

# Knowledge understanding in complying zakah: Evaluation of Goodness-Fit Indices using Structural Equation Models

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## ABSTRACT

*Structural equation model is one of the powerful tools employ by researchers to analyze and estimates the model fitness. Exploring by contrast the hypotheses on causal relationship between multivariable observational data and determine factors of knowledge understanding may influence the behavioral of complying zakah income in modern life. This paper presents the applying of structural equation model by determine the factors of fitness model that can be computed simultaneously through the fitness model of factor knowledge understanding. The selections of fitness indices are widely known as the most informative indices and with this it concludes discussion for the future.*

**Keywords:** Structural Equation Model, Zakah, Knowledge of Understanding, Fitness Indices, Regression model, Correlation and Covariance Model

## Introduction

Research on social sciences and behavioral have the interesting attributes such as socio economic status, knowledge, satisfaction that cannot be directly observed. This attributes has to be measured by multiple indicators that have the measurement errors. Base on this study, the purpose is to identify the relationship between complying zakah and the understanding of knowledge of zakah through applying SEM (Structural Equation Modelling) model. By using SEM, the measurement errors from the latent variables of true scores from this attributes can be evaluate through covariance analysis.

Fit indices are the most interesting evaluation and it is closely related to test statistics (Yuan, 2005). The distribution of Chi-squared statistics underlies the rationales of the model base through null hypotheses. To define SEM from the aspect of modeling, various analyses contribute such as estimation of parameters, model fitness analysis and evaluating the significant of specific hypothesis (Barret, 2007). SEM provides the understanding of linear relationship or a causal relationship between multiple exogenous variables and endogenous variables through the simultaneous multiple equation estimation process. To understand the basic about the equivalent model or the fitness of the model, first need to know how the model fit evaluated in structural equation model. The basic indices used as fitness is the discrepancy between sample of covariance matrix of the observed variables and the variance matrix variables (Hershberger, 2006). Not surprisingly, the model reflected many of characteristics and can be formulated through graph and structural equation model techniques. By chance, the equivalent model arises from the mathematical and graph theorist based on causal relationship.

Therefore, the understandings of knowledge in complying zakah have its own construct base to evaluate the model fitness. By then, knowledge of zakah need to be adapted by each Muslim built on the foundation of faith. Zakah is one of the obligatory act of worship with a prescribed by time (haul), minimal amount (nisab), prerequisites, benefactor and recipient. This all are perfectly explained and regulated in the Islamic jurisprudence. Hairunnizam, Sanep & Mohd Ali (2004) mentioned that the knowledge of zakah should be applied as early stages to maintain the wellness and beneficent of Islamic economics system. This behavioral would engage Muslim to oblige this pillar into their daily life.

Most studies on zakah conducted by Wahid, Hairunnizam; Mohd Noor, Mohd Ali & Ahmad (2005) and Muda, Muhammad; Marzuki, Ainulashikin & Shahrudin, (2006) are more precisely on knowledge of zakah. Some studies also are more focusing on the impact of information towards zakah. This align with Kamil, Chek Derashid & Engku Ismail (1997), the compassion on behaviors toward zakah more affected by the believes of the pillar in Islam. Therefore, this behavior should be exposed from the early stages of childhood to this third pillar in Islam and should be well verse in Muslim soul. Zakah are predominantly mentioned together with *salat* in the same phrases in the Quran. In this Quran verses provided some simple spiritual and psychological grounding for the Muslim. In order to be understood by the believers in numerous context and references, zakah further highlighted the significance of common practice will lead to a purification of life and pious worship to God. Among verses are from these;

*Establish salat and pay zakah...*<sup>1</sup>

*They establish salat and pay zakah..*<sup>2</sup>

*If you establish salat, disburse zakah and believe in My Messengers..(Maidah 5:12)*

*Take alms (sadaqa, zakah) of their wealth so that you may purify and sanctify them thereby, and pray for them; for you prayers are a comfort for them. God is the Ultimate Seer and Hearer..(Tawbah 9:103)*

Performing the obligation of zakah is a remarkably way of sacrificing their individuals perspectives on wealth. Zakah is a multi-faceted practice. It will bring together the main traits of generosity and benevolence. This traits will bring closer to Allah s.w.t, thus it carries a person away from vices and prevent miserliness. Highlighted in Quran:

*"...Human souls are prone to selfish avarice" ( Nisa 4:128)*

*Tazkiya* is one of the zakah etymological derivatives means purification. It derives the purification of envy and hatred and conversely. It purify the miserliness from the spirit of individualism richness. Moreover it justifiably, for those who observe the commands through compassion for others. Zakah is one of the major tools in attracting the mercy from Allah s.w.t. As for the recipient, zakah is an addition for the financial aid for the needy. Consequently, it encourage individual to elevate their own security of capital wealth. This circulation of giving will prosper ate the economy by helping the needy. By doing this zakah will prevent polarization and strengthening the society. Quran mention:

*That which God gives as spoil to His Messenger from the people of the township, it is for God and His Messenger (for the State) and for the near of kin, orphans, the needy and the way-farer so it will not become the property of the rich among you. ( Hashr 59:7)*

Undoubtly, zakah bring benefits to the benefactor and the recipient. Each aspect of life has brought benefit to both the seen and unseen situation now and hereafter. In the perspective of economics, zakah can be correlate with the reallocation of wealth. An article written by the scholars mentioned through their academics writing, zakah is an essential act involving all the allocative role of factor of production. Thus, zakah will lead to a competitive Islamic fiscal policy where it will enrich the economic by accumulate the wealth and redistribution of income. Under such circumstances, in possession of complying zakah, the spread of information and knowledge need to remain high correlation. Thus by doing this, the public will also alert with the development of ummah and society through complying zakah. This paper will discuss the relationship between this two attribute of knowledge understanding in zakah will lead to accomplish the action. The power of fitness indices and the sensitivity of changes in correlation will match the statistical correlation based on the existing literature review. Issues on fit indices will be discussed by the following manner as the measurement of fitness indices. We conclude this paper by discussion few implication of fitness indices and pointing out remaining issues for further research.

### **The Measurement of Goodness of Fit Indices**

Among research conducted are more associated to the awareness of zakah and widely focused on its fiscal effectiveness as a means in achieving objectives such as equitable distributions, stable economic growth and the allocation of resources. These objectives basically embodied with the characteristic of zakat by determining the impact of zakat toward the economic stability. Further studies indicated by Azhan Othman & Halim Noor.A (2012), that zakah will intervene all interest in every sector whether primary, secondary or tertiary sector in the economy. Mentioned also zakah is no less complex less than the tax. This redistribution of income will act as a device to stimulate growth and promoting the social benefit and act as an international peace. Nur Barizah & Hafiz (2010) manage to include that inner factor such as social responsibilities and religious manner are the dominant factor contributes to zakah compliancy.

As mentioned earlier the correlation between these attributes are highly correlated. Let us present some properties of statistical and rationales by using commonly fit indices related to the knowledge of understanding in complying zakat.

#### Relative Normed-Fit Indices

The fitness of indices model describes the discrepancy of observation values and the expected values under statistic model. It shows how well this value fits into the statistic model by Hu and Bentler, (1992). Fitness indices are widely known in the area of continuous data used in meant for multivariate model. Typically involves the latent variables through estimation of covariance and correlations. Under multivariate statistical techniques in normal assumption, the efficient estimators are maximum likelihood (ML). Among others the category of fit indices are Chi-Squared ( $\chi^2$ ), RMSEA (Root mean square error of approximation) and GFI (Goodness of fit statistic index). Hu & Bentler (1999) the chi-square statistics formally measures the overall model fit by assesses the magnitude of discrepancy between samples that fitted the covariance matrices. Also the covariance matrix will be optimized by the unknown parameter that would fit the population Byrne (1998). This estimates have been a most informative fit indices (Diamontopoulos and Siguaw, 2000:85) due to its sensitivity of number estimated in the model. The general formula is

$$\chi^2 = \sum \frac{(f_o - f_e)^2}{f_e} \quad [1]$$

The cutting points for RMSEA have been widely discussed and the achievement cutting points are recommended at the range of 0.05 to 0.10. This points was considered as an indication of fair fit values above 0.10 indicate is poor fit value. ( MacCallum et al, 1996). However, the most cut-off value between 0.06 (Hu & Bentler, 1999) or up to more rigid range 0.07 ( Steiger, 2007) seems to be the general consensus range amongst the researcher. The degree of RMSEA basically provided by the values of degree of freedom or a large sample by keeping all coefficient constant also known as the parsimony fit. The greater the sample size RMSEA will be in a positive value but the degree of freedom may not be the main degree will effect RMSEA value because the larger the degree of freedom the parsimony fit will diminished (Mulaik, 2009).

$$RMSEA = \sqrt{\frac{\left(\frac{\chi^2}{df}\right) - 1}{n - 1}} \quad [2]$$

Goodness-of-Fit Index (GFI) is a pair of value that range between 0-1.0, where if it indicate 1.0 then it will be considered as the best fit and the absolute fit index if the value is above 0.90 that estimates the proportion of covariances in the sample data matrix explained by the model. This index was created by Joreskog and Sorbom (2004) resulted by model fits compared with no model at all. The general formula in GFI is

$$GFI = 1 - \frac{Tr((\mathbf{W}^{-1}(\mathbf{S} - \mathbf{C}))^2)}{Tr((\mathbf{W}^{-1}\mathbf{S})^2)} \quad [3]$$

Where, the  $C_{res}$  and  $C_{tot}$  respectively is the residual and total variability in the sample of covariance matrix. The limitation of this method is calculated through the values vary from the sample size. The mean value of GFI tends to increase along with the number of cases. This GFI will affect the model value of RMSEA.

#### Numerical Goodness Fit- Indices

With the above-mentioned statistics, now the estimated are on the zakat understanding. We model the responses of 437 a segmentation of adults age range between 20 up to 40. The continuous data are basically more on the zakah knowledge towards zakah compliance. The results are as follows.

**Table 1**  
The Fitness Indices Assessment for the structural model

Name of category	Name of Index	Index Value	Comments
1. Absolute fit	RMSEA	0.059 *RMSEA < 0.08	The required level is achieved
	GFI	0.909 *GFI > 0.90	The required level is achieved GFI = 0.90 is a good fit
2. Parsimonious fit	Chisq/df	2.524 *Chisq/df < 5.0	The required level is achieved Chisq/df = 2.54 is a good fit

\*The indices value are recommended since they are frequently reported in literatures

By using 5% significance level, this model is barely accepted and through the fitness indices, each statistics indicated this model is rejecting the null hypothesis. The value of statistic suited for each of the cut-off point for absolute index and parsimonious index. The cut-off point for RMSEA required level are 0.05 – 1.0. But the lesser cut-off points the better of goodness fit indices. The level of points is less than 0.08 were considered the good of fitness index (Brown & Chudek, 1993). This estimation of RMSEA index indicated at 0.059 index value based on the statistics. In this situation argued by L.L Thurstone (1947), which based on the relation between two variables, the number of parameter of the equation that has been estimated is considerably smaller than the number of observation is the ideal equation. Thus parsimony became the principal of method in factor analysis estimation that affected the minimum rank, of the factor determination and the simple structure based on the Thurstone idea. Nevertheless, Karl Popper (1934) argued this statement by saying that the concept of parsimony does not stand on its own but it rather works with other fundamental principal by diminish the false theorist and rejecting the null hypothesis.

The several of goodness of fit indices described by the full structure which correlate the covariance matrix by reproducing the minimal observed covariance matrix. It is quite possible to

produce a model which can estimate the portion of involving latent variables by not misspecified and still have the goodness of fit indices for the overall model.

From table 2 the confirmatory factor analysis each summary for all constructs remained reliable and each factor loading is higher from each construct of knowledge towards zakah compliance.

**Table 2**  
The confirmatory factor analysis summary for all constructs

Construct	Item	Factor Loading	Cronbach Alpha (above 0.7)
Knowledge (X1)	X11	0.69	0.869
	X12	0.68	
	X13	0.67	
	X14	0.81	
	X15	0.72	
	X16	0.82	
	X17	0.85	
Zakah Compliance (Y)	Y1	0.72	0.863
	Y2	0.66	
	Y3	0.67	

Above indicated that each construct contributes to high factor loading for each variables. As a whole the cronbach alpha for the knowledge known as the independent variable estimates as 0.869 higher than the cut-off point. Whilst the cronbach alpha for zakah compliance contributes 0.863 to this dependent variable towards the factor. Knowledge of understanding in zakah influencing the zakah compliance. According to Barret (2007), in confirmatory factor analysis (CFA), there is no parameter of variables due to no outcome for variables. This is due to the causal of exogenous variables and it is hypothetical. To overcome this situation, once to assessing this by using the discrepancy between model implied by the covariance matrices and the observed covariance. Consequently, any research activity conducted does always have the appropriateness of elements in doing basis assumption and hypothesis, knowing whatever the result are drawn from research are only provisional and at a risk of being either rejected by others. This situation are due to others who does not share the same assumption or hypothesis. Each result will influence for the future analysis.

### Conclusion

SEM plays as a tool that fit the data into a model. It requires the data determination to fit into the model. Researcher need to acknowledge these result based on the requirement through assessing model fitness by spreading the discrepancy of covariance matrix in this statistical test that was made available to the model data. The acceptability of chi-square, RMSEA and GFI defined the logic approaches of model specification. In social sciences, investigates the used of approximate fit indices where the latent observation data used to explain the phenomenon of the measurable consequences.

A concise summary of the model of good fitness data in the analysis are directive and drive in the research process, it includes also the theory testing purpose of structural equation of modeling. In this situation, researcher investigate the point of knowledge well documented as an element that drives people into action of doing so in the manner of zakat compliancy. Knowledge of certain areas may

influence people behavior to be more accurately act at circumstances. Although there are still deficient in the behavior of people, but still the usefulness of knowledge will bring people into a form of power and less of hesitant of weakness. Traditionally the goodness fit indices also is ongoing debate but it yield high values of parameters reflecting the hypothesized causal path value. Until then the use of SEM are pertinent to those reflecting the behavior and causal relationship.

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- <sup>1</sup> See Ahzab 33:33; Baqara 2:43, 110; Nisa 4:77; Hajj 22:78; Nur 24:57; Mujadila 58:13; Muzamil 73:20
- <sup>2</sup> See Baqara 2:3, 277; Maida 5:55; Anfal 8:3; tawba 9:5, 11,18,71; Naml 27:3; Luqman 31:4; Bayyina 97:5
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