Determinants of Efficiency of Zakat Institutions in Malaysia: A Non-parametric Approach

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ABSTRACT

Paying zakat is an obligation of the rich Muslims to give a specific amount of their wealth (with certain conditions and requirements) to beneficiaries called al-mustahiqqin with the main objective of the achievement of socioeconomic justice. Zakat institutions are trusted bodies that manage zakat in Muslim countries. In Malaysia, such zakat institutions are State Islamic Religious Councils (SIRCs). The institutions are expected to play a key role in promoting the socio-economic objectives of zakat in Malaysia. Thus, it is of prime importance that these institutions are being managed efficiently. The purpose of this paper is to analyse the efficiency of zakat institutions in Malaysia. This study uses the Malmquist Productivity Index to estimate productivity and efficiency of zakat institutions in Malaysia and the Tobit model to determine the factors affecting efficiency of zakat institutions in Malaysia. The data consists of a panel of fourteen zakat institutions in Malaysia during the period of 2003 to 2007. Our results suggest that Total Factor Productivity (TFP) of zakat institutions in Malaysia increased at an average rate of 2.4 per cent during the study period and is mainly attributed to technical progress rather than efficiency components. The empirical findings based on the Tobit regression suggest that zakat payment system, computerised zakat system, board size, audit committee and decentralisation significantly affect the efficiency of zakat institutions in Malaysia.

Keywords: Efficiency, Data Envelopment Analysis (DEA), *Zakat*, *Zakat* Institutions, Malaysia.

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1. Introduction

One of the performance measures in the public sector is efficiency. *Efficiency* deals with both inputs and outputs that measures how productive inputs are turned into outputs. Besides efficiency, there are two other measures of concern in public sector organisation. These are *Economy* and *Effectiveness*. Economy represents the relationship between resources expended or budgeted for an activity and what is received for them. *Effectiveness* focuses mainly on the outputs that refer to goods and services produced as a direct result of management activities. An additional measure of performance is *outcomes* that refer to the consequences of the output produced (Schacter, 1999). In this study, efficiency of *zakat* institutions will be evaluated as one part of the performance measurement system.

In Malaysia, *zakat* is managed by the State Islamic Religious Councils (SIRCs). The institutions are expected to play a key role in promoting the socio-economic objectives of *zakat* in Malaysia. Thus, it is of prime importance that these institutions are being managed effectively and efficiently. Being public service organisations which are accountable to the stakeholders and Muslim public at large, these *zakat* institutions have been subjected to intense public scrutiny and criticism. Cursory examination would indicate many parties questioning the efficiency and effectiveness of these institutions in managing *zakat* affairs of their respective states. Public concern about the efficiency of *zakat* institutions arises as issues of misuses of *zakat* funds and frauds by *amil* (the collector of zakat funds appointed by the respective SIRCs) have continued to be unresolved issues. For example, a mainstream major Malay newspaper, Utusan Malaysia (2001) reported that the institution of *zakat* in Malaysia is still inefficient as there remains a growing number of the poor and needy in Malaysia. It was reported that this situation is due to the inefficient management of *zakat* distribution. BERNAMA[1] (2008) revealed cases of misappropriation of *zakat* funds in Selangor and an *amil* in Johor who had stolen RM18 thousand in 2011. Therefore, an investigation on the efficiency of the institution is important to evaluate the extent of *zakat* institutions' efficiency in Malaysia. Hence, this study aims to evaluate the efficiency of *zakat* institutions in Malaysia and further examine the determinants of the efficiency.

Having stated the importance of this study, the investigation of the efficiency of *zakat* institutions in Malaysia is achieved by applying

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[1] The Malaysian National News Agency.

the Malmquist Productivity Index. This paper also presents technical efficiency measures which illustrate how closely an operating unit functions in relation to the production frontier. Technical efficiency indicates the degree to which the operating unit produces the maximum feasible output for a given level of inputs, or uses the minimum amount of feasible inputs to produce a given level of output. Higher efficiency from one period to another does not necessarily suggest that the operating unit achieves higher productivity, since technology may have changed. The data which form the basis of the study have been obtained from the annual report of *Pusat Pungutan Zakat*, Kuala Lumpur[2] as well as from the office of the SIRCs and Zakat Center for which data that is unavailable in the annual report. The structure of this paper is as follows. The next section provides some literature on *zakat* and efficiency. Section 3 discusses the methodology and input-output specification. Section 4 reports the findings and the last section concludes.

2. Related Studies

In Malaysia, all aspects pertaining to the administration of *zakat* are under the jurisdiction of the states through the SIRCs. There are a total of fourteen SIRCs, one for each of the thirteen states and one for the federal territory. Due to the demand of more efficient and effective collection and distribution of *zakat* funds in Malaysia, some of the Religious Councils have corporatised an institution that is responsible for the oversight of collection (and distribution) part of *zakat* in those particular states. Eight Religious Councils have so far been corporatised, starting with *Pusat Pungutan Zakat* (PPZ), Wilayah Persekutuan in 1991, followed by *Pusat Zakat* Selangor, Pahang and Pulau Pinang in 1995, and lastly *Pusat Pungutan Zakat* Negeri Sembilan and Melaka in 2000 (Ahmad *et al.*, 2006). It was followed by *Tabung Baitulmal* Sarawak in 2001 and the latest was *Pusat Zakat* Sabah which was corporatised in 2007. However, to date, only Selangor, Pulau Pinang, Sarawak and Sabah are fully corporatised (both Collection and Distribution operations).

The rise of New Public Management and decentralisation show a transfer of some public services to the private sector and has been seen to be more effective and contributed to a decline in the traditional ethos of the public sector (Brereton and Temple, 1999). The decentralisation

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[2] PPZ Kuala Lumpur has taken its own initiative in combining data of all zakat institutions in Malaysia.

of the Islamic religious councils showed a transfer of authority or decentralisation of the chairman of the councils from Sultan to the state government (*Menteri Besar* or Chief Minister) and further delegation to others than the Chief Minister. To date, the religious councils of Perak, Kelantan, Perlis and Pahang are still chaired by the Sultan, while Terengganu, Melaka and Negeri Sembilan have decentralised the authority of the religious councils to the Chief Minister. The remaining religious councils have been further decentralised to others than Sultan and the Chief Minister.

Most studies conducted on *zakat* in Malaysia concentrated on various areas including theoretical (Mujitahir, 2003; Tarimin, 1995), legal and compliance (Idris *et al.*, 2003; Ahmad, 2004), accounting (Abdul Rahman, 2003; Ismail and Sanusi, 2004) and Muslim awareness and payment behaviour (Nor *et al.*, 2004; Ahmad *et al.*, 2005; Idris and Ayob, 2002). However, there are very few studies that examined the performance of *zakat* institutions. Some studies focused on the performance of *zakat* collection and distribution (Noor et al., 2005) and some other studies measure the impact of privatisation on the performance of *zakat* institutions (Nor Ghani *et al.*, 2001; Ahmad *et al.*, 2005). It can be seen that there is no study which comprehensively examines the efficiency of Malaysian *zakat* institutions.

In terms of efficiency, economic efficiency is defined in economic theory as a term describing how well a system is performing, in generating the maximum desired output for given inputs with available technology. Efficiency is improved if more output is generated without changing inputs. An economic system is more efficient if it can provide more goods and services for society without using more resources. Studies on the efficiency of financial institutions have also been extensively undertaken especially in the banking sector. Sufian (2006), Hassan (2006), Tahir, Bakar and Haron (2009), Sufian and Habibullah (2010), Maamor and Ismail (2010), Sufian (2013) are among the recent studies undertaken on financial institutions.

Although studies on public sector efficiency have been extensively undertaken (Eg: Local Government: Borger and Kerstens, (1996), Worthington and Dollery (2002), Gimenez and Prior (2007); public bus operators: Odeck and Alkadi (2001), Odeck and Alkadi (2004); Public hospital: Cristian Nedelea and Matthew Fannin (2012); Education: Ruggiero and Vitaliano (1999), Mante and O'Brien (2002)), its extension into Malaysian cases is a bit low. Husain, Abdullah and Kuman (2000), Ibrahim and Md. Salleh (2006) and Mohd Arshad (2012) are

among studies that explore the efficiency of public sectors in Malaysia. Husain, Abdullah and Kuman (2000) studied the efficiency of the Road Transport Department (RTD) using Data Envelopment analysis (DEA) and found out that out of 46 service units, only 11 service units scored above 50% in efficiency scores. Ibrahim and Md. Salleh (2006) for instance, in their studies of local governments in providing local public goods and services, found that the overall result showed that most of the local governments in Malaysia are cost inefficient, and that municipality councils were more inefficient than the district councils. Mohd Arshad (2012) who investigates the level of technical efficiency of Malaysia's secondary education in comparison with other countries found that Malaysia is found technically inefficient in terms of utilising its educational resources. To our knowledge, Abd. Wahab & Abdul Rahman (2011, 2012) are the first studies undertaken in examining efficiency of zakat institutions in Malaysia. However, the studies investigated the efficiency of zakat institution in the first stage without examining its determinants. Hence, this study tries to fill this gap by embarking on a study on factors contributing to the efficiency of *zakat* institutions in Malaysia with the hope to contribute towards an improvement of the performance of *zakat* institutions in Malaysia.

3. Methodology

3.1 *Malmquist Productivity Index and Technical Efficiency*

The Malmquist index approach has been used in a variety of studies related to the financial sector to measure productivity change. In particular, this approach has been applied in various studies such as Worthington & Dollery (2002) to examine the productivity of the Australian local government; Rezitis (2006) to measure efficiency of the Greek banking industry; Jajri (2007) to analyse the total factor productivity growth rate in Malaysia for the period 1971-2004; and Sufian and Haron (2008) to investigate the performance of the Malaysian Islamic banking sector.

The advantages of the Malmquist productivity index are that it does not make assumptions about the optimising behaviour of the producers and it allows for inefficiency (Fare, Grosskopf, Norris and Zhang, 1994). Furthermore, the Malmquist index does not rely on econometric estimation, but instead it uses a nonparametric approach similar to that used by Data Envelopment Analysis (DEA). The advantages

of using a nonparametric approach are that it avoids imposing a parametric specification for the underlying technology as well as for the distributional assumption of the inefficiency being studied. DEA is the most suitable method in examining the efficiency of *zakat* institutions in Malaysia over other methods as it has a number of desirable features suitable for this particular study. DEA does not require either input or output prices in their construction. It is also based on a distance function approach which can handle multiple inputs and outputs. The method also does not assume any specific behavioural assumption of the Decision Making Units (DMUs). In addition, it was reported in Charnes et al. (1978, 1979) that DEA was originally developed in response to a need for improved methods for evaluation and controlling public sector activities. Therefore, DEA can be considered as the appropriate method for evaluating the efficiency of *zakat* institutions in Malaysia. In this paper, a nonparametric approach is used because it is relatively less data demanding, i.e., it works quite well with a small sample size, compared to a parametric approach. Thus, the small sample size of this study, which contains only 14 Decision Making Unit (DMUs), is conducive to the use of a nonparametric approach.

The Malmquist productivity index, as presented by Fare et al. (1989), is linked with the use of distance functions, which describes multi-input, multi-output production technology without the involvement of explicit price data and the need to specify behavioural assumptions such as profit maximisation or cost minimisation. Distance functions are classified into output and input distance functions. An output (input) distance function is defined as the reciprocal of the maximum (minimum) proportional expansion (contraction) of the output (input) vector given an input (output) vector (Fare et al., 1994). In this study, output distance functions are used. It should be stated that a production technology should be determined before an output distance function is defined. Let a multiple-input and multiple-output production technology at time t (S^t) be defined as:

$$S^t = \{(\mathbf{x}^t, y^t) : \mathbf{x}^t \text{ can produce } \mathbf{y}^t\}, \, t = 1,\ldots,T, \tag{1}$$

where $\mathbf{x}^t$ is an (Nx1) input vector and $\mathbf{y}^t$ is an (Mx1) output vector. Then the output distance function at time t is defined as:

$$D_0^t\{(x^t, y^t) = \inf\{\theta : (y^t / \theta) \in S^t)\}, \, t=1,\ldots,T. \tag{2}$$

The distance function in (2) is defined as the reciprocal of the maximum proportional expansion of the output vector, y^t, given input vector, x^t, under period t technology. If the output vector is on the boundary or frontier of technology, then the value of the distance function is one, i.e. the production is technically efficient, otherwise it is less than one, i.e. the production is technically inefficient. Fare et al. (1989) showed that the Malmquist total factor productivity index is represented as the geometric mean of two Malmquist indexes and is defined as:

$$M_0(x^{t+1}, y^{t+1} x^t, y^t) = [(M)_0^t(x^{t+1}, y^{t+1} + x^t, y^t) \times M_0^{t+1}(x^{t+1}, y^{t+1} x^t, y^t)]^{1/2} \tag{3}$$

$$= \left[\left(\frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_0^{t+1}(x^t, y^t)} \right) \left(\frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_0^{t+1}(x^t, y^t)} \right) \right]^{1/2}$$

where $M_0^t(x^{t+1}, y^{t+1} x^t, y^t)$ and $M_0^t(x^{t+1}, y^{t+1} x^t, y^t)$ are Malmquist indices measuring productivity change between periods $t+1$ and t and are defined using technology at time t and $t+1$ respectively. In addition, Fare et al. (1989) indicated that the Malmquist productivity index given by equation (3) can be decomposed into two components: the efficiency change *(EFFCH)* component which measures how much closer to the production frontier the operating unit is in period $t+1$ compared to period t and it is referred as the catching up effect, and the technical change *(TECHCH)* component which captures the change in the production technology as a shift in the production frontier. Thus, equation (3) is written as follows:

$$M_0(x^{t+1}, y^{t+1} x^t, y^t) = \frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t)} \times \left[\left(\frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_0^{t+1}(x^{t+1}, y^{t+1})} \right) \left(\frac{D_0^t(x^t, y^t)}{D_0^{t+1}(x^t, y^t)} \right) \right]^{1/2} \tag{4}$$

Where :

$$\frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t)} = EFFCH \tag{5}$$

$$\left[\left(\frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_0^{t+1}(x^{t+1}, y^{t+1})} \right) \left(\frac{D_0^t(x^t, y^t)}{D_0^{t+1}(x^t, y^t)} \right) \right]^{1/2} = TECHCH \tag{6}$$

Productivity advances occur if *Mo(•)>1*. In a similar way, improvements in efficiency occur if *EFFCH>1* and technical advances occur if *TECHCH>1*. Fare et al. (1994) showed that the efficiency change *(EFFCH)* component of the index could be written as the product of two components: the pure efficiency change (PECH) component and the scale efficiency change component (SECH). In particular:

$$\frac{D_0^{*t}(x^{t+1}, y^{t+1}|VRS)}{D_0^t(x^t, y^t|VRS)} = PECH \tag{7}$$

$$\left[\left(\frac{D_0^t(x^t, y^t|VRS)}{D_0^t(x^t, y^t)}\right)\left(\frac{D_0^{t+1}(x^{t+1}, y^t)}{D_0^{t+1}(x^{t+1}, y^{t+1}|VRS)}\right)\right]^{1/2} = SECH \tag{8}$$

where *VRS* is variable returns to scale and $D_o(• | VRS)$ indicates distance functions calculated under the assumption of variable returns to scale. Values of *SECH>1* indicate that the operating unit has become more scale efficient. In order to estimate the component distance functions of the Malmquist index, the data envelopment analysis (DEA), a non-parametric technique of linear programming, is used. More specifically, the Malmquist productivity index (4) is calculated by solving four linear programming problems, each one of which corresponds to each of the four distance functions:

$D_0^t(x^t,$

$y^t), D_0^{t+1}(x^{t+1}, y^{t+1}), D_0^t(x^{t+1}, y^{t+1}), D_0^{t+1}(x^t, y^t)$

By assuming constant returns to scale, these distance functions are calculated by using the fact that the output distance function is reciprocal to Farrell's (1957) output-based technical efficiency measurement (Fare et al. 1994). Therefore, the distance function $D_0^t(x^t, y^t)$ for each *k'=1,…,K* is calculated as follows:

$$\{D_0^t(x^{k',t}, y^{k',t})\}^{-1} = \max \infty^{k'} \tag{9}$$

Subject to:

$$\infty^{k'}, y^{k',t} \le \sum_{K=1}^{K} z^{k,t} y^{k,t}_m \qquad m=1, …M;$$

$$\sum_{K=1}^{K} z^{k,t} y^{k,t}_n \le x^{k',t}_n \qquad n=1,…N;$$

$$z^{k,t} \ge 0 \qquad k=1,…K.$$

where $k=1,\ldots,K$ DMUs producing m$=1,\ldots$, M outputs,, $y_m^{k,t}$ at each time period $t=1,\ldots,T$. These outputs are produced with the use of $n=1,\ldots,N$ inputs, $x_n^{k,t}$ and $z^{k,t}$ is the intensity variable identifying to what extent a particular DMU is employed in production. The other three distance functions are calculated similarly, substituting the appropriate index (i.e. t or $t+1$). In order to derive the decomposition of the efficiency change *(EFFCH)* component (5) into the pure efficiency change *(PECH)* component (7) and the scale efficiency change *(SECH)* component (8), the calculation of two more distance functions is needed.

The Malmquist productivity index and its components discussed above are calculated on the basis of measures of technical efficiency. Technical efficiency measures are calculated for each DMUs each year of the period 2003-2007 based on the DEA model (9). Note that in this paper, $D_0^t(x^{k',t}, y^{k',t})$ or $\frac{1}{\infty k'}$, defines the output oriented technical efficiency measure which varies between zero and one (Coelli et al. 1997). This technical efficiency measure is not only influenced by the pure technical efficiency, but also by the production scale. Thus, the above technical efficiency measure, which can be viewed as the overall technical efficiency *(TE)*, can be decomposed into pure technical efficiency *(PTE)* and scale efficiency *(SE)* components. Therefore, the constant returns to scale technology assumption of model (9) is relaxed to those of variable returns to scale (VRS) and non-increasing returns to scale (NIRS or Constant Return to Scale (CRS)) by incorporating the restrictions $\sum_{K=1}^{K} z^{k,t} = 1$ and $\sum_{K=1}^{K} z^{k,t} \leq 1$ and respectively. Therefore, two more efficiency measures are produced based on $D_0^t(x^{k',t}, y^{k',t}|VRS)$ and $D_0^t(x^{k',t}, y^{k',t}|NIRS)$.

The pure efficiency *(PTE)* measure is given by $D_0^t(x^{k',t}, y^{k',t}|VRS)$ since it excludes the production scale impact and the scale efficiency *(SE)* measure which is defined as the ratio of $D_0^t(x^{k',t}, y^{k',t})$ to $D_0^t(x^{k',t}, y^{k',t}|VRS)$ that is:

$$SE = \frac{D_0^t(x^{k',t}, y^{k',t})}{D_0^t(x^{k',t}, y^{k',t}|VRS)} \tag{10}$$

Note that $D_0^t(x^{k',t}, y^{k',t}) \leq D_0^t(x^{k',t}, y^{k',t}|NIRS) \leq D_0^t(x^{k',t}, y^{k',t}|VRS) \leq 1$. It indicates that $SE_{k'} \leq 1$. If $SE_{k'} = 1$, then DMUs k' is scale efficient; if $SE_{k'} < 1$, then DMUs k' is scale inefficient due to either decreasing returns to scale (DRS) as $D(x^{k',t}, y^{k',t}|NIRS) = D_0^t(x^{k',t}, y^{k',t}|VRS)$ or increasing returns to scale (IRS) as $D_0^t(x^{k',t}, y^{k',t}|NIRS) < D_0^t(x^{k',t}, y^{k',t}|VRS)$.

3.2 Tobit Analysis

To test the determinants of efficiency of *zakat* institutions in Malaysia, a model of efficiency (PTE) will be tested against the determinants of *zakat* efficiency. PTE reflects the efficiency score of a DMU regardless of its scale/size (Coelli, Rao and Battese, 2005). The efficiency score based on a DMU's size is shown by the scale efficiency (SE) results. PTE is preferred compared to TE since PTE (the VRS model) is suitable for the firm which is run in imperfect competition, government regulations and constraints on finance (Coelli, Rao and Battese, 2005). Since *zakat* institutions are under the state government list, hence, it is more suitable to consider the VRS model (PTE) compared to the CRS one (TE).

Since the DEA technique produces efficiency scores which are bound by 0 and 1, hence, it is appropriate to use a limited dependent variable approach, such as the Tobit model to perform the multivariate analysis. The possible determinants of the efficiency of *zakat* institutions are investigated using a random effects[3] Tobit model. Details of the determinants are provided in the Appendix.

The equation for the Tobit model is:

$$Z^*_k = \beta' \, X'_k + \varepsilon'_k \tag{11}$$

Where $Z_{k'} = 1$ $\quad\quad$ if $Z^*_{k'} \geq 1$,

Or $\quad Z_{k'} = Z^*_{k'}$ $\quad\quad$ if $Z^*_{k'} < 1$,

Where β is a vector for estimated parameters, Z^*_k is the limited dependent variable ie. PTE and SE, $X_{k'}$ is a vector of independent variables and ε'_k is the error term.

Zakat has been functioning as an instrument of relieving poverty among the Muslims. The establishment of the institution of *zakat* for the purposes of collecting *zakat* dues and distributing *zakat* funds is the fundamental principle of the law and governance of *zakat*. Hence, the state has the responsibility of collecting and distributing *zakat* in a well-organised system as prescribed by Islam (Muhammad Ali, 2011). Thus, it is of prime importance that *zakat* is managed efficiently.

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[3] A random effects model assumed the unobservable effects are uncorrelated with the observed explanatory variables, whereas a fixed effects model assumes that they are correlated. In the context of a Tobit model, the statistical package Stata only provides the random effects option. This is because the fixed effects cannot be conditioned from the likelihood, and unconditioned fixed effects estimates are biased.

With regards to *zakat* institutions in Malaysia, many factors can affect its efficiency. One of the important factors is the number of branches. Applying the branching concept to *zakat* institutions is expected to help in identifying potential *zakat* recipients as well as monitoring the effectiveness of the disbursement in certain area. Having several branches in a particular state enables *zakat* institutions' personnel to have direct and easy accessibility to the public at large. However, findings from the literature showed that the relationship between the number of branches and efficiency varies across studies. Chang & Chiu (2006) for instance, evidenced a positive relationship while Jackson & Fethi (2000) found an insignificant and negative relationship between the two variables. The result of Pasiouras, Sifodaskalakis & Zopunidis (2007) also showed that more branches reduce technical and cost efficiency. In this study, the well-functioning branch is expected to increase the efficiency of *zakat* institutions in Malaysia.

The second factor that we consider in this study is number of staff. Human capital is one of the main inputs in production and should never be ignored in the evaluation of efficiencies. They serve as an important resource in attaining objectives of the organisation. However, it is not the number of people exactly that serves the deal, but how motivated they are, and how efficiently they possess the capability to perform a particular task. Most prior studies evidenced that a large number of people hamper efficiency which may result in delays (Keen, 1991) and increase complexity (Ginn and Barlog, 1994). With regards to *zakat* institutions, a high number of staff is therefore, assumed to reduce efficiency.

The use of information and communication technology (ICT) through interconnected computer networks allows individual and institutions to communicate with each other effectively and inexpensively. The widespread availability of ICT nowadays (computers, digital telecommunication, etc.) has led to the creation of an unprecedented capacity for dissemination of knowledge and information to society. Studies have found that ICT leads to the efficiency of an institution. For instance, Ng & Chang (2003) studied the effect of computerisation on efficiency in terms of the percentage of workers using computers. The results showed that computerisation exerted a positive effect on efficiency scores. With regard to *zakat* affairs, three different technological advancements are found available in *zakat* institutions namely *zakat* payment systems (ZPS), operational websites (WEB) and computerised *zakat* systems (CZS). *Zakat* payment systems

refer to the available tools and devices offered by *zakat* institutions for *zakat* payment. For example, short-message-service (SMS), auto-teller machine (ATM), credit card, internet-banking, phone-banking, newspapers and magazines are among modern zakat payment systems offered by *zakat* institutions recently. However, some *zakat* institutions have offered a more varied number of *zakat* payment systems compared with others.

A website of *zakat* institutions may contain all information on *zakat*, *zakat* calculator, data of *zakat* collection and distribution as well as news and updates of the related *zakat* institutions. Hence, the existence of operational websites give a lot of benefits for all *zakat* stakeholders and to a certain extent improves efficiency of *zakat* institutions. Meanwhile, computerised zakat systems refer to a system developed by some *zakat* institutions in Malaysia for managing data on *zakat* collection as well as *zakat* distribution. It was first utilised by *Pusat Pungutan Zakat* (PPZ) *Kuala Lumpur* to keep data on *zakat* payers and printing out the receipt of *zakat* payment. A more developed computerised *zakat* system contains information and data on *zakat* collection, *zakat* distribution, administration as well as financial data of the institutions. The existence of the computerised *zakat* system may expedite the working process of *zakat* institutions which may lead to improve *zakat* efficiency.

Every single organisation has its own governance structure. As for *zakat* institutions in Malaysia, the governance structure varies from one state to another. Better governance is associated with greater efficiency of an organisation (Meon & Weill, 2005). Governance characteristics such as the structure of Boards of Directors and Audit Committees reflects the performance of an institution and further affect efficiency (Khiari et al., 2007) Hence, the efficiency of an institution is determined by the direction and performance of the Board. Consequently, it is assumed that the governance characteristics affect the extent of efficiency of *zakat* institutions in Malaysia. In this study, Board size, number of meetings and existence of Audit Committees are assumed to affect *zakat* efficiency.

Corporatisation refers to the transformation of state assets or agencies into state-owned corporations in order to introduce corporate management techniques to their administration. In the early 1990s, *zakat* institutions in several states such as Kuala Lumpur and Selangor embarked on a new strategy to improve their performance by corporatising the *zakat* collection counter. Under the corporatisation regime, the institutions adopted management concepts of the corporate sector such as marketing, research and development as well as utilising

management information systems (MIS). Even though these states have their own corporatised *zakat* collection counter, the centers are still under the governance of the SIRCs. Studies have been done on the effect of corporatisation on efficiency. For example, Shleifer and Vishny (1994) show that corporatisation exerts a positive impact on a firm's relative efficiency as long as managers have additional control rights over the firm. According to Cambini et al. (2008), corporatisation, reallocating control rights to managers, is a potentially effective instrument in providing incentives to improve performance and increase efficiency. Similarly, Vagliasindi (2008) argue that better monitoring systems, improvements in information-sharing channels and reduction in governmental political intervention may enhance efficiency of an organisation. As discussed earlier, some religious councils have corporatised *zakat* affairs in their particular state with the aim of improving *zakat* management and to enhance the awareness of paying *zakat*. Therefore, it is believed that corporatisation of *zakat* institutions is expected to enhance their efficiency.

Another important factor that will affect *zakat* efficiency is decentralisation. A chairman of a religious council in Malaysia is the person responsible for determining the objectives and the missions of the council. After the decentralisation of the *zakat* institutions in the 1980s, the councils were chaired by different personalities. It has been argued that decentralisation improves governance and public service delivery by increasing allocative efficiency through better matching of public services to local preferences and productive efficiency through increased accountability of local governments to citizens, through fewer levels of bureaucracy, and better knowledge of local costs (The World Bank, 2001). However, the authority has to be people who respond to local demand as well as having adequate mechanisms for accountability because granting authority without accountability can lead to corruption and lower productive efficiency. It also needs to be accompanied by reforms that increase the transparency and accountability of the institution. In case of the SIRCs, the transfer of the person who chairs the Councils from Sultans to the State Governments (*Menteri Besar* or Chief Minister) to others may contribute to different quality of performance of the institution since decentralisation has seen to show a more effective management of an institution. Since there exist differences in persons who chair the religious councils of *zakat* institutions in Malaysia, it is assumed that the differences contribute to the efficiency of *zakat* institutions in Malaysia.

Based on the above discussion, the model of *zakat* efficiency is written as:

$$PTE_{it} = \beta_0 + \beta_1 NOB_{it} + \beta_2 NOS_{it} + \beta_3 ZPS_{it} + \beta_4 WEB_{it} + \beta_5 CZS_{it}$$
$$+ \beta_6 BS_{it} + \beta_7 MPY_{it} + \beta_8 AC_{it} + \beta_9 DEC_{it} + \beta_{10} CORP_{it} + \mu_{it}$$
$$SE_{it} = \beta_0 + \beta_1 NOB_{it} + \beta_2 NOS_{it} + \beta_3 ZPS_{it} + \beta_4 WEB_{it} + \beta_5 CZS_{it}$$
$$+ \beta_6 BS_{it} + \beta_7 MPY_{it} + \beta_8 AC_{it} + \beta_9 DEC_{it} + \beta_{10} CORP_{it} + \mu_{it}$$

Where:

PTE, SE : Pure technical efficiency and scale efficiency computed from the DEA model
NOB : Number of branches
NOS : Number of staff
ZPS : *Zakat* payment system
WEB : Website
CZS : Computerised *zakat* system
BS : Board size
MPY : Meeting per year
AC : Audit committee
DEC : Decentralisation
CORP : Corporatisation

3.3 Data and Inputs-Outputs Definition

For the purpose of this study, the production approach[4] is chosen in defining the inputs and outputs. The production approach is chosen whereby *zakat* institutions are assumed to produce more *zakat* funds (collecting *zakat*, and 'persuading' more people to pay *zakat* and distribute it) using *dakwah* and other promotion methods. Since this study is the first attempt in measuring efficiency of *zakat* institutions, the choices of inputs and outputs for this study are serendipitous and based on the availability of data for analysis.

The data used in the analysis are different in units of measurement (some are in terms of Ringgit Malaysia such as total expenditure, total collection and total distribution, while the others are in terms of real numbers). Avkiran (1999) acknowledges the edge of the DEA by stating

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[4] There are mainly two approaches in defining inputs and outputs especially in the banking sector, ie. the production approach and intermediation approach. Under the production approach, an institution is defined as a producer. The intermediation approach on the other hand, assumes that a DMU acts as an intermediary.

that the technique allows the researchers to choose any kind of inputs and outputs of managerial interest, regardless of different measurement units and there is no need for standardisation. Table 1 displays the descriptive statistics of the inputs and outputs employed in this study. All data were collected from the institutions' annual report of the SIRCs over the period of study (2003 to 2007) as well as from the officers of the councils for data that were not available in the annual report.

Table 1   Descriptive Statistics of Inputs and Outputs of the SIRCs, 2003-2007

	Mean	Median	Maximum	Minimum	Std. Dev
Input					
No. of staff	127	100	461	22	91
Total Expenditure	37,742.331	25,727,861	214,767,671	1,957,135	42,735,550
Output					
Total collection	42,079,560	27,771,981	202,193,541	5,102,537	42,224,646
Total distribution	32,111,273	20,392,516	174,520,057	3,036,304	34,232,324
No. of *zakat* payers	304,079	62,408	2,100,562	1,482	505,887

Based on Table 1, of all 14 SIRCs, the state of Selangor is found to have the highest number for most variables used since the state of Selangor has the largest concentration of Muslim population in Malaysia with 16.75% of Muslim population in 2007 (Department of Statistics Malaysia, 2010). On the other hand, the state of Perlis is found to have the lowest value of outputs and inputs, simply due to the fact that the state of Perlis is the smallest state in Malaysia with the smallest Muslim population in the country (which recorded only 1.21% of total Muslim population in 2007)(Department of Statistics Malaysia, 2010).

4.   Empirical Results

In this section, the results of productivity change followed by technical efficiency (TE), and its decomposition into pure technical efficiency (PTE) and scale efficiency (SE) components are presented. The efficiency is examined first by employing the Malmquist Productivity Index using

the DEA methods for each year under investigation. To substantiate the results under the DEA approach, a random-effect Tobit model is employed to relate the technical efficiency scores with its determinants.

4.1 Productivity Change

Table 2 presents the Malmquist Productivity Index (MPI) i.e. Total Factor Productivity Change (TFPCH) and its components: Technical Change (TECHCH), Efficiency Change (EFFCH), Pure Efficiency Change (PECH) and Scale Efficiency Change (SECH) for the period 2003 to 2007. If the value of MPI or its components is greater (less) than one, it denotes improvement (deterioration) in performance.

Table 2   Summary results of Malmquist Productivity index and its components, 2003-2007

Year	TFPCH	TECHCH	EFFCH	PECH	SECH
2003-2004	1.038	1.004	1.034	1.054	0.981
2004-2005	0.969	0.998	0.971	0.943	1.029
2005-2006	1.027	1.035	0.965	1.025	0.968
2006-2007	1.065	1.104	0.965	1.025	0.942
2003-2007	*1.024*	*1.035*	*0.990*	*1.011*	*0.980*

TFPCH: Total Productivity Change; TECHCH: Technical Change; EFFCH: Efficiency Change; PECH: Pure Efficiency Change; and SECH: Scale Efficiency Change.

Based on the results in Table 2, it indicates that TFP increased at an average rate of 2.4 percent over the entire period. On average, this improvement is ascribed to a technical progress (TECHCH) of 3.5 per cent while efficiency change (EFFCH) contributed a negative change (-1%). Furthermore, the efficiency change is largely contributed by pure efficiency (1.1%) while scale efficiency contributed a negative change (-2%) to the efficiency change. The substantial growth in technical change and negative growth in efficiency components suggests that an increase in TFP of *zakat* institutions in Malaysia is due to improvements in the technical aspects rather than the innovation in efficiency components.

4.2 Technical Efficiency

Table 3 displays the mean technical, pure technical and scale efficiency score of *zakat* institutions in Malaysia for the years 2003 (Panel A), 2004

(Panel B), 2005 (Panel C), 2006 (Panel D) 2007 (Panel E) and all years (Panel F).

Table 3   Summary statistics of efficiency scores (TE, PTE and SE)

Year/Types of Efficiency	Mean	Min	Max	SD
Panel A: 2003				
TE	0.810	0.325	1.000	0.223
PTE	0.845	0.462	1.000	0.205
SE	0.950	0.704	1.000	0.084
Panel B: 2004				
TE	0.828	0.363	1.000	0.199
PTE	0.882	0.518	1.000	0.178
SE	0.933	0.680	1.000	0.089
Panel C: 2005				
TE	0.812	0.337	1.000	0.227
PTE	0.834	0.389	1.000	0.229
SE	0.959	0.752	1.000	0.075
Panel D: 2006				
TE	0.802	0.336	1.000	0.210
PTE	0.857	0.464	1.000	0.193
SE	0.928	0.724	1.000	0.079
Panel E: 2007				
TE	0.779	0.331	1.000	0.224
PTE	0.874	0.515	1.000	0.127
SE	0.880	0.643	1.000	0.127
Panel F: All years				
TE	0.806	0.325	1.000	0.211
PTE	0.861	0.389	1.000	0.192
SE	0.929	0.643	1.000	0.094

Based on table 3, the TE scores of *zakat* institutions are found to be the highest in 2004 (0.828), while in 2007, TE scores of *zakat* institutions is the lowest (0.779). Similarly the PTE score is also found to be the highest in 2004 (0.882), but 2005 is the lowest PTE year score (0.834). However, based on the results, the efficiency score of *zakat* institutions in Malaysia has not changed much over years. Hence, one should pay particular attention to the differences between efficiency scores of

different zakat institutions as the measurements between the minimum and the maximum scores among *zakat* institutions are even bigger than the differences between years. Another interesting result that should be of concern is the higher results of SE compared to PTE which suggest that efficiency of *zakat* institutions in Malaysia may be due to the scale or size of the institutions rather than their technical aspects. The results show that pure technical inefficiency dominates scale inefficiency of Malaysian *zakat* institutions. In other words, it shows that *zakat* institutions in Malaysia have relied more on its size of operation in gaining efficiency.

4.3 The Determinants of Zakat Efficiency

The regression results focusing on the relationship between *zakat* efficiency and the explanatory variables are presented in Table 4. In this section, the determinants of efficiency of *zakat* institutions are tested against the PTE and SE of *zakat* institutions in Malaysia.

Table 4   The determinants of PTE and SE of *zakat* institutions in Malaysia

Dependent variables	PTE		SE	
	Coefficient	P> | t |	Coefficient	P> | t |
constant	0.3622	0.164	0.8383	0.000
NOB	0.0120	0.133	0.0041	0.187
NOS	-0.0003	0.672	-0.0008	0.000***
ZPS	0.1287	0.001***	0.0168	0.095*
WEB	0.0518	0.610	0.0670	0.079
CZS	-0.4791	0.001***	-0.0523	0.248
BS	0.0202	0.094*	0.0058	0.217
MPY	0.0189	0.467	-0.0108	0.255
AC	0.2528	0.041*	-0.1138	0.006***
DEC	0.1243	0.025*	0.2279	0.000***
CORP	-0.1397	0.200	-0.0626	0.116
sigma	0.2247		0.0947	

NOB: Number of branches available; NOS; Number of staff; ZPS: Total zakat payment system offered; WEB: Dummy of operational website; CZS: Dummy of computerized zakat system; BS: Board size; MPY: Meeting per year; AC: Audit committee; DEC: Decentralization; CORP: Corporatization.
***, ** and * represent significance at 1 per cent, 5 per cent and 10 per cent levels respectively.

Table 4 shows the determinants of PTE and SE of *zakat* institutions in Malaysia. Based on the results, all variables positively affect PTE of *zakat* institutions except NOS, CZS and CORP and only ZPS, CZS, BS, AC and DEC are found significant in determining PTE of *zakat* institutions. In terms of SE, all variables positively affect SE of *zakat* institutions except MPY, AC, NOS, ZS and CORP and only AC, NOS, ZPS, WEB and DEC are found to be significant in determining SE of *zakat* institutions.

4.3.1 Discussion of the Results

Branch networks may facilitate the geographical constraint of several large states in Malaysia. Although the results are not statistically significant at any conventional levels, the results imply that the extension of branch networks to collect and distribute *zakat* funds, may increase the costs but may however, influence the increase in outputs (of *zakat* collection and distribution). Selangor, Perak and Kedah for instance, are the leading institutions in providing a higher number of branches in the respective states. This is probably due to the vast expanse of the state and that those states have among the highest concentration of Muslims in their population. Hence, the extension of branches into a local committee may ease the *amil*[5] to collect *zakat* as the localised area of *zakat* management has become narrower. Hence, the branch may also fulfill customers' needs more easily.

A negative coefficient of NOS suggests that a higher number of staff may not consequently increase the efficiency of *zakat* institutions in Malaysia. A large number of people in an organisation tend to diminish efficiency as it may results in delays (Keen, 1991) and increase complexity (Ginn and Barlog, 1994). Large numbers of people involved in a process of an organisation may affect the process efficiency (see Arveson, 1999) whereby the bureaucratic processes which add no value to an organisation nor to the customer tend to add inefficiencies (*Zaheer et al.*, 2008). Such results indicate that, in order to improve their efficiency, *zakat* institutions do not necessarily need to hire more staff and unnecessarily incur more staff costs. However, the quality and qualification of staff should be paid more attention to by the institutions.

With regards to technology, three proxies of technology were used to determine the efficiency of *zakat* institutions in Malaysia. The proxies are total *zakat* payment used by the institutions, existence of operational

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[5] Amil: the collector of zakat funds appointed by the authority.

websites and existence of computerised *zakat* systems. In theory, the use of technology may benefit the applicant in terms of work efficiency, be easy to use and provide many more advantages. However, in this study, the computerised *zakat* collection system is found to negatively affect the efficiency of *zakat* institutions in Malaysia. This could be due to the different levels of usage of the system. The system is developed on the institution's own initiative, using its own budget and involves a relatively high cost. More advanced *zakat* institutions such as in Penang, Selangor and Kuala Lumpur are using a more developed CZS which includes the reminder system, information about *zakat* payers and *zakat* recipients which enable them to perform various analyses, as well as other information such as the financial and administration system. In contrast, the CZS in some *zakat* institutions such as in Melaka and Kelantan only manages information on *zakat* payers and related information, but is not well-developed and integrated. The positive effect of operational websites suggest that their existence may improve the efficiency of *zakat* institutions in Malaysia. Based on the researchers' observation, most websites developed by *zakat* institutions in Malaysia provide the viewers with *zakat* information, *zakat* institution's information, a *zakat* calculator, as well as a complaint system to encourage further improvement of the institutions.

Perhaps the most important finding is the positive and significant coefficient of modes of *zakat* payment used, which suggests that the more types of *zakat* payment systems are offered by *zakat* institutions, the more efficient the institutions. Improvements in technology especially in collecting *zakat* funds have widely been used by higher-technology savvy applicants especially in urban states like Selangor and Kuala Lumpur. For instance, the Selangor state offers the highest number of *zakat* payment systems, and eases the way for *zakat* payers to pay *zakat* online. A total of 11 *zakat* payment systems were offered in Selangor, including internet banking, short-messages-services (SMS), ATM machine, kiosk machine, credit card, phone-banking and e-debit system. Furthermore, people in Kuala Lumpur and Selangor can also be considered as the most technology-literate in Malaysia since Kuala Lumpur is the capital city of Malaysia while Selangor is located near to the capital city of the country which exposed vastly to the development in technology.

Boards of directors have a number of important responsibilities including hiring and overseeing management teams, setting major policies and objectives and participating in the significant decisions

within their organisation. Thus, Boards of directors play a key role in setting the policies under which management operates, and Board decisions have a significant influence on an organisation's performance (Hsu and Petchsakulwong, 2010). Based on the results of the Tobit regression model, board size is found to be positively associated with efficiency of *zakat* institutions in Malaysia. Consistent with Abor *et al.* (2008), Huang *et al.* (2008) and Hsu and Petchsakulwong (2010), it indicates that a wider pool of knowledge and more varied opinions to draw from (provided by a larger Board), to a certain extent lead to increased efficiency of an organisation. A high number of knowledgeable *zakat* directors with diversity of perspectives, backgrounds, expertise and experience within the Board are important in making important decisions to improve the efficiency and further the attainment of the objectives and goals of the institutions. Perhaps the diversity of professionals on board may be more beneficial to be evaluated in order to complement the results. The number of professionals on a Board may be more beneficial than its size as the members would be expected to have outstanding experience and knowledge that can improve the efficiency of the institutions. However, due to the unavailability of data, this variable had to be left out from the analysis.

From the traditional functional perspective, the aim of auditing is to increase efficiency or financial or administrative accountability of an organisation based on the written rules and regulations of the said organisation. (Boerhannoeddin *et al.,* 2004). An Audit Committee is defined as a group of board members responsible for reviewing and monitoring all internal and external audit functions of an organisation (Boerhannoeddin *et al.*, 2004). An Audit Committee is established to oversee the financial reporting process including (but not limited to) supervising internal auditors, monitoring internal controls and ensuring adequate compliance with the standards. Since the committee reports to the Board of Directors, they have to be independent. Nonetheless, while other studies explore other dimensions of Audit Committees such as its size, diligence and financial expertise available on the Audit Committee (see Hsu and Petchsakulwong, 2010), this study investigated the effect of the existence of Audit Committees in the management of *zakat* institutions in Malaysia. In this study, the existence of an Audit Committee (AC) is found to be positively associated with PTE of *zakat* institutions in Malaysia. The result is probably attributed to the importance of an Audit Committee within an organisation although

there is a limited number of them in existence within *zakat* institutions in Malaysia during the study period. During the study period, there were only five *zakat* institutions in Malaysia (as for 2007) which had established Audit Committees in their organisation.

Under corporatisation, *zakat* institutions have implemented innovations and new approaches such as setting up a special unit on research and development, public relations, promotions and internal audit; the use of computers and information technology in *zakat* affairs and encouraged involvement of young and professionals that not only have religious backgrounds but also those who have modern and professional education (Makhtar and Ahmad, 2010). Furthermore, other transformations are also innovated by those corporatised institutions in transforming facilities and other methods of *zakat* payment involving the phone-banking system, using short-message-services (SMS), internet-banking, auto-teller machine (ATM), credit cards, debit cards and many other efforts, including more agressive promotion and publicity through advertisements, article writing, exhibitions, pamplets, documentary in electronic and print media (Makhtar and Ahmad, 2010). In terms of *zakat* distribution, the corporatised *zakat* institutions have innovated in creating a variety of *zakat* distribution projects as well as providing immediate assistance and aid to the recepients (Makhtar and Ahmad, 2010).

With innovation and transformation implemented, corporatised *zakat* institutions are assumed to be more efficient as compared to the conventional ones. However, surprisingly, the results show that corporatisation does not lead to overall improvement in the efficiency of *zakat* institutions in Malaysia. This could probably be due to the limited number of corporatised institutions because there are only three fully corporatised *zakat* institutions and another four are partially corporatised. Further analysis in Table 5 showed that fully corporatised *zakat* institutions are positively associated with the efficiency of *zakat* institutions in Malaysia while the partially corporatised ones negatively affect *zakat* efficiency. These provide evidence that the partially corporatised *zakat* institutions dominate the effect of corporatisation towards the efficiency of *zakat* institutions in Malaysia due to their larger numbers than the fully corporatised ones. On the other hand, it can be suggested that in order to improve their efficiency, *zakat* institutions should be fully corporatised as it involves the same pattern of working experience and may lead to input savings when a single institution manages both *zakat* collection and distribution matters .

Table 5   Tobit regression results of corporatisation

Dependent variables	PTE		SE	
	Coefficient	P> |t|	Coefficient	P> |t|
constant	0.9321	0.000***	0.9476	0.000***
DUMFCORP	0.4465	0.002***	0.0677	0.132
DUMPCORP	-0.0290	0.785	0.0073	0.860
sigma	0.3398		0.1376	

FCORP: Fully corporatised; PCORP: Partially corporatised.
*** represents significance at 1 per cent level.

In terms of organisational structure, SIRCs in Malaysia have undergone changes since the adoption of the decentralisation policy in the 1980s. Decentralisation is the process by which decision making responsibilities are transferred from higher levels of government to the lower levels (Winkler, 2005). Decentralisation of *zakat* institutions showed a transfer of authority i.e. from the Chairman of the institutions of the traditional structure of *Sultan/Raja/Yang Dipertua Negeri* to others, such as the State Government, or further down the hierarchy to departments other than the State Government. The system may benefit the *zakat* institutions in terms of attainability of the goals and objectives of the organisation as the decentralised authority at the lower level of management and those who are responsive to the local stakeholders of *zakat* affairs in the particular states.

A consistent result appears in terms of the effect of decentralisation (DEC) on the efficiency of *zakat* institutions in Malaysia. The positive and significant results of DEC in Table 4 suggest that consistent with Azfar *et al.* (2001) and Barankay and Lockwood (2007), decentralisation improves efficiency of an organisation as it increases accountability, reducing levels of bureaucracy as well as limiting the leakage of funds and other resources. There exists the need to have an authority which responds to local demands as well as to have adequate mechanisms for accountability. It is likely to be aware of local preferences which in turn, will enable it to adjust to local demands in a timely manner. With respect to *zakat* institutions in Malaysia, the decentralisation allows persons at other than the Chairman to respond to the local stakeholders

of *zakat* affairs in their states as they are those at the same level with the stakeholders of the institutions.

Furthermore, further analysis in Table 6 revealed that a two stage decentralisation of the chairmanship of *zakat* institutions to other than the Sultan and the Chief Minister tends to improve the efficiency of *zakat* institutions. The results could be due to the fact that decentralisation further down the organisational hierarchy leads to higher efficiency. The results of this study imply that, in order to improve the efficiency of *zakat* institutions in Malaysia, the Chairmanship of the institutions should be among the lower level of hierarchy of the management with appropriate experience and qualifications to chair and lead the councils. They should also be more transparent and accountable in managing the institutions. Furthermore, it also indicates that chairmanship held by a non-political person and those who have the appropriate ability and qualifications may also help to improve the efficiency of the institutions.

Table 6   Tobit regression results of decentralisation

Dependent variables	PTE		SE	
	Coefficient	P>|t|	Coefficient	P>|t|
constant	0.8272	0.000***	0.8839	0.000***
DUMOSCM	-0.1599	0.059**	0.0650	0.144
DUMOSOTH	0.4992	0.000***	0.1447	0.001***
sigma	0.2365		0.1274	

OSCM: Decentralised to Chief Minister; OSOTH: Decentralised to others.
*** and **represents significance at 1 and 5 per cent levels respectively.

5.   Conclusion

This paper investigates the productivity and efficiency of *zakat* institutions in Malaysia during the period of 2003-2007. The results suggest that TFP of *zakat* institutions in Malaysia has increased at an average rate of 2.4 per cent during the study period. This improvement is attributed to a technical progress (TECHCH) of 3.5 per cent while efficiency change (EFFCH) contributed a negative change (-0.1%). The results suggest that an increase in TFP of *zakat* institutions in Malaysia

is due to improvement in technical aspects rather than the innovation in efficiency components. The results of technical efficiency revealed that the average level of overall technical efficiency is 80.6 per cent, suggesting that *zakat* institutions in Malaysia could have increased outputs by 19.4 per cent with the existing level of inputs.

The determinants of *zakat* institutions in Malaysia with PTE and SE as the dependent variables were tested against ten (10) independent variables. Those variables are number of branches available (NOB); number of staff (NOS); total *zakat* payment system offered (ZPS); dummy of operational website (WEB); dummy of computerised *zakat* system (CZS); Board size (BS); meetings per year (MPY); Audit committee (AC); Decentralisation (DEC); and Corporatisation (CORP). Based on the Tobit regression results, there are five (5) variables that have significant impacts on *zakat* efficiency. Variables ZPS, BS, AC and DEC have positive impacts while the variable CZS has a negative impacts on PTE. From the findings, it is hoped that this study provides guidance for the policymakers to improve the efficiency of *zakat* institutions in Malaysia. It is suggested that the government should enhance proper governance of zakat institutions. JAWHAR (Department of *Zakat, Waqaf* and *Hajj*), a federal agency of zakat in Malaysia should further strengthen its role into a prominent and decisive central agency of zakat in Malaysia. The enthusiasm and determination of the government is important in upgrading zakat as a mainstream Islamic institution in the country.

This study is an initial effort in analysing the efficiency of *zakat* institutions in Malaysia. Nevertheless, the study has made significant contributions initiate policy directives that may be considered by the relevant authorities including the SIRCs and *Zakat* Center as well as the Federal Government to further improve the managerial aspect of *zakat* institutions in Malaysia. Several aspects such as the use of several technological advancements such as *zakat* payment systems should be used as guidance to the related authorities to further improve efficiency of *zakat* institutions in Malaysia.

However, there are some limitations in this study. One of the limitations is regarding the availability of data. First, In terms of the inputs and outputs in the efficiency measures, other variables such as the number of recipients of *zakat* funds should have been included as one of the important outputs, since *zakat* recipients are the final customers in the *zakat* process. Besides that, the examination on the role of the board of directors in improving efficiency will be more interesting if the total number of professionals on board is available. Second, the

scope of this study could be extended to a longer period of time. If more recent data could be included in the study, more robust and meaningful findings may be obtained from the research undertaken. Despite these limitations, the findings of this study are expected to contribute to the existing knowledge on the performance of *zakat* institutions in Malaysia. Nevertheless, the study has provided further insight to the policymakers with regard to attaining optimal utilisation of capacities, improvement in managerial expertise and the efficient allocation of scarce resources of *zakat* institutions in Malaysia. In spite of the differences in the *zakat* system applied in the other Muslim countries, the findings in this study are also expected to contribute to the improvement of efficiency of *zakat* institutions in other countries.

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Appendix

Definition and Explanation of Each Variable

Variables	Definition
Board size (BS)	Total number of board of directors
Meeting per year (MPY)	Active board of directors measured by number of meetings a year
Audit committee (AC)	Existence of audit committee on every SIRCs; takes the value 1 if the committee is exist, or 0 otherwise.
Number of branches (NOB)	Total number of branches in every state
Number of staff (NOS)	Total number of staff in every state
Technology	A variable measured by number of *zakat* payment system offered (ZPS), existence of operational website (WEB) and existence of computerized *zakat* system (CZS).
Corporatisation (CORP)	Functions of SIRCs; takes the value 0 if the SIRCs is managing the *zakat* affairs itself, 1 if the SIRCs manages the *zakat* affairs with its subsidiary or 2 if the subsidiary is managing the *zakat* affairs in the respective state.
Decentralisation (DEC)	Chairman of the councils, a variable equals to 0 if the council is chaired by the Sultan/Raja/Yang di Pertuan Besar, 1 if chaired by the state government and 2 if chaired by others.
DUMFCORP	Fully corporatised dummy variable that takes a value of 1 for fully corporatised zakat institution, 0 otherwise.
DUMPCORP	Partially corporatised dummy variable that takes a value of 1 for partially corporatised zakat institution, 0 otherwise.
DUMOSCM	Decentralisation dummy variable that takes a value of 1 if chief minister is the chairman, 0 otherwise.
DUMOSOTH	Decentralisation dummy variable that takes a value of 1 if others is the chairman, 0 otherwise.