Information Management and Business Review (ISSN 2220-3796)
Vol. 15, No. 2, pp. 17-34, June 2023 (SI)

The Economic Theory Assumption and Utility Maximization Model: The Perspective of Zakat Compliance Behavior

Mohd Rahim Khamis, Mohd Faizal bin Kamarudin*
Department of Economics and Financial Studies, Faculty of Business and Management, UiTM Puncak Alam, Selangor, Malaysia
mfk@uitm.edu.my, faizalkamarudin@gmail.com*

Abstract: The dearth of studies on the economic theory and model from the perspective of zakat compliance behavior is hardly found in the literature and empirical evidence as well. Numerous studies have been explained through utility maximization and compliance behavior especially in the context of taxation based on the economic theory assumption. Discussion on compliance behavior has two basic theories that are associated with compliance; firstly, the psychological and sociological theory, and secondly, the economic theory that is always used to discuss compliance behavior in taxation. Due to that, this study aims to discuss the relevant economic theory and model from the perspective of zakat compliance behavior. In reviewing the relevant literature, this article provides a discussion on economic theory and model as a basis for explaining zakat compliance which includes a number of aspects like the economic aspect, psychological and sociological aspects as well as the Islamic aspect as previously suggested by some studies. Additionally, it demonstrates that economic theory and model also can be used to discuss Zakat compliance behavior and not purposely in the taxation system. Based on the discussion, this study will hopefully shed some light that even though the theory and model mainly discuss conventional perspectives such as the taxation system but it's also can be adapted to discuss on Islamic perspective with some modification.

Keywords: *Zakat Compliance, Rational Choice Theory, Utility Maximization Model*

1. Introduction

Compliance is an important aspect of human behavior or moral codes and has raised various issues in research in the fields of economics, accounting, psychology and much more (Idris, 2002; Veerinderjeet, 2003). Roth, Scholz, and Witte (1989, p. 2) defined compliance as "taxpayer files all required tax returns at the proper time and the returns accurately report tax liability in accordance with the rules, regulations and the court decision applicable at the time the return is filed". Other than that, Alm (1991) and Hijattulah and Pope (2008) described compliance as an individual's responsibility to report the total income and information needed as required by laws, rules and regulations and court judgments. Veerinderjeet (2003) stated that compliance with tax occurs when people declare all their income sources by filling up the tax form from the authorities at the given period. Individuals are fully compliant if they fulfill every aspect of the obligations such as registering with the revenue authorities as required, disclosing all information required and returning the forms on time, reporting their tax liability accurately and maintaining all records as required by governing bodies (Fischer et al., 1992; McKerchar & Evans, 2009). Simply put, compliance behavior can be defined as a human action to complete an activity as required by the authorities, regulatory bodies or the courts.

On the other hand, Juan, Ern, and Kwee (2006) adopted a different view and described compliance as a function of cognitive and affective influences over the taxpayers. Cognitive can be characterized as the person's comprehension of the subject matter and affective can be defined as the person's behavior in taking action. The definition of Cognitive is not only limited to comprehension, it refers to the depth of knowledge on the subject matter, the understanding of technical and legal aspects and the ability to keep updated on the subject matter. Affective then refers to the attitude and behavior of people which includes intentions, perceptions in the context of equity, ethics and morality. By this token, in discussing human behavior, it can be seen that decision-making is influenced by the level of knowledge, understanding, comprehension, intention, perception, ethics and moral stand on the subject matter. From the above explanations, the review on compliance can be recapitulated as human behavior (taxpayers) in deciding to abide by the law to avoid any legal action such as penalties, punishment or fines.

However, zakat compliance behavior according to Islamic doctrine is different from tax as zakat is a mandatory Islamic obligation to satisfy the necessary conditions to achieve purity and goodness of soul (Diabi, 1993). This is clearly described in the Holy Qur'an, Surah 87 and Verse 14 mentioned as:

"He indeed is successful who purifies himself".

Another reference in the Holy Qur'an is mentioned in Surah 9, Verse 9-10 which noted:

"He indeed is successful who causes it to grow and he indeed fails who buries it".

In other words, compliance with zakat is to find the "*Barakah*" in actions and to simultaneously purify wealth to receive more blessings. As a Muslim individual, the action of zakat compliance is not solely determined by the rules and regulations enforced by the authorities but rather, by the Islamic obligation to find and receive blessings from Allah S.W.T. Idris (2002) mentioned zakat compliance as payment in accordance with fatwa and regulations exacted by zakat authorities. The explanation is adapted from the definition discussed by previous studies in the tax environment. Additionally, Bidin and Idris (2008) described zakat compliance behavior as an action (compliance) by the Muslim individual (target) on employment income (context) for a specific year (time). Another explanation by Saad (2009a) and Abdul-Jabbar and Nashwan (2022) suggested that zakat compliance depends on the reasoning Muslim individuals apply in deciding whether to disobey or comply with the command of Allah S.W.T, Islamic obligations and the rules issued by zakat authorities.

Alternatively, Ahmad and Daud (2010) discussed zakat compliance in terms of payment through official channels. Individuals become more compliant if payment is made through official channels overseen by the relevant authorities such as the Zakat institution. Muslim individuals will assume non-compliance if zakat is paid through an unofficial channel. This explanation is supported by Mohamed et al. (1995) who stated that certain states in Malaysia require Muslim individuals to pay their zakat through an official channel and if any individual is caught paying zakat through an unofficial channel, they may be fined or jailed or both.

The point here is that, based on the number of explanations, the concept of zakat compliance can be concluded as a human behavior (the Muslim community's) in decision-making (compliance or non-compliance) to pay the zakat (official or unofficial channels) according to Islamic obligation and *Shariah* law to achieve satisfaction in the present life and afterlife (*al-falah*). This is reinforced by Barizah and Rahman (2007) who mentioned that zakat payers are expected to get returns not just in the present life but also in the afterlife when they comply with Islamic obligations. The decision to comply or otherwise is a measure of the strength of a believer's worship of Allah S.W.T and is an indication of thankfulness (Ahmad Bello, 2008). This clearly shows that zakat compliance is based more on fulfilling obligations to achieve satisfaction in the present and afterlife, to receive blessings from Allah S.W.T, to purify wealth and concurrently receive "*barakah*" in action whilst compliance with tax is based more on adhering to the law and to avert punishment and penalties (Abdul-Jabbar & Nashwan, 2022). The discussion on the concept of compliance behavior of zakat can also be applied to describe compliance behavior in any type of zakat since it involves similar issues such as action, target, context and time.

Additionally, Hasseldine and Bebbington (1991) suggested that a blend of two approaches; incorporating the economic model and psychological and sociological model provide a better understanding in discussing associated tax compliance. The combination of both approaches explained how individuals act in their economic life and explored the implications of economic issues on individual behavior. This situation is related to the issue of choice and individual decision-making (Pope & Raihana, 2010). Generally, the economic approach is based on the economic theory such as expected utility or a game-theoretical framework which explains the factors such as marginal tax rate, income, penalties and probabilities of detection as factors determining compliance behavior (Kamdar, 1997). In contrast, the psychological and sociological approach is based on respective theories encompassing factors such as attitude and perceptions determining compliance behavior in taxation (Trivedi, Shehata, & Mestelman, 2005). The most popular models of compliance in both studies are the Tax Evasion Model (Utility Function Model) by Allingham and Sandmo (1972) and the Expanded Taxpayer Compliance Model by Fischer et al. (1992). This illustrates that both approaches used are able to explain the subject of compliance.

In the Malaysian context, numerous studies have applied psychological and sociological theories when discussing the subject of zakat compliance namely; the Theory of Planned Behavior (TPB) (Sapingi et al., 2011; Saad, 2009a; Bidin, 2008), the Theory of Reasoned Action (TRA) (Muhammad, 2016; Arif et al., 2011; Bidin et al., 2009), The organizational legitimacy theory (Sawmar & Mohammed, 2021) and Psychology Theory (Cognitive Theory and Social Learning Theory) and Social Perspective (Instrumental and Normative Perspective) with modification on Taxpayer Compliance Model (Idris, 2002). Even though a number of studies have shown that the theories and models in psychology and sociology used are able to explain compliance behavior in Zakat, it is still inconclusive. This is because previous reviews regarding compliance behavior showed that the economic approach is also able to explain compliance behavior in Zakat. This was revealed through the study by Diabi (1993) who discussed the zakat evasion concept, Daud (2011) who studied compliance behavior in zakat on income through official channels in Acheh, Khamis (2014) who discussed factors determining compliance behavior of business zakat among business owner in Selangor and Nashwan et al. (2020) who studied zakah compliance behavior among entrepreneurs based on economic factors approach. Both studies applied the Tax Evasion Model formulated by Allingham and Sandmo (1972). However, it is still inconclusive due to the lack of studies discussing the relevant economic theory and model from the perspective of zakat compliance behavior. Due to that, this paper applies the economic theory and model to discuss 0the compliance behavior of zakat in Malaysia.

2. Literature Review

The Economic Theory Assumption and Compliance Behavior of Zakat

Compliance theories can be explained in a multitude of ways detailing why states, firms 00and individuals comply or do not comply with the laws and regulations. Discussions among these theories are useful as a guide to promote a better understanding of compliance behavior (Mai & Ofori, 2010). As such, Mai and Ofori (2010) found that there is no comprehensive theory in explaining the subject matter. Essentially, two basic theories are associated with compliance; firstly, the psychological and sociological theory, and secondly, the economic theory (Trivedi et al., 2005). According to Richardson (2006), psychological theories become a better approach to discussing tax compliance. This can be proven by various studies using psychological and sociological theories (Akers, La Greca, Cochran, & Sellers, 1989; McKerchar & Evans, 2009; Sutinen & Kuperan, 1999). This is also reflected in the zakat context where psychological theories are often utilized in explaining compliance behavior (Idris, 2002; Idris, 2009; Saad, 2009b; Bidin, 2008; Bidin & Idris, 2008; Bidin et al., 2009).

In microeconomics, the theory and model that explains human behavior are the Rational Choice Theory and the utility maximization concept. This is because the Rational Choice Theory discusses the concept of rationality in decision-making to maximize utility. The theory views individuals as actors who will make choices based on the logic of consequences and rationale based on their calculation of expected subsequences (Mai & Ofori, 2010). The emphasis in this theory is the concept of rationality. The rational concept in microeconomics is closely related to the behavior in a household. Individuals represent the household in consuming commodities to maximize satisfaction (utility) (Wetzstein, 2005). This scenario shows that households have a selection to choose from in terms of goods and services delivered at a specific time and a specific place and that these decisions are made to maximize their satisfaction (utility). From a management perspective, the concept of rationality is discussed more often when an individual has alternatives and needs to decide among all the choices to maximize the probability of achieving the goal. As rational decision maker, individuals will define the issues carefully, study the alternatives that they have and concurrently delineate the specific goal they want to achieve (Robbins & Coulter, 1999; Robbins & DeCenzo, 2008). Robbins and DeCenzo (2008) suggested rationality in decision-making often involves three elements; certainty, risk and uncertainty which is applied in every decision made by an individual. Certainty refers to the outcome of every possible alternative already known to the decision maker, uncertainty can be explained as an outcome of the alternatives that is unknown to the decision maker and the element of risk is the chance of loss incurred by the outcome resulting from the decision made.

Ahmad and Daud (2010) referred to rationality as a process to maximize utility (satisfaction) based on a set of constraints. This is because individuals frequently have alternatives and they need to decide between the alternatives based on their rationale. As rational decision-makers, they measure the whole expected utility

value of each potential and select the alternatives to maximize expected individual utility gain (Friedman & Savage, 1952). The whole expected utility of each potential is the total of utilities related to possible results, influenced by the probability that each result will arise.

Herfeld (2022) identify one of the most dominant theories explaining human behavior as rational choice theory although they have been utilized extensively in the social and behavioral sciences, their application spans fields like philosophy, evolutionary biology, and anthropology in addition to fields like economics, sociology, and political science. Additionally, they serve as the theoretical and conceptual foundation for entire fields of research, including formal decision and game theory. As a result, rational choice theory is widely used in theoretical and practical fields of modern science, philosophy, psychology, and (behavioral) economics. At least five different types of criticism have been levelled at rational choice theory, however: the ideological category, the formal-logical category, the empirical category, the ethical category, and the scope category have all been criticized.

From an Islamic perspective, the principle of rationality is different since rational human behavior is to fulfill their needs to achieve goals in the present and afterlife. Ahmad and Daud (2010) and Nashwan et al. (2020) argued the concept of rationality in the theory needs some modification in line with Islamic principles as discussed by Kahf (1983). They stated that if the same concept was to be used in explaining Islamic economics, it would need to be readjusted to the Islamic rationale where utility is not only maximized in the present life (0*duniawi*) but also the afterlife (*al-falah*).

This is depicted by the Muslim individuals who, when deciding to pay zakat, are willing to share their wealth with the community and Islam and at the same time, forgo a part of their0 consumption. Khurshid (2007) supported this and described human beings fulfilling needs for personal consumption based on a concept of *maslahat* or public welfare rather than their instinctive desires. As such, the decision made is still considered a rational act because the goal of the decision is to reach the highest level of satisfaction (present life and afterlife (*al-Falah*). This is clearly described in the Holy Qur'an, Al-Qasas (28:77) noted that:

"But seek, with the (wealth) which Allah has bestowed on thee, the Home of the Hereafter, nor forget thy portion in this world: but do thou good, as Allah has been good to thee, and seek not (occasions for) mischief in the land: for Allah loves not those who do mischief."

The second emphasis in the rational choice theory is utility. From a microeconomic perspective, utility can be described as the "ability or power of a commodity (goods and services) to satisfy when a household (individual) consumes the commodity (goods and services) to achieve satisfaction"(Wetzstein, 2005, p. 25). Other research by Wentworth and Ricket (1985) mentioned that utility is derived from the total of expected benefits and expected costs while Gcabo and Robinson (2007) explained utility as weighted from an individual's respective probabilities to maximize their expected utility based on certain assumptions and constraints. Bernoulli (1954) described utility as the level of satisfaction achieved by each individual through their actions. The explanation of utility is based on the assumption that every individual is influenced by various factors in their decision-making to buy goods. This decision is not purely dependent on the price of the goods or monetary values but is influenced by the level of satisfaction they gain. According to Petersen and Lewis (1999) among economists, the term utility has been used to measure and explain satisfaction. This is because utility refers to overall satisfaction that is affected by a number of factors not limited to just physical satisfaction but also other factors such as psychological attitudes, peer group, personal experience and environment (Nicholson, 2005; Nicholson & Snyder, 2008). Even though the level of satisfaction among an individual is virtually impracticable to measure but it will be assumed that it can be done through a hypothetical example.

Based on assumptions and explanations by Bernoulli (1954) the utility desired by an individual is focused on physical utility (satisfaction) without taking into consideration other aspects of life. Nicholson and Snyder (2008) and Nicholson (2005) also defined individual utility as achieving a person's consumption of physical commodities which are influenced by a number of factors. This is proven by Allingham and Sandmo (1972) and Veerinderjeet (2003) who mentioned taxpayers will maximize expected utility based on the cost in deciding to either pay or avoid taxation. To maximize expected utility, the taxpayer will report their lowest

possible income or not report their income at all. If these transgressions are found out the individuals will most likely be penalized. However, if their transgressions remain undetected by the authorities, they will most likely continue with these practices. Becker (1968) also explained that an individual will commit a crime if the utility gained from the crime is greater than the utility gained from doing the right action.

However, for a Muslim individual, every decision is made to maximize utility in the present life and afterlife (Ahmad et al., 2011; Ahmad & Daud, 2010; Khamis, 2014; Abdul-Jabbar & Nashwan, 2022). Every Muslim individual believes that each action will be judged on the day after and this belief may be symbolized by the Muslim individual's compliance with zakat payment. They are willing to share their wealth with the community, especially with the poor and simultaneously forgo a part of their consumption. This is still considered to be rational as the aim is to achieve the highest level of satisfaction either in the present life or the afterlife (*al-Falah*). With the sharing of wealth, more wealth, kindness and happiness are brought into their lives. The satisfaction gained is the unexpected reward from Allah S.W.T. This is evident in the Al-Baqarah (2:261) which notes that:

"*The parable of those who spend their sustenance in the way of Allah is that of a grain of corn: it grows seven years and each ear Hath a hundred grains. Allah gives manifold increase to which He pleased: And Allah careth for all and He knoweth all things"*.

As such, the obligation to pay zakat is not a burden to the Muslim community but it can be viewed as an investment made in the present life for the afterlife as promised by the Almighty.

From the discussions on Rational Choice Theory, it is evident that the theory is widely utilized by economists and its application stretches into other fields. As stated by Heckathorn (2001) rational choice theory has appeared as the lead in discussing a number of disciplines and has not just been limited to the field of economics, especially in the last two decades. This is evidenced in a multitude of past research where the theory is used in discussing different areas such as criminal activity (Becker, 1968), tax compliance and evasion behavior (Allingham & Sandmo, 1972), producer behavior (Yusof & Amin, 2007), fishermen compliance behavior (Ali & Abdullah, 2010) and zakat compliance behavior (Ahmad & Daud, 2010; Khamis, 2014; Nashwan et al., 2020; Khamis et al., 2011). This illustrates that the rational choice theory is a general theory that can be adapted and applied to explain various cases such as compliance which cannot be explained by one comprehensive theory as mentioned by Mai and Ofori (2010) and Herfeld (2022).

The above discussion has highlighted the significance of rational choice theory in explaining the concept of rationality and the maximization of utility. However, it can also be applied to the Islamic perspective with some modifications in the concept of maximizing utility.

3. Utility Maximization Model and Compliance Behavior

Since Rational Choice Theory is the combination of the rational action concept and maximizing utility, the Utility Maximization Model was used as a model in this study. This is because numerous studies have been explained through utility maximization and compliance behavior, especially in the context of taxation. Pioneering research was conducted by Allingham and Sandmo (1972) who formulated the Tax Evasion Model in discussing tax evasion (Ali, Cecil, & Knoblett, 2001; Alm & McKee, 1998; Alm & Torgler, 2011; Wintrobe & Gërxhani, 2004). The model is derived from the traditional expected utility theory (Torgler, 2003; Zhiyang An, 2006), using standard microeconomic assumption (Chorvat, 2007) and is known as the standard theoretical model in explaining associated tax compliance (Diabi, 1993; Wintrobe & Gërxhani, 2004). The Tax Evasion Model was formulated based on the Economics Crime Approach Model derived by Becker (1968) (Alabede, Zaimah, & Kamil, 2011; Alm & Torgler, 2011; Sour, 2004). This model is favored among economists as it is conducive to explaining utility maximization and compliance behavior (Ali et al., 2001; Clotfelter, 1983). Additionally, the model is able to identify the factors influencing individuals who evade taxation.

It is necessary to mention here that the specific model formulated by Becker (1968) in equation (1) is to explain that a rational individual's decision to either commit a crime or act according to the law is based on maximizing utility. In maximizing utility, an individual will commit a crime if the expected utility from

committing the crime is more than the expected utility acquired from an act according to regulations.

$$EU = pU(Y- f) + (1 – p) U (Y) \quad (1)$$

Where;

EU	An individual expected utility
p	Probability of being caught and convicted
f	The monetary equivalent of the punishment if convicted of the offense
Y	Gain from undetected offense
U	Individual's von Neumann-Morgenstern utility index

Based on equation (1) an individual will commit a crime when the expected utility (EU) achieved becomes positive and will act contrarily if the expected utility (EU) achieved is negative. The expected positive and negative utility of each individual depends on the monetary equivalent of punishment if convicted of the offense (f), gains from being undetected from the offense (Y) and the probability of being caught and convicted (p). For instance, if f >Y and

p is sufficiently high, the EU will be the negative result. From the explanation of the model, it is shown that an individual will try to maximize utility when trying to evade taxation. From the decisions made, individuals compare the benefits that they can get if they succeed in evading tax and the risks they will face if they are caught and fined by the authorities. The model suggested a penalty structure and the probability to be detected or economic factors as the main factors in explaining the criminal activities.

In the case of compliance behavior, Allingham and Sandmo (1972) adapted this model in discussing tax evasion and found that decision-making to either comply or evade taxation is an uncertain decision. This is because failure to report full income to tax authorities does not automatically incur penalty or punishment. Taxpayers have a choice to declare actual income, under-report actual income or not report income at all. Their decisions will depend on the likelihood of being found out by the tax authorities.

The model gives two possible outcomes in maximizing expected utility: the first outcome is the probability of being detected and punished for tax evasion (p) by tax authorities. From this situation, a taxpayer will have to pay tax on the undeclared income (W-X) at a penalty rate (μ) which is higher if compared to the normal tax rate (θ). The second outcome is the probability of being undetected from tax evasion (1–p). For example, taxpayers will choose whether they pay the tax or avoid tax payment using the maximum satisfaction estimation as follows:

$$E (U) = (1 –p) U (W- \theta X) + pU (W – \theta X – \mu [W– X]) \quad (2)$$

Where;

U	Standard utility function
W	Actual income
θ	Tax rate
X	Declared income
p	Probability investigation by the tax authority
W– X	Amount of tax on declaring amount/income
μ	Penalty rate

In equation (2), U (W- θX) is the utility gained from the revenue income on tax evasion with an assumption of not being caught by tax authorities while U (W – θX – μ [W– X]) is utility gained by a taxpayer if the tax evasion has been detected and punishment and fines have been imposed by the tax authorities. As such, to maximize utility, a taxpayer is subject to the probability of either being caught or otherwise by the tax authorities which becomes the obstruction. This is outlined below:

$$Y^{nc} = W – \theta X \quad (3)$$

$$Y^{c} = W – \theta X - \mu (W– X) \quad (4)$$

Based on equations (3) and (4), the obstruction in maximizing taxpayer satisfaction, the *First Order Condition* (FOC) from equation (2) can be written as follows:

$$\partial E(U)(X) = -\Theta (1 - p) U'(Y^{nc}) - (\Theta - \mu) pU'(Y^{c}) = 0 \quad (5)$$

To fulfill the requirement of maximum function, the *second order condition* (SOC) from equation (5) can be written as follows:

$$\partial^2 EUX^2 = -\Theta^2 (1 - p) U''(Y^{nc}) + (\Theta - \mu)^2 pU''(Y^{c}) < 0 \quad (6)$$

From equations (2) until (6), to maximize expected utility, a taxpayer will declare income (X) lower than that of actual income (W) or ($Y^{nc} = W - \Theta X$) which depend on the penalty or punishment they will face with (μ [W–X]) and the cost they need to cover if evasion is detected. The taxpayer becomes compliant if they assume that a high cost of penalty and punishment will be incurred if caught so much so that it will affect their level of satisfaction. The degree of compliance becomes lower if the cost of penalty and punishment is lower. Allingham and Sandmo (1972) found that tax audits, penalties and punishment were factors in influencing the taxpayer in tax evasion. Here, through the model of tax evasion, as a rational taxpayer is viewed to maximize expected utility, they are comparable to a gambler who partakes in risky benefits and risky prospects (Alm and Torgler, 2011).

However, the model had been criticized by some researchers because they assume compliance is not only influenced by tax audits and law enforcement like penalties and fines but is also influenced by other factors (Alabede et al., 2011; Fischer et al., 1992; Hajah Mustafa, 2007). This is shown by Jackson and Milliron (1986) who identified 14 factors influencing tax compliance behavior based on a review of compliance literature. From studies by Jackson and Milliron (1986), Fischer et al. (1992) categorized 14 factors into four main factors such as noncompliance opportunity, demographic variables, attitude and perception and structure/system of tax. Alm et al. (1995) also noted that to describe tax compliance behavior, a number of factors beyond economic factors have been identified to motivate individuals to comply. These include factors from the social sciences. For this reason, the model is deficient due to the lack of discussion of other factors influencing tax evasion as mentioned by a number of previous studies.

Even though there are deficiencies within the model formulated by Allingham and Sandmo (1972) many studies have shown that with some modification, the model is able to explain compliance behavior (Cowell, 1985; Yitzhaki, 1974; Daud, 2011). For instance, Sour (2004) explained that for over 25 years this traditional economic model was still used as the basis for explaining compliance behavior without other researchers formulating a new approach. The extension and modification of this model over the years have contributed to compliance literature (Sandmo, 2004).

Another study by Yitzhaki (1974) used the model with modifications, to study the implication of the penalty structure on tax evasion. This study provides more detail on the penalty factor enforced and paid by a tax evader on the amount of unreported income which is not explained in most tax systems (Chorvat, 2007). This is because most reviews in the tax system discuss tax penalty which is based on the tax unpaid without discussing unreported income (Chorvat, 2007). It is clearly explained through the tax evasion model by Allingham and Sandmo (1972), that fines and penalty rates are paid on evaded income rather than unreported income (Borck, 2004; Kamdar, 1997). For this reason, Yitzhaki (1974) adapted the two demonstrated functions of evading taxes and suggested that the taxpayer should pay a penalty or fines on unreported income. The study showed that the taxpayer will choose to be compliant or non-compliant depending on the penalty structure that is imposed on undeclared income which is not discussed by the previous model. The adapted model is discussed as follows:

$$E(U) = (1 - p)\, U\,[y\,(1 - t) + t\,(y - x)] + pU\,[y\,(1 - t) - tf(y - x)] \quad (7)$$

Where;

p	probability to be detected
y	income before tax deduction
y	(1-*t*)net income after tax deduction
x	amount of income reported
y-x	unreported income
f	amount of penalty

From equation (7), the modified model explains taxpayer utility with the probability of being undetected by tax authorities for unreported income U [y (1- t) + t (y – x)] while the following equation explains the probability of being caught by tax authorities for unreported income and with the additional penalty incurred from the unreported income U[y (1 – t) – tf (y – x)]. Thus, if they are caught, the total penalty to be paid by taxpayers is calculated from the total sum of unreported income. This can be written as follows:

$$E(U) = (1 - p)\, t - pft \quad (8)$$

Thereby, from equation (8), the *First Order Condition* (FOC) can be written as follows:

$$U'(yA)U'(yB) = (1-p)pf \quad (9)$$

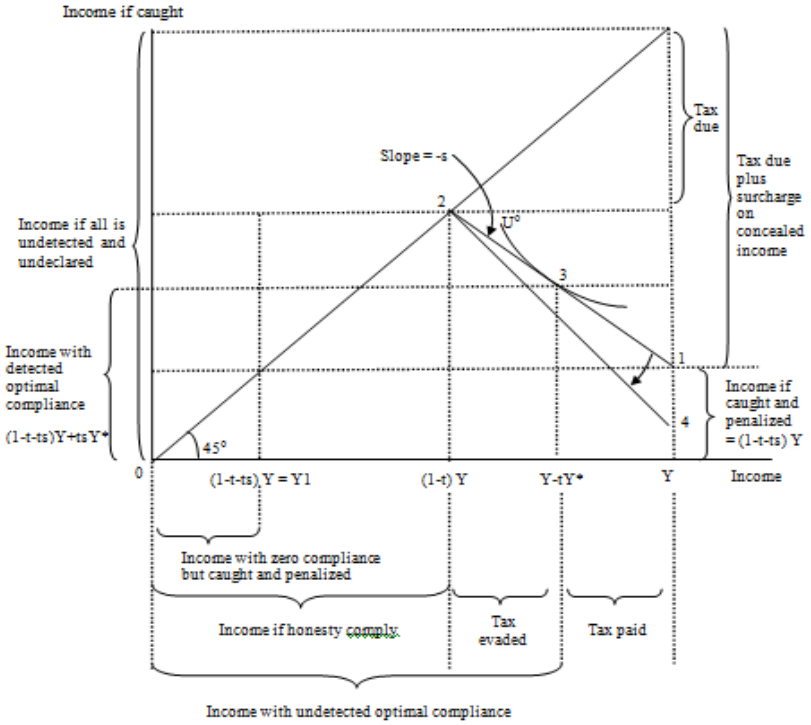
Where;

$y_A = y\,(1 - t) + t\,(y - x)$
$y_B = y\,(1 - t) - tf(y - x)$

In equation (9), if taxpayers become risk neutral, they are able to choose whether to be compliant or to report zero income, which depends on the probability of detection and the likelihood of penalties being enforced. Even though the study by Allingham and Sandmo (1972) focuses on the same factors, this study expands and emphasizes the penalty structure for tax evasion where the penalty will be imposed on unreported income or unpaid tax. The study incorporating the adapted model sheds new light on compliance behavior as compared to the previous model by Allingham and Sandmo (1972) in discussing compliance behavior. This is augmented by Sour (2004) who mentioned the model by Allingham and Sandmo (1972) and Yitzhaki (1974) as two different explanations. This is because the model by Allingham and Sandmo (1972) focused on the amount of income declared by a taxpayer to tax authorities in maximizing utility while the model by Yitzhaki (1974) explained the under-reporting of income as well as unreported income by taxpayers to tax authorities.

The study by Yitzhaki (1974) was supported by Cowell (1985) who stated that the level of compliance is related to the amount of income to be declared to the tax authorities. Cowell (1985) gave more focus to the role of economic theory in analyzing evasion and policy implication. Subsequently, the study formulated several economic models in explaining tax evasion. The model was concluded by Cullis and Lewis (1997) as shown in Figure 1. In the model, the legal income to be taxed is given by (OY) and the income liable to a proportional tax rate is (t). The probability of detection for tax evasion is (p) and detection for undeclared income is subject to a surcharge at a rate (s). If the taxpayer is completely honest they will declare the true income (Y) and the net income will be (1-t)Y. If the taxpayer is dishonest and remains undetected by authorities, the income is (Y) and if the dishonest taxpayer is detected by authorities for tax evasion, the income is (1-t-ts) Y(=distance Y1 in figure 1).

Figure 1: Cowell's Economic Actor's Compliance Decision



Source: Cowell (1985)

In addition, Borck (2004) applied both models by Allingham and Sandmo (1972) and Yitzhaki (1974) in identifying the effect of the penalty structure on evasion, expected revenue and taxpayer welfare in the government sector. The study aims to shed light on two assumptions: the first assumption is if the government tries to maximize expected tax revenues, it will prefer the explanation from the Allingham and Sandmo (1972) model and secondly, if the government wants to maximize expected voter welfare, it may utilize the explanation by the Yitzhaki (1974) model. This shows that both explanations can be used in analyzing compliance behavior; however, it depends on the situation and the situation that needs to be clarified.

Moreover, Chorvat (2007) also adapted the tax evasion model to identify the relationship between the timing of tax payment (time factor) and the amount taxpayers need to pay (discount factor) thus giving more insight into the level of compliance. In the study, Chorvat (2007) described how taxpayers compared the benefit of cheating with the penalty and punishment incurred for tax evasion. The study assumed penalties imposed will be paid at a different period of time and calculated the time difference, including the discount factor (δ). Taxpayers will act on this situation to maximize the expected utility. As such, to exemplify tax compliance among taxpayers, two-period models were outlined in the study since the benefits of cheating and penalties imposed on the taxpayer occur at two different times. Therefore, income can be indicated in a certain period of time (*j*th) and the nature of the situation (*i*th) whether they are audited or not as (yij). In explaining the situation, the formulation model with some modifications from the tax evasion model can be written as follows:

$$E(U) = (1- p) [U (yij) + \delta U (yij)] + p [U (yij) + \delta U (yij)] \quad (10)$$

Where;

EU	expected utility for the individual
δ	Discount factor
y	income
*j*th	period of time (length)

*i*th state of nature – audited and not audit
p probability of detection

When reviewing the discussion on the utility maximization model and compliance behavior, most of the previous studies are based on a modified and adapted Tax Evasion Model to explain compliance behavior without creating a new approach (Sour, 2004). This means the explanation mainly focuses on individuals as rational decision-makers trying to maximize utility following law enforcement (penalty and punishment) which has become the main factor influencing tax compliance and evasion (Allingham & Sandmo, 1972; Borck, 2004; Chorvat, 2007; Cowell, 1985; Pyle, 1991; Yitzhaki, 1974). However, the discussion by many researchers on compliance and evasion behavior is redundant. This is because some of the prior studies mentioned provide a better understanding of compliance behavior through two approaches; however, these two approaches namely the economic and psychological and sociological theories must be blended (Hasseldine & Bebbington, 1991; Schmolders, 1970; Sour, 2004). This means the discussion on the factors determining compliance behavior is not just solely dependent on the economic aspect but also needs to be expanded through other factors (James & Alley, 2002; James, Murphy, & Reinhart, 2005) such as psychological and sociological aspects (Fischer et al., 1992). Hence, Alm and Torgler (2011) expounded that the basic economic model of compliance is found lacking in fully describing compliance behavior.

To overcome this shortcoming, Alm and Torgler (2011) added the ethical factor in explaining compliance behavior. The ethical factor can be demonstrated when an individual complies with tax payments as long as they believe that compliance is doing the right thing. Based on the Tax Evasion Model, Alm and Torgler (2011) formulated a new economic model by adding an ethical dimension. This is shown in equation 11.

$$U = U(I, M) \tag{11}$$

Where (M) is measured as individual ethics which can be defined as the difference between actual taxes reported and the tax reported if the taxpayer is honest and fully compliant. As such, the individual pays their taxes as a normal person and this becomes ethical behavior. Therefore, (M) becomes a specific function as below:

$$M = M(tD - tI) = -\alpha(tD - tI)^2 \tag{12}$$

In equation (12), M achieves a maximum when D=I or when the taxpayer pays all taxes legally and M becomes a minimum when D=0. This ethical behavior also increases when rates fall with reported income. This study illustrates that compliance behavior is not just dependent on law enforcement factors (penalty and punishment) but is also dependent and influenced by other factors such as ethical values which previous studies failed to incorporate.

4. Utility Maximization Model and Compliance Behavior of Zakat

Besides being an adaptation of the Tax Evasion Model in explaining tax compliance behavior, the model also serves as a basis to discuss compliance and evasion of zakat (Diabi, 1993; Daud, 2011). The adaptation brings a new dimension to the model due to both studies suggesting that zakat compliance behavior is dependent on a number of factors ranging from economic, sociological and psychological as well as the Islamic aspect. This is revealed through the first study by Diabi (1993) who discussed the concept of zakat evasion. The study adopted the Tax Evasion Model in discussing zakat evasion because there has never been concentrated economic literature on the subject and it is relatively less studied in Islamic economics if compared to studies in tax compliance and evasion.

Diabi (1993) assumed that Muslim individuals declared their true income (Y_n) depending on their faith, attitude towards the risk of being detected and the enforcement of penalties for zakat evasion. As such, they may declare their actual income (d=1) or portion of actual income (0 < d < 1) or not report income at all (d=0). In terms of zakat evasion, two different scenarios may arise in which the transgression is detected (S_1) and undetected (S_2). The probability that the evasion is detected (S_1) to occur is (p) and the probability that it goes undetected (S_2) is (1-p). If (S_1) occurs, Muslim individuals will attain (X_2) and when (S_2) occurs, they will

attain (X_1). From this, there are three possible cases where the penalty rate (k) is equal to ½, where no penalty is involved (k=0) and lastly, where the penalty rate is limited by the range (0 < k < ½). 0In relation to the discussion, Diabi (1993) formulated a model to explain zakat evasion as follows:

$$E(U) = pU(X_2) + (1-p)\,U(X_1) \quad (13)$$

Subject to;

$$X_1 = Y_n(1 - dZ) \quad (14)$$
$$X_2 = Y_n(1 - Z - k - kZ + kdZ) \quad (15)$$

Where;

Y_n	Actual income
d	declare income
Z	Zakat rate
k	Penalty rate

The *first order condition* (FOC) for maximize is therefore:

$$\frac{\partial E(U)}{\partial(d)} = kZp\,U'(X_2) - Z(1-p)\,U'(X_1) = 0 \quad (16)$$

$$\frac{\partial E(U)}{\partial(d)} = kpU'(X_2) - (1-p)\,U'(X_1) = 0 \quad (17)$$

$$\frac{(1-p)}{kp} = \frac{U'(X_2)}{U'(X_1)} \quad (18)$$

From equations (13) to (15), if Muslim individuals comply with zakat payment, they will declare their true income (Y_n) where their consumption of X_1 (Y_n (1- dZ)). If they are dishonest, and avoid zakat payment, it is then divided into two different situations of either being undetected or detected for evasion ($X_2 = Y_n$ (1- Z – k – kZ + kdZ)). From equation (16), Diabi (1993) provides a number of results as follows:

Full evasion which remains undetected

If d=0 (undeclared at all), S_2 (undetected) occurs and equation (16) becomes,

$$\frac{\partial E(U)}{\partial(d)} = kZU'[Y_n(1-Z-k-kZ)] - (1-p)\,U'[Y_n] \quad (19)$$

and $\frac{\partial E(U)}{\partial(d)} < 0$ assuming that, $\frac{U'(Y_n(1-Z-k-kZ))}{U'(Y_n)} < \frac{(1-p)}{kp}$ (20)

Equation (19) shows the solution for zakat evasion, where the zakat evader preserves their full income (Y_n) and spends it all in X_1

Full evasion with detection

If d=0 (undeclared at all), S_1 (detected) occurs, the evader provides just a portion of their true income (Y_n (1-

Z-k-kz) and therefore presents an obstacle to Muslim individuals to consume X_2. The result is that their welfare is significantly reduced while the welfare of the zakat recipient is reinstated.

No evasion

If d=1 (declaration of true income) with no evasion due to staunch religious beliefs or strong "*Iman*" or the fear of detection resulting in penalty and punishment by the authorities, the result of the equation (16) becomes;

$$\frac{\partial E(U)}{\partial (d)} = kpU'[Y_n (1-Z-k-kZ)] - (1-p) U'[Y_n (1-Z)] \geq 0 \quad (21)$$

and $\frac{(1-p)}{kp} \leq 1$ assuming that, $k \geq \frac{(1-p)}{p}$ and $p \geq \frac{1}{(k+1)}$

Partial evasion which remains undetected

In this case 0 < d < 1 (declared a portion of income) and equation (16) becomes,

$$\frac{\partial E(U)}{\partial (d)} = kpU'[Y_n (1-Z-k-kZ+dkZ)] - (1-p) U'[Y_n (1-dZ)] < 0 \quad (22)$$

The zakat evader decides to pay zakat for just a portion of their income due to low religiosity levels. If they are not caught, they will consume Yn (1-dZ) on X_1 but in a proportion less to that of full evasion which remains undetected where their benefit is comparatively more (Y_n) and the loss in benefit is represented by dZY_n

Partial evasion with detection

Muslim individuals may become partial evaders but if they are caught by zakat authorities, they will have to pay the zakat plus a penalty (if any). Consequently, equation (16) is formulated,

$$\frac{\partial E(U)}{\partial (d)} = kpU'[Y_n (1-Z-k-kZ+dkZ)] - (1-p) U'[Y_n (1-dZ)] < 0 \quad (23)$$

Where $\frac{(1-p)}{kp} > \frac{U'(X_1)}{U'(X_1)}$

Muslim individuals will consume Y_n (1-Z-k-kZ+dkZ) on X_2 but in a proportion higher than what is consumed by full evaders who are detected (Y_n (1-z-k)). The evader's welfare thus is reduced and the zakat recipient's right is reinstated.

As previously discussed, the study by Diabi (1993) mainly focused on the economic aspect (penalty and punishment) without further discussing other factors influencing zakat evasion and compliance. As the discussions around the adapted model still do not fully explain zakat compliance behavior, a recent study by Ahmad et al. (2011) formulated a new economic model based on the Tax Evasion Model which explains the factors determining zakat compliance behavior through official channels in Acheh. The study covered three important aspects, namely, psychological and sociological, economic as well as the Islamic aspect. As a result, several factors were identified and discussed such as the implementation of laws (*IL*), commitment to the religion/faith (*RI*), understanding/knowledge about zakat (*KL*), access to the payment system (*PM*), trust to

the formal institution (*TR*), perception about the tax system (*TAX*), environment (*EV*) and a few demographic factors such as age, level of education and monthly expenses. Thus, the adapted model in explaining zakat compliance is as follows:

$$E(U) = [1 - p(\alpha - z(\alpha))\, U(Z^{tb})] + [p(\alpha - z(\alpha))\, U(Z^{b})] \quad (24)$$

Where;

U	Standard utility function
α	Total income to pay the zakat
z	Zakat rate
z (α)	Total zakat paid to the formal institution
p	Probability pay through formal institution
Z^{tb}	Avoid paying through formal institution
Z^{b}	Comply pay through formal institution

$U(Z^{tb})$ is satisfaction achieved by the zakat payer from avoiding payment of zakat through formal institutions. Meanwhile, $U(Z^{b})$ refers to the total satisfaction achieved by the zakat payer when they comply with zakat payment through formal institutions. $p(\alpha - z(\alpha)$ is the probability of a zakat payer paying their zakat through the formal institutions. As such, when $p(\alpha - z(\alpha) = 0$, this means that the zakat payer avoids paying zakat through formal institutions and becomes non-compliant in this respect. Therefore, the limitation in maximizing the satisfaction of zakat payers through formal institutions is subject to the following equations:

$$Z^{b} = \alpha - z(\alpha) \quad (25)$$

$$Z^{tb} = (1 - z)\,\alpha - (IL+RI+KL+PM+TR+TAX+EV)\,(\alpha - z(\alpha)) \quad (26)$$

As such equation (24) can be written as follows:

$$E(U) = [1 - p(\alpha - z(\alpha))\, U((1 - z)\,\alpha - (IL+RI+KL+PM+TR+TAX+EV)\,(\alpha - z(\alpha))] + [p(\alpha - z(\alpha))\, U(\alpha - z(\alpha))] \quad (27)$$

Based on equation (27), the general model which discusses factors determining compliance behavior in zakat on income through official channels in Acheh is as below:

$$\frac{p\,U'(Z^{b})}{1 - pU'(Z^{tb})} = (IL+RI+KL+PM+TR+TAX+EV) \quad (28)$$

From equation (28), $\left(\frac{pU'(Z^{b})}{1 - pU'(Z^{tb})}\right)$ is the Muslim individual's probability to comply with payment of zakat on income through formal institutions to maximize expected utility which depends on the implementation of laws (*IL*), commitment to the religion/faith (*RI*), understanding/knowledge about zakat (*KL*), access to the payment system (*PM*), trust to the formal institution (*TR*), perceptions about the tax system (*TAX*), environment (*EV*). From the factors that have been identified, Ahmad et al. (2011) revealed that seven factors significantly influence the compliance of Muslim individuals in paying their zakat through formal institutions which include; gender, age, education, monthly spending, understanding, tax and environment while faith, law, trust of the zakat institution and access to payment mechanism are not significant.

However, the study by Ahmad et al. (2011) was inconclusive since it mainly focused on the compliance behavior of zakat on income through official channels. Hence study by Khamis (2014) takes the initiative to apply the economic theory and model in discussing compliance behavior of business zakat among SMEs. The study produced a new dimension of the rational choice theory in describing compliance behavior. From the basic concept of the theory, as a rational individual, every decision is made to maximize utility which is influenced by various factors.

As revealed by Khamis (2014), Ahmad et al. (2011) and Diabi (1993) the Tax Evasion Model is able to explain factors determining compliance and evasion behavior in zakat. The adapted model illustrated that there are a

number of factors influencing compliance behavior in zakat and it is not just solely dependent on law enforcement (penalty and punishment). Table 1 summarizes past studies that adapted the Tax Evasion Model as a basis to discuss compliance and evasion behavior.

Table 1: **Summary of the past studies that adapted the Tax Evasion Model**

Author (s)	Focus / Issue (s)	Main Finding (s)
Allingham and Sandmo (1972)	▪ Discussed the tax evasion scenario	▪ Tax audits, penalties and punishments were the factors influencing tax evasion
	▪ Focused on the amount of income reported to tax authorities in maximizing utility	▪ Penalties and fines paid on evaded income
Yitzhaki (1974)	▪ Discussed the implication of the penalty structure on tax evasion	▪ Provided details on penalty structure ▪ Penalties and fines should be paid by the taxpayer based on unreported income
	▪ Focused on the under-reporting or unreported income by a taxpayer to tax authorities	▪ Criticisms of the previous model as tax penalty are based on unreported income and not on tax unpaid.
Cowel (1985)	▪ Discussed the role of economic theory in analyzing evasion and policy implication	▪ Supported the Yitzhaki (1974) explanation and model ▪ The level of compliance is related to the amount of income to be declared to the tax authorities
Diabi (1993)	▪ Discussed and explained the concept of zakat evasion	▪ Muslim individuals declared true income depending on faith, attitude towards the risk of being detected and enforcement of laws ▪ Produced a number of results. Firstly, full evasion which remains undetected, full evasion with detection, secondly, no evasion because of high religiosity levels or strong "*iman*" and fear of detection resulting in penalty and punishment by tax authorities, thirdly, partial evasion which remains undetected due to low levels of religiosity and lastly partial evasion with detection.
Borck (2004)	▪ Explained the effect of the penalty structure on evasion, expected returns and taxpayer welfare in the government sector	▪ Provided two assumptions ▪ Governments that want to maximize expected tax revenue will prefer The Allingham and Sandmo (1972) model. ▪ Governments that want to maximize expected voter welfare will prefer using Yitzhaki (1974) model.
Chorvat (2007)	▪ To identify the relationship between the time factor and discount factor and the level of compliance	▪ Assumes taxpayer will act on the time factor and discount factor to maximize utility ▪ Formulated two-period models based on the benefits of cheating and penalties gained by the two different times
Ahmad et al. (2011)	▪ To identify factors determining compliance behavior in zakat on income through official channels in Aceh	▪ Formulated the new economic model to explain zakat compliance behavior with the newly added Islamic aspect

		▪ Found that gender, age, education, monthly spending, understanding, tax and the environment significantly influence zakat compliance
Alm and Torgler (2011)	▪ To discuss the impact of ethical factors on tax compliance behavior	▪ Argued that tax compliance is dependent on more than law enforcement ▪ Individuals pay taxes as normal and rational persons and this translates into ethical behavior ▪ Ethical behavior increases and the rate for reporting income will fall

Sources: Many literature studies

The summary in Table 1 shows that the Tax Evasion Model is able to explain compliance behavior in a diverse range of studies. The explanation could be the answer to the two criticisms from previous studies. Firstly, Richardson (2006) mentioned psychological theories as the best approach to explaining human behavior but, many studies have revealed that the microeconomic theory is also able to discuss compliance behavior and is significant in explaining zakat compliance as compared to psychological theories. This is because in rationale choice theory as explained by Ahmad et al. (2011) individuals tries to maximize their satisfaction in two life dimensions which are not described by psychological theories. In explaining the compliance behavior of zakat, it must be related to the satisfaction gained through their actions in achieving both life dimensions. This suggests that economic theory is more significant in explaining zakat compliance behavior as compared to psychological theories commonly applied by previous studies.

Secondly, most of the researchers adapted the Tax Evasion model incorporating the economic aspect such as penalty and punishment without taking into consideration other aspects that may influence compliance behavior. However, Ahmad et al. (2011), Khamis et al. (2011) and Khamis (2014) revealed that the model can be utilized as a basis for explaining zakat compliance which includes a number of aspects like the economic aspect, psychological and sociological aspects as well as the Islamic aspect as previously suggested by some studies.

5. Discussion and Conclusion

In general, this paper has implications for the rational choice theory and specifically for the Zakat compliance behavior model. This is because, fundamentally, this paper is an attempt to fill the gap in the studies in this area as prior research has adapted the behavior model. Basically, the discussions of this paper revealed that the economic theory and model are able to discuss the subject of zakat compliance. In the Malaysian context, prior studies on zakat compliance behavior mainly focused on the psychological and sociological approach, revealing the suitability of the model in explaining zakat compliance behavior (Saad, 2009b; Bidin, 2008; Bidin & Idris, 2008; Bidin et al., 2009). This shows that few studies have applied the economic theory and model in explaining zakat compliance behavior even though there was a study that revealed the economic study (applied economic theory and model) was able to explain compliance behavior in zakat (Ahmad et al., 2011; Khamis, 2014). The study by Ahmad et al. (2011) modified the Tax Evasion Model to match explanations of zakat compliance behavior based on Acheh. Hence, this paper takes the initiative to provide evidence of the economic theory and model also suitable for discussing compliance behavior with some modification.

Discussion on this study produced a new dimension of the rational choice theory in describing compliance behavior. Before this, the rational choice theory commonly explained the behavior of households in deciding between alternatives implicating that they can choose among the alternatives to maximize utility (satisfaction). From the basic concept of the theory, as a rational individual, every decision is made to maximize utility which is influenced by various factors. Thus, in explaining zakat compliance behavior, the concept of rational choice theory is used to explain compliance behavior but the maximizing of utility among the Muslim community does not just concern physical utility as explained in the theory but also includes afterlife utility (satisfaction). This is because when the action is related to Islamic obligation, the choice in

doing the action can be seen to maximize utility in the two-life dimensions; the present life and the life after. This shows the implications of the rational choice theory itself.

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