meet their production level. Some of the technical inefficiency may cause by the inappropriate size of operation (Kumar & Gulati, 2008).

Intermediation Approach

For the intermediation approach, the institution will be an intermediary between giver and receiver (Sufian, 2009). The intermediary will manage all the given assets and ensure the beneficiaries will receive the benefits. In the case of waqf institutions, waqif or the giver is an individual or organization who endowed their assets for philanthropy for the sake of Allah, while SIRC is the *mutawalli* or the operator that managed waqf on behalf of the giver. Meanwhile mawquf 'alayh or receiver/beneficiary is the person who receives the benefits from the assets endowed by the waqif. Thus, SIRC act as the intermediaries to deliver the benefits from giver to receiver. In Malaysia, SIRC is the sole trustee for all waqf assets. However there also some SIRC granted the management of waqf to their subsidiaries such as Selangor Corporate Waqf, Negeri Sembilan Corporate Waqf, and Johor Waqf Office. Figure 1 illustrates the relationship between waqf giver, waqf manager, and the beneficiaries.

Figure 1. The relationship among various parties in waqf



Selection Input and Output

Selection of input and output for this study are based on the availability of data from SIRC in terms of intermediation approach. Studies on measuring the efficiency of a non-profit organization have been conducted using different inputs and outputs. For instance study by Shree & Kumar (2015) investigated the efficiency of private sector banks in India using deposits, borrowings and operating expenses as inputs while

investments and advances as outputs. Another study conducted by (Kamau, 2011) used deposits, capital, and labor as inputs while loan and investment as outputs.

Hence, as mentioned above, for this study, the intermediation approach is employed. Total expenditure will be the input in this study as an expenditure (excluding salary) used to manage all waqf assets endowed by the waqif. For instance the cost of operations, development and monthly or yearly maintenance of the assets. Wahab & Rahman (2012) in their study to measure the performance of zakat institutions also used expenditure as an input.

Land and cash waqf received were used as outputs in this study. Land waqf is the most preferable type of waqf endowed. There are two types of waqf namely specific and general waqf. Specific waqf is for specific purposes as determined by the giver. Land waqf received by the waqf institutions will be developed according to the request of the waqif and the benefits derived will be given to beneficiaries. Meanwhile, for general waqf, the usage of waqf is not predetermined by the giver. Mutawalli is given the freedom to utilize the waqf land for purposes that maximized benefits to the beneficiaries. Examples of benefits are the development of schools, mosques and hemodialysis centers from waqf land received for the benefits of the ummah. Table 1 shows the number of waqf land in Malaysia for both specific and general waqf. The data shows SIRC in Malaysia has received a large number of waqf land from the waqif. All waqf land received should be developed by the SIRC to fulfill the intention of waqif and benefits of the ummah.

Type of waqf	Number of land lots	Area (Hectare)	Value (MYR)
General	1012	4,836.50	19,282,885.01
Specific	3512	6,255.32	80,046,285.68
Total	4524	11,091.82	99,329,170.69

Source: JAWHAR (Isamail, Rosele, & Anuar, 2015)

Table 1. Waqf land in Malaysia, 2010

The second output in this study is cash waqf. Waqif gives cash waqf to *mutawalli* who in turn used it for the purpose of enhancing the socioeconomic development of recipients. Amount of cash waqf donated is significantly influenced by promotion and awareness effort undertaken by waqf institutions (Majid, 2015). Johor Waqf Office, for example, has collected Malaysian Ringgit MYR45 million cash waqf to developed eight projects. And in a recent project, Johor Waqf Office utilized cash waqf to purchase hemodialysis machines worth MYR4.5 million.

Meanwhile, Table 2 shows total cash waqf collected in Selangor. As mentioned earlier, PWS is a subsidiary appointed by Selangor SIRC to manage all matters related to waqf. Hence, PWS has become one of the institutions that have highly focused on generating cash waqf. PWS has joined and collaborated with other institutions such as universities and banks which aimed to increase the collection of cash waqf (Mokhtar, Sidin, & Razak, 2015).

Type of waqf	2011 (MYR)	2012 (MYR)	Until June 2013 (MYR)
(i) General waqf	2,007,775.43	4,004,452.00	2,306,071.53
(ii) Specific waqf	33,395,954.50	22,947,240.11	17,977,406.23
Total	35,403,729.93	26,951,692.11	20,283,477.76

Source: Selangor Corporate Waqf (Othman, 2013)

Table 2. Total cash waqf collected in Selangor, 2011 to June 2013

Due to the limited availability of data, this study analyzed data from four SIRC. One input and two outputs have been chosen to measure the efficiency of the institutions. Table 3 provided a brief explanation of input and outputs.

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Table 3. Explanation of input and output

Input/ Output	Variable Name	Explanation
Input 1	Expenditure	Total yearly expenditure of every SIRC or its subsidiary
Output 1	Cash waqf	Total cash waqf received from waqif of every SIRC or its subsidiary
Output 2	Land Waqf	Total of land waqf received by the SIRC from waqif of every SIRC or its subsidiary

Table 4. Descriptive statistics for input and outputs

	2011	2012	2013	2014	2015
Output 1					
Land					
Mean	21.634	31.48	26.61	33.49	30.15
SD	17.38	13.20	15.13	25.62	25.80
Output 2					
Cash Waqf					
Mean	10185931.11	3670952.57	4870249.28	7393830.32	9905800.62
SD	20024149.63	6475067.88	9299468.74	12713940.09	14772281.51
Input					
Expenditure					
Mean	1007836.63	902751.27	1627901.14	1817795.54	1759900.31
SD	310868.53	884236.56	860598.08	1129832.06	1372389.12

Table 4 presents the descriptive statistics of all variables used (input and output) to measure the efficiency of waqf institutions based on intermediary approach over the period 2011 -2015.

4. Result and Discussion

The efficiency of waqf institutions was examined by using DEA for 2011 until 2015. Table 5 shows the result of technical efficiency from the variable return to scale assumption.

Table 5. The efficiency score of State Islamic Religious Councils (SIRCs), 2011-2015 (VRS)

SIRC / Year / Efficiency	2011	2012	2013	2014	2015
State A	0.257	0.085	0.207	0.019	0.013
State B	0.392	1.000	1.000	1.000	1.000
State C	1.000	1.000	1.000	1.000	0.754
State D	0.303	0.870	0.102	0.161	0.315

Table 5 reported the result of four SIRCs from the year 2011 to 2015 ranged from 0.013 to 1.00. The result showed both State B and C operating at the best practice in TE score (1.000) for every year except in 2011 for State B (0.392) and 2015 for State C (0.754). The result indicated that there was no wastage of inputs in affected the quantity of output produced. The similarities between State B and State C are that both institutions are managed by subsidiaries firms appointed by the respective SIRCs. This is in contrast to other SIRCs that favor public sector approach for their waqf entities.

Meanwhile, the result indicates that the inefficiency of State A is mostly contributed to scale rather than purely technical aspects. At 0.870 in 2012 State D was almost as efficient compared to other years. The result from the VRS assumption indicated that most of the inefficiency of Melaka were contributed by the pure technical rather than scale. This result may due to the fact that the structure of management and administration of these institutions still under the SIRCs as mentioned in the preceding paragraph. Under this structure, the religious council themselves will do all job related to waqf without appointing any subsidiary.

Efficiency of Waqf, DEA

Table 6. Summary statistics of Efficiency Scores (TE, PTE and SE) by year

Years/ Types of Efficiency	Mean	Min	Max	SD
Panel A: 2011				
TE	0.488	0.257	1.000	0.346
PTE	0.685	0.266	1.000	0.374
SE	0.777	0.303	1.000	0.323
Panel B: 2012				
TE	0.739	0.085	1.000	0.440
PTE	0.943	0.815	1.000	0.877
SE	0.734	0.104	1.000	0.435
Panel C: 2013				
TE	0.577	0.102	1.000	0.490
PTE	0.711	0.232	1.000	0.368
SE	0.694	0.338	1.000	0.355
Panel D: 2014				
TE	0.545	0.019	1.000	0.529
PTE	0.603	0.159	1.000	0.460
SE	0.690	0.122	1.000	0.415
Panel E: 2015				
TE	0.521	0.013	1.000	0.441
PTE	0.640	0.162	1.000	0.427
SE	0.667	0.080	1.000	0.403

Table 6 displays the mean technical, pure technical and scale efficiency score for selected waqf institutions in Malaysia for 2011 (Panel A), 2012 (Panel B), 2013 (Panel C), 2014 (Panel D) and 2015 (Panel E).

Based on Table 6, the highest TE score for waqf institutions was in 2012 (0.739), while 2011 shows the lowest TE score (0.488) for waqf institutions. Similarly, the PTE score is also found to be highest in 2012 (0.943) but the lowest score in 2014 is the lowest PTE score (0.603). Another result shows three out of five years' inefficiency score of Malaysian waqf institutions were dominated by pure technical efficiency. Pure technical score relates to the management, administration, technology aspects of waqf institutions. This result is in accordance with the study by Majid & Said (2014) found that most of the problems faced by the waqf institutions related to management, administration, legal procedure, and physical barriers.

5. Conclusion

This paper investigates the efficiency of waqf institutions in Malaysia during the period of 2011 to 2015. By using output-orientation under variable return to scale (VRS) assumption, the study conducted involved four SIRC as DMU. The result indicated that 2012 show two out of four SIRC operating at an optimum level where TE score for State B and State C is 100%. While State D with 87% of technical efficiency score. Meanwhile, the overall results show that most of the inefficiency of waqf institutions in Malaysia was dominated by the pure technical rather than scale efficiency. This implies that more attention should be given to the technical aspect in order to improve efficiency.

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References

- Alfirevic, N., Pavicic, J., & Najev-Cacija, L. (2014). Performance of non-profit organizations: Empirical contrasts between privately and publicly funded Croatian humanitarian organizations. *Economic Annals*, 59(200), 115–129. <https://doi.org/10.2298/EKA1400115A>
- Averson, R. D. (1998). High-performance work systems and occupational safety. *Journal of Applied Psychology*, 90(1), 77.
- Bakri, M. H. Y. (2014). Hanya 0.027% Tanah Wakaf Dimajukan Jawhar guna Perkongsian Pintar Atasi Kekurangan Dana.
- Bowlin, W. (1998). Measuring performance: An introduction to data envelopment analysis (DEA). *The Journal of Cost Analysis*, 15(2), 3–27.
- Chames, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision making units. *European Journal of Operational Research*, 2(6), 429–444. [https://doi.org/http://doi.org/10.1016/0377-2217\(78\)90138-8](https://doi.org/http://doi.org/10.1016/0377-2217(78)90138-8)
- Gulati, R. (2011). Evaluation of technical , pure technical and scale efficiencies of Indian banks : An analysis from cross-sectional perspective Estimation of technical , pure technical and scale efficiencies of Indian banks : An analysis from cross-sectional perspective. *The 13th Annual Conference on Money and Finance in the Indian Economy*, 1–30.
- Husain, N., Abdullah, M., & Kuman, S. (2000). Evaluating public sector efficiency with data envelopment analysis (DEA): A case study in Road Transport Department, Selangor, Malaysia. *Total Quality Management*, 11(4–6), 37–41. <https://doi.org/10.1080/09544120050008282>
- Isamail, M. Z., Rosele, M. I., & Anuar, M. (2015). Pemerkasaan Wakaf di Malaysia: Satu Sorotan. *Labuan E-Journal of Muamalat and Society*, 9, 1–13.
- Kahf, M. (2003). The Role of Waqf In Improving The Ummah Welfare. *International Seminar on “Waqf as a Private Legal Body,”* 1–26.
- Kamau, A. W. (2011). Intermediation Efficiency and Productivity of the Banking Sector in Kenya. *Interdisciplinary Journal of Research in Business*, 1(9), 12–26.
- Kumar, S., & Gulati, R. (2008). An examination of technical, pure technical and scale efficiencies in Indian Public Sector Banks using Data Envelopment Analysis. *Eurasian Journal of Business and Economics*, 1(2), 33–69.
- Majid, A. (2015). Saham Wakaf Johor kumpul RM45.
- Majid, R. A., & Said, R. (2014). Permasalahan Pengurusan Hartanah Wakaf di Malaysia. *International Surveying Reserach Journal*, 4(1), 29–43.
- Mokhtar, F. M., Sidin, E. M., & Razak, D. A. (2015). Operation of Cash Waqf in Malaysia and its Limitations. *Journal of Islamic Economics, Banking and Finance*, 11(4), 100–114.
- Sadeq, A. M. (2002). Waqf, perpetual charity and poverty alleviation. *International Journal of Social Economics*, 29(1/2), 135–151.
- Saifuddin, F., Kayadibi, S., Polat, R., Fidan, Y., & Kayadibi, O. (2014). The Role of Cash Waqf in Poverty Alleviation : Case of Malaysia. In *Kuala Lumpur International Business, Economics and Law Conference 4 (KLIBEL4)* (Vol. 1, pp. 272–289). Kuala Lumpur, Malaysia.
- Sarker, D., & De, S. (2004). Non-parametric approach to the study of farm efficiency in agriculture. *Journal of Contemporary Asia*, 34(2), 207–220. <https://doi.org/10.1080/00472330480000051>
- Shree, R. S., & Kumar, P. S. (2015). Performance Efficiency of Selected Private Sector Banks in India Using Data Envelopment Analysis. *International Journal of Innovative Research and Development*, 4(6), 242–252.
- Sufian, F. (2009). Determinants of bank efficiency during unstable macroeconomic environment: Empirical evidence from Malaysia. *Research in International Business and Finance*, 23(1), 54–77. <https://doi.org/http://>

doi.org/10.1016/j.ribaf.2008.07.002

Sufian, F. (2011). Benchmarking the efficiency of the Korean banking sector: a DEA approach. *Benchmarking: An International Journal*, 18(1), 107–127.

Wahab, N. A., & Rahman, A. R. A. (2012). Efficiency of Zakat Institutions in Malaysia: An Application of Data Envelopment Analysis. *Journal of Economic Cooperation and Development*, 1(205), 95–112.

Wahab, N. A., & Rahman, A. R. A. (2012). Productivity growth of zakat institutions in Malaysia: An application of data envelopment analysis. *Studies in Economics and Finance*, 29(3), 197–210. <https://doi.org/10.1108/10867371211246876>

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