



## Factors that influence the Islamic Perspective Human Development Index as Evidence of the Development of the Muslim Community

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### Abstract

This study aims to analyze the relationship between macroeconomics and zakat on the Human Development Index (HDI) and the Islamic Human Development Index (I-HDI) using the *maqāṣid al-sharī'ah* theory approach. We also calculate I-HDI based on *maqāṣid al-sharī'ah* theory by combining material and non-material aspects and then compare between I-HDI and HDI. The indicators used in the calculation of I-HDI are indicators that are relevant and in accordance with the objectives of *maqāṣid al-sharī'ah*, so that I-HDI can give a general picture of the results of human development. By employing the dynamic panel regression two-step Generalized Method of Moments (GMM) the study finds that there is a significant difference and quite a large disparity between the results of the HDI and I-HDI, in 34 provinces of Indonesia. The study reveals that economic growth, health fiscal policy, and zakat have a positive effect both on HDI and I-HDI. Nevertheless, the education fiscal policy variable has a positive effect on I-HDI, and conversely, has a negative effect on HDI. This condition occurs because the target and strategy for absorption of the education budget are not optimally carried out by the government. This research suggests that in formulating budget policies, the government should not only focus on material elements but also non-material elements which are reflected in the I-HDI model.

**Keywords:** Factors that influence; Islamic Human Development Index; Muslim Community

## INTRODUCTION

Development is a multifaceted process that takes into account shifts in all aspects of society, culture, and governance. Economic development refers to efforts to shift the standard of living of the economy from one based on modest growth and low wages to one based on innovation and high wages. Human development aims to enhance people's living conditions, namely the ability to obtain a healthier, educated, and prosperous quality of life (Mahmudov, 2020). The measurement of human development was first introduced by the United Nations Development Program (UNDP) in 1990. UNDP introduces a new idea for measuring human development called the Human Development Index (HDI). The standard of living is quantified by the Human Development Index (HDI). To construct HDI, three fundamental approach dimensions are used: healthy life expectancy, educational attainment, and income (Hasan, 2020). One indicator of human development can be measured by the increasing number of companies, higher levels of education, and ever-developing technology. Human Development Index (HDI) is a concept that explains the condition of each resident from the results of human development achievements as measured by three basic approach dimensions, namely average age or longevity, level of health, knowledge or level of education, and a decent standard of living (Rahim et al., 2022). According to Anto (2020), the development of human quality levels in Indonesia uses HDI, this concept only measures material well-being and ignores the material side, so HDI cannot be a comprehensive measure of human development. Therefore, many studies criticize HDI in terms of theory and conceptual application. The Islamic Human Development Index (I-HDI) is a concept that measures the achievement of the level of human welfare so that basic human needs are met to be able to live happily in this world and the hereafter, namely achieving happiness (Yumashev et al., 2020).

According to Imam Al-Syatibi, the basic *maslahah* for human life consists of five things, namely religion, soul, intellect, lineage, and property. These five dimensions are basic human needs, if these needs cannot be met or are met unbalanced, life welfare will not be achieved perfectly (Hasbi, 2021). The Islamic Human Development Index (I-HDI) can be used as a measuring tool for Islamic human development, especially in countries where most of the population is Muslim, such as Indonesia. The emergence of the I-HDI concept can determine whether the Islamic religion influences the human development and economic growth of a country (Amir et al., 2022). The object of human development is the development of Human Resources (HR) by Islamic values through the expansion of useful production, improving the quality of life, balancing development, developing of technology that is in line with the conditions of Muslim countries, and reducing dependence on the outside world and integration larger than the Muslim world (Rahim et al., 2021). Development in Islam is an effort made to change life for the better and more blessed, this will be achieved if development is carried out based on justice, balance, and obedience to the rules set by God. The success of the development is not solely successful from material achievements, but moral and spiritual development is very important in the advancement of human development (Sarkodie et al., 2020). According to Yumashev et al., (2020), several countries rank high on the Islamic Human Development Index (I-HDI) compared to the Human Development Index (HDI). On the other hand, several countries experienced a downgrade in I-HDI. In general, the contribution of

the material welfare index (MW) and non-material welfare (NMW) is very significant in contributing to human development. Based on the theory, the richer a country, the higher the welfare of its people, and the easier progress of human development will be realized.

The United Nations Development Program (UNDP) bases the three dimensions of human development on the concept of human capabilities. The United Nations Development Program recognizes that the Human Development Index is not a perfect indicator of progress toward a better life for everyone everywhere. HDI is an evolving index of human development. HDI cannot perfectly capture developments in human development. Therefore, many studies have criticized HDI concepts and indicators to find more complex concepts and dimensions in providing an overview of the development of human development (Jin et al., 2020). Human development is influenced by three factors, namely the human ability to choose the quality of life, career opportunities, and high income. The method for calculating the current HDI weight cannot be used as a measurement tool for human economic development, where the HDI indicator is no longer relevant to the development of human development in Muslim countries. HDI has drawbacks, namely, it does not include moral, and ethical dimensions and ignores aspects of freedom and human rights (Chen et al., 2020). According to data from UNDP, Indonesia's human development results are still below expectations. In 2020, Indonesia is ranked 116th out of 178 countries in achieving HDI. Among ASEAN countries, such as the Philippines, Singapore, and Malaysia, Indonesia is in the lowest position in terms of HDI. Furthermore, Indonesia experienced an increase in 2019, which was ranked 133 out of 188 countries (Troya, 2019). Even though HDI achievement in Indonesia tends to increase from year to year. In general, in all Indonesian Provinces there are quite large gaps and disparities in the results of human development calculations. UNDP realizes that HDI has shortcomings and weaknesses in measuring human development progress. Therefore, many studies have criticized the concept and indicators of HDI. Sengayi et al., (2020), proposed a modified HDI model by increasing the dimensions of work and political freedom. Human development is explained in this study by three factors, namely the human ability to choose a quality of life, career opportunities, and being able to have a high income. The purpose of this index is to complement the deficiencies of the HDI indicator so that it can be used as a modified measure or concept that is more representative of human development.

According to UNDP, economic growth has an impact on a country's ability to promote sustainable human development (Viana, 2022). Human resource expansion is a key contributor to economic expansion. The Gross Domestic Product is a measure of economic activity (GDP). In economic terms, gross domestic product (GDP) is the sum of all the profits made by all of a country's businesses. Human resource expansion is a key contributor to economic expansion. The Gross Domestic Product is a measure of economic activity (GDP). In economic terms, gross domestic product (GDP) is the sum of all the profits made by all of a country's businesses (Zhang et al., 2021). Measurement of economic growth with GDP is used by almost all countries to see the condition of human development using the national structure (Abendin & Duan, 2021). There is a positive correlation between GDP expansion and the human development index (HDI) supporting factor for the development of national income

so that it can improve people's welfare. The relationship between fiscal policy and I-HDI is a measuring tool for taking policies to improve the quality standards of human development. I-HDI cannot be separated from fiscal policy. The role of state expenditure budget allocation in education and health both at the central and regional levels is very important for human development. Improving the quality of human development is inseparable from the role of fiscal policy (Samsudin, 2020). The allocation of central and regional government funds toward education and healthcare, in particular, plays a pivotal role in promoting human development. Educating oneself is a means to a better life and faster, more complete human development. Increases in public health and education can boost the economy and create jobs. Health facilities and services cover all expenses that affect life expectancy, strength, and stamina as well as people's vitality. The quality of education is a very important factor in increasing creativity and innovation in economic development. Education can improve and encourage people's skills in work (Raies, 2020).

Human development goals will be achieved by improving the health of the population. Health is defined as the physical, mental, social, and spiritual maintenance of everyone so that they can be active in participating in community activities. Health is the main factor for people's welfare, so health must be the main concern of the government as a provider of public services. The government can guarantee people's right to health by providing fair, equitable, adequate, affordable, and quality health services. This policy is very dependent on health fiscal policy (Mounsey et al., 2020). Jedidiaet al., (2021), said that there is a positive relationship between human development and zakat. In this context, the distribution of zakat can improve human development by maximizing the distribution of zakat. Zakat is currently an alternative instrument in human development. Currently, in several countries like Pakistan dan Bangladesh, zakat is used as an instrument that is ignored by development organizations, even though zakat has enormous potential to improve the quality of human resources. In the Islamic economic and social system, zakat plays a crucial role in establishing equity and ensuring that everyone's basic needs are met. The Islamic microfinance-based zakat model as an idea that integrates charity with microfinance and Islamic finance can reduce inequality in income distribution and alleviate poverty in general Sueb et al., (2022), defines *maqāṣid al-sharī'ah* as the overall scope of human and environmental welfare based on Islamic law designed to protect and achieve human goals, both in this world and in the hereafter. *Maqāṣid al-sharī'ah* is an instrument used to determine the suitability of the way of life of Muslims with the values of Islamic law which cover all aspects of life, consisting of social, political, economic, spiritual, environmental, and universal human arrangement aspects. In general, the concept of *maqāṣid al-sharī'ah* aims to protect religion, soul, mind, lineage, and wealth and preserve a healthy environment (Al-Ghazali, 1993).

The purpose of this research is to analyze and examine the relationship between macroeconomics and zakat on the Human Development Index (HDI) and the Islamic Human Development Index (I-HDI) using the *maqāṣid al-sharī'ah* theory approach. Then the researchers tested and compared the results of HDI and I-HDI calculations. Indonesia with 34 provinces was chosen as the object of this study due to several reasons, first, Indonesia is a country with the largest number of Muslims in the world. secondly of the 34 provinces that are the object of research, there is a significant

disparity in welfare caused by the country's vast area so development is not evenly distributed. Understanding human development as a process that cultivates multiple dimensions including moral, spiritual, and material growth is central to this view. But the current human development index's composite indicator only accounts for progress in material areas, not moral or spiritual growth (Abdul et al., 2022). HDI is very useful, but HDI is completely inappropriate and insufficient to measure economic development from an Islamic perspective. To achieve the goals of economic development, Islam prohibits the separation of dimensions of human development, such as moral, spiritual, material, social, and welfare. The goal of development progress must be pursued in all aspects and dimensions (Huda et al., 2020). According to Ikhwan et al., (2020) life and property security, personal freedom, access to quality education, marriage and parenthood, child care, social cohesion, and low crime rates are widely acknowledged as essential components of long-term prosperity. Both material and immaterial (ethical) progress is valued by the Islamic concept of progress. Islam acknowledges the importance of both the physical and the spiritual, including things like morality, ethics, and faith. He views human life as divided into two stages, namely temporary life is life while in the world and the afterlife is permanent and eternal life. Therefore, we can define human contentment as a function of both early and later life prosperity using the symbol (W).

Islamic Human Development Index (I-HDI) is a conceptual framework that can be used to create a measurable index that measures all dimensions of human development achievement according to *maqāṣid al-Sharī'ah*. The results of research by Rama & Yusuf, (2020), regarding I-HDI explain that HDI is not able to capture the religious and ethical perspectives of socio-economic development in Muslim countries. Muslim countries have various cultures and values that cannot be fully accommodated by the HDI measurement. The Islamic Human Development Index (I-HDI) as a holistic and comprehensive human development index is adopted from the five dimensions of *maqāṣid al-Sharī'ah*. Both material and spiritual progress are valued in Islamic thought. Islam affirms the significance of both physical and immaterial factors morality, and ethics, in a well-rounded individual (Koyimah et al., 2020). Religion has an important role in directing human life. The worldview of religion has a great influence on ensuring human self-reformation and ensuring the fulfillment of all human spiritual and material needs. Religion has a meaning and purpose, which is to provide direction for all activities and change people to become better people through changes in behavior, lifestyle, environment, and so on. Ibn Ashur defines guarding religion (*ḥifẓ al-dīn*) as the savior of every Muslim's faith from any influences that might damage his behavior (As-Salafiyah et al., 2022). This study selects two indicators of the preservation of religion, namely the level of spending, namely zakat carried out by Muslim residents. The level of crime and corruption. The ratio of crime to the total population and perceptions of corruption.

The ratio of a high crime or corruption perception index indicates a lower level of morality and religious practice. This research develops four main indicators for preserving life, namely (1) life expectancy; the right to life is a fundamental right of all people. This indicator is represented by life expectancy. A longer lifespan represents a better quality of life. (2) Access to work. Access to work is one of the most basic rights for everyone. Work is mandatory to support survival. The unemployment rate

represents the access of people to jobs. (3) Fulfillment of basic needs is represented by the level of poverty and expenditure per capita refers to the number of people living below the poverty line while representing consumption expenditure. Higher poverty rates are undesirable while higher consumption expenditures are desirable. Intellect is a characteristic of humans and needs to be continuously enriched to increase the knowledge and technology base in advancing human development and welfare. Improving science and technology is the basis for human development and prosperity and it has a close relationship with the concept of *maqāṣid*. This research develops two indicators for preserving intelligence, namely access to educational institutions and educational output. Access to educational institutions is represented by the ratio of the number of schools to the population. Higher ratios represent higher access to education. While the output of education refers to the results of the educational process which is represented by the literacy rate. A higher literacy rate indicates a better output from the educational process. Child preservation (*ḥifẓ al-nasl*) includes protection, preservation, and offspring. Hasballah et al., (2021), consider that no civilization can survive if the next generation is spiritually, physically, and mentally weak or of low quality. Protecting offspring (*nasl*) in this study uses three indicators, namely family preservation, family divorce rates, and infant mortality. A high fertility rate indicates a high commitment to the sustainability of future generations. On the other hand, the divorce rate and the infant mortality rate in the household threaten the stability and survival of humans.

Al-Ghazali and al-Satibi place wealth (*ḥifẓ almāl*) at the end of the *maqāṣid al-Sharī'ah* dimension, this is because without the four dimensions above *maqāṣid* cannot be a driving force for the general welfare. This study proposes three indicators for wealth preservation. The first is the ownership of wealth which is represented by income per capita. Higher ownership of wealth represents higher material well-being. The second is wealth growth represented by economic growth (GDP growth). A higher economy is expected to increase the welfare of the whole society. The third is the distribution of wealth. This refers to the distribution of wealth ownership among people. Islam introduced several religious instruments to promote the distribution of wealth such as zakat, waqf, alms, and inheritance. The Gini ratio was chosen by research to represent the distribution of wealth. A low Gini ratio indicates a higher distribution and an even distribution of income. *Maqāṣid al-sharī'ah* is an instrument used to determine the conformity of the way of life of Muslims with the values of Islamic law which cover all aspects of life, consisting of social, political, economic, spiritual, environmental, and universal human arrangement aspects. On the one hand, *maqāṣid al-sharī'ah* connects the spirit and philosophy of sharia and on the other hand, it is connected with the social, economic, historical, political, and environmental context of the society in general. It also serves as a tool to measure the conformity of changes with the universal goals, principles, and values of *shariah* (Sueb et al., 2022).

According to Akmal et al., (2021), *maqāṣid al-sharī'ah* is a bridge that can connect text and context, between goals and means, between goals and methodology, and between Islamic law and Islamic goals universally as a means for actualization. The theory of *maqāṣid al-sharī'ah* has developed gradually over several centuries which is documented in books of *usul fiqh* and Islamic legal theory. Imam Syafi'i as the originator of the science of *ushul fiqh* discusses the purpose of *sharī'ah* orders such as

zakat, waqf and the importance of maintaining the five needs that are characteristic of the science of *maqāṣid al-sharī'ah*. *Maqāṣid al-sharī'ah* theory has become the correct framework for developing theories, models, policies, and reform programs in various aspects of life. *Maqāṣid al-sharī'ah* is widely applied in research related to Islamic reform, Islamic law, political thought, business and economics, social research, medicine, psychology, and other disciplines. That *maqāṣid al-sharī'ah* is a method and intellectual device in Islamic reformation (Altabaa, 2021). Ahmad al-Raysūnī argues that "*Al-Sharī'ah Kulluha Mu'allal*" that all dimensions and aspects of *shari'ah* have a purpose. That is, everything that is ordered and prohibited by Allah SWT has wisdom and goals in the form of benefit for humans (Alziyadat & Ahmed, 2019). *Maslahah* by 'Izz al-Dīn Ibn 'Abd al-Salām is divided into two categories, namely *maṣlahah dunyawiyah* and *maṣlahah ukhrawiyah* (Abdur, 2020).

Worship whose benefits can be felt in this world and the hereafter (*ma'qul*) and there is also worship whose wisdom, benefits, and rewards can only be reaped in the hereafter (*gayr ma'qul al-ma'na*). The five *maqāṣid al-sharī'ah* concepts are not final formulations. Muslim scholar always carries out new interpretations and reconstructions adapting the timeless principles of *maqāṣid al-sharī'ah*. Attempts to reform several scholars, including Rashad Ri, Ibn Ash'ath, 'Ali al-Fasi, Muhammad al-Ghazali, 'aha Jabir al-'Alawi, Yusuf al-Qardawi, and others, have attempted to decipher the *maqāṣid al-sharī'ah*, *shari'ah* in principle refers to the benefit of humans. The main objective of *maqāṣid al-sharī'ah* is to realize the benefit of mankind, both in this world and the hereafter. This is to the mission of Islam which is *rahmatan li al-Alamin* (Ishak, 2020). The framework model in this study is depicted in Figure 5 below. The model was developed to test the variables of economic growth, fiscal policy, and zakat on the Comparison of the Human Development Index (HDI) and the Islamic Human Development Index (I-HDI).

Kusumawardani, (2020), examined the connection between trust in zakat institutions and good governance among zakat contributors in Nigeria. Despite the similarities between their research and this one, the two studies were conducted in very different contexts due to the different requirements for each payment (a form of charity in Nigeria and a legal requirement in Saudi Arabia). Such a distinction necessitates a more thorough investigation into the function of governance, including the significance of each law and judicial process and procedures. The management of ZISWAF in Indonesia is currently regulated by the zakat management law and is carried out by BAZNAS and LAZ. Through the Amil Zakat Organization (LAZ) and the Muslim community (Ismail et al., 2013). Human development is closely related to zakat on the Islamic side. In this context, the distribution of zakat must be maximized. Zakat is currently an alternative means of human development. In the view of Islam, every person's wealth has other people's rights which must be given and distributed fairly, so that wealth will flow further and can help meet the needs of the people who are on the poverty line.

The Islamic microfinance model offers two integrated institutional models, namely zakat, *infaq*, and alms institutions and Islamic microfinance institutions. Integrated institutions can use combined funding sources from zakat, *infaq*, and alms funds as well as commercial funding sources. By using a pool of funding sources, each institution can provide commercial services as well as social services for the poor who

economically have low- and middle-income incomes. Commercial microfinance services offer a variety of financial services such as savings products, funding schemes, and fee-based financial products for economically poor people with middle income. The hope is that after they get commercial financing, they can increase their income to a high-income level (Arwani, 2020). In Islam, zakat funds are used as social security. Instruments of social security in Islam include zakat which is included as one of the funding traditions, the obligation of zakat simultaneously is an instrument for liberating poverty. Social security financing schemes in Islam apart from zakat can be taken from other Muslim assets such as endowments, *infaq*, alms, *ghanimah*, *fa'i*, *kharaj*, land rent, and *mal mustafad* (useful assets). One of the social security instruments is zakat, which is included as one of the funding traditions. The obligation of zakat is an instrument for alleviating poverty. In addition to zakat, social security funding schemes. The use of zakat for constructive purposes will be more significant because the benefits will be enjoyed indefinitely, thereby reducing poverty. If the basic needs of the ummah have been addressed, then zakat funds can be used for productive businesses to deal with poor families and improve the quality of the ummah's economy (Raies, 2020)

## METHODOLOGY

To find out the relationship between IHDI, HDI, macroeconomics, and zakat. This study uses a panel regression model. Panel regression is one of the most powerful techniques to provide more informative data, less collinearity between variables, and more degrees of freedom and efficiency. This study uses company data disclosed in annual reports published from 2016 to 2022. Data were obtained from BPS, the Ministry of Finance, BI, and the BAZNAS website. The Generalized Method of Moments (GMM) is used to estimate the model, GMM is one of the most flexible and dynamic methods that provide consistent results in the presence of different endogenous sources. The system generalized method of moment (SYS-GMM) proposed by Banerjee et., al, (2020). Possible endogeneity, which is important in panel data regression, can be addressed with SYS-GMM. To be more specific, we opted for the two-step SYS-GMM over the one-step version because it is more efficient. The former metric is employed for identifying second-order autocorrelation, while the latter is utilized for verifying the reliability of instrumental variables. The estimation model used in this study adopts the research model conducted by (Blundell & Bond, 2000). The regression model for this study is as follows:

$$I\text{-HDI}_{it} = \beta_0 + \beta_1 L.I\text{-HDI}_{it} + \beta_2 PDRB_{it} + \beta_3 EDUC_{it} + \beta_4 HEALTH_{it} + \beta_5 ZAKAT_{it} + \beta_6 DMG_{it} + e_{it}$$

$$HDI_{it} = \beta_0 + \beta_1 L.HDI_{it} + \beta_2 PDRB_{it} + \beta_3 EDUC_{it} + \beta_4 HEALTH_{it} + \beta_5 ZAKAT_{it} + \beta_6 DMG_{it} + e_{it}$$

Where I-HDI = using the maqāsid al-sharī'ah size  
HDI = adopted from UNDP measurements  
PDRB = GDP per capita growth percentage.  
EDUC = APBN Education spending budget  
HEALTH = APBN health spending budget



Zakat = muzakki zakat funds, BAZNAS

DMG = demography as a control variable using a measure of the number of productive populations.

## RESULTS AND DISCUSSION

Based on the results of the statistical test of the first hypothesis, the variable economic growth has a positive effect on the Human Development Index (HDI) and the Islamic Human Development Index (I-HDI), so it can be concluded that hypotheses H1a and H1b can be accepted. The results of this study are supported by research by Hakim et al., (2021), which argues that economic growth can have a positive influence on the level of achievement of human development. Likewise, economic growth can have a positive influence on I-HDI in terms of the *al-maal* or wealth index. It can be said that the increase in people's per capita income means that development in an area will increase. Where the higher the national or regional income, the greater the new production capacity that will absorb labor. High income is reflected in high per capita income and relatively small unemployment. This condition can encourage the equal distribution of per capita income and an increase in the human development index. The results of this study are supported by research results by Caravaggio (2020), an increase in per-capita output growth is one of the characteristics of modern economic growth. Increased economic growth in a country can result in changes to consumption patterns in fulfilling people's needs, so it can be concluded that high economic growth can provide welfare to the community and can increase people's purchasing power consumption. Statistical test results show that the variable government expenditure in the health sector has a positive and significant effect on the Human Development Index (HDI) and the Islamic Human Development Index (I-HDI). It can be concluded that hypotheses H2a and H2b are accepted. This finding is in line with research conducted by Koyimah et al., (2020), who stated that government spending in the health sector had a positive effect on human development in general. The results of this study are supported by research by Chen et al., (2020), he explained that government spending on health has a positive correlation to human development and is part of the implementation of *maqāsid al-sharī'ah*, namely the soul index, and heredity index. The indicator of the life index is measured using life expectancy data because it relates to the importance of maintaining mental health for survival so there is a close relationship between the life index and the health budget. Meanwhile, the heredity index relates to the importance of maintaining a good generation in terms of quality and quantity.

The 2021 Indonesia health profile publication report found that the condition of the health budget could occur due to the factor of increasing health spending that was still not on target and the amount of the budget was still below 5% of GDP. This means that the expenditure allocation for the health function is not by the statutory mandate of at least 5% of GDP. In addition, Indonesia's population continues to increase from year to year, this condition is not comparable with the amount of spending allocated to the health function, so it requires even more costs (Basrowi et al., 2021). According to the results of Mounsey et al., (2020), the government needs to provide specific policies on direct spending as a form of investment in providing facilities to the community, especially in the public services sector such as the

construction of hospital buildings, road repairs, and infrastructure development evenly. The role of government has a function in determining the health budget such as the provision of public health service facilities in general. Spending on infrastructure is carried out to advance human development and make it easier for people to access economic activities so that people's purchasing power and per capita income of the state will increase.

Based on the statistical hypothesis test results, the government spending variable in the education sector hurts the Human Development Index (HDI) and has a positive effect on the Islamic Human Development Index (I-HDI). It can be concluded that hypothesis H3a is accepted and hypothesis H3b is rejected. The results of this study support the research of Amir et al., (2022), that the factor of government spending in the education sector is the dominant factor that can determine the increase and progress of human development. This condition can be interpreted that the government's target of budget allocation for human development is not maximally carried out to increase human development in Indonesia. Nawawi et al., (2021), explained that there was no influence on the education budget because the education budget allocation was 20% of the state budget and was not properly realized for education. However, the education budget is allocated predominantly for employee salaries and government official travel expenses. Thus, the expenditure budget in the field of education from year to year has not shown any significant influence on the achievement of human development. The statistical test results of the zakat variable have a positive and significant effect on the Human Development Index (HDI) and the Islamic Human Development Index (I-HDI). It can be concluded that hypotheses H4a and H4b are accepted.

The results of this study are in line with the research of Karuni, (2020), the role of zakat is needed as a distribution function of channeling funds directly obtained from the assets of the rich so that human development can be realized. Zakat has enormous potential and value statistically. According to Islamic economic theory, one of the main factors of the Islamic financial system that can be used as social financing is the distribution of zakat. The research results are in line with the compliance with the attitude of paying zakat. Zakat is one of the religious orders that must be obeyed by every Muslim who could do so. The level of compliance is influenced by the faith factor. However, if the payment of zakat is required through a formal institution that collects zakat, as is implemented in several Islamic countries, then zakat compliance is now compliant with a formal institution that collects zakat. Therefore, the management of zakat institutions, collection efficiency, and several other factors related to the services provided by zakat institutions affect the level of zakat compliance. This theory is built based on the model of taxpayer compliance by adding several important factors that affect compliance with zakat payments (Ashraf & Rauf, 2020).

## **Macroeconomy**

Economic growth has the function to increase economic capacity in the long term. The state provides economic goods and necessities to provide welfare to the people. According to Chowdhury et al., (2020), five important factors must be done to achieve prosperity. First, providing training and job vacancies. Second, ensure that

employees have a fair wage scheme. Third, arrange the necessary insurance to reduce insurance, work-related accidents, and other benefits. Fourth, helping individuals with mental and physical problems so they can enjoy a normal life. Fifth, through laws and regulations and tax regulations, collecting *zakat*, *infaq*, and *sadaqah* funds. This effort is not only centered on one person but demands collectively. According to Mensi et al., (2020), to measure the impact of fiscal policy on national income can be measured using changes in income divided by changes in government spending. The purpose of published regional or regional fiscal policies is to cover the budget deficit in implementing state activities between the national and regional governments, which is called the vertical balance of the budget, and between regions, it is called the horizontal balance of the budget. All government steps that increase or decrease the amount of tax levy is referred to as fiscal policy. Spending and taxes are the two basic tools of fiscal policy. The quantity of economic activity, the pattern of distribution of resources, and the distribution of income can all be affected by changes in the amount and composition of taxes and government spending (Tan et al., 2020).

According to Saleh, (2020), Islam must have unique qualities and strategies to achieve the goals of economic growth as follows; (1) Comprehensive (*al-syumul*), namely economic growth in Islam is focused on achieving universal values of justice. (2) Balanced (*tawazun*), namely growth is not only oriented towards creating increased production but is shown based on the principle of distribution justice. (3) Realistic (*waqi'iyah*) is a realistic view of problems following reality. (4) Responsible (*mas'uliyah*), where Islam gives individual freedom in any sector with expressions that can show respect for human rights to enjoy worldly pleasures but this freedom is not limited. (5) Human-centered development (*ghayatuha al-Insan*), is different from modern economic development which emphasizes that the only field of development operations is the physical environment, State expenditure budget (APBN) and district/city Regional Revenue and Expenditure Budget (APBD) documents outline how much money the government will spend and take in each year. The fiscal policy seeks to promote economic growth by maintaining price and output stability. The objective of published regional fiscal policies is to cover the budget deficit for state implementation activities between national and regional governments (vertical budget balance) and between regions (horizontal budget balance) (Muhafidin, 2020). All government steps that increase or decrease the amount of tax levy is referred to as fiscal policy. Changes in the amount and composition of taxes and government spending have an impact on aggregate demand factors including the level of economic activity, patterns of distribution of resources, and distribution of income (Mohammad, 2022).

The health budget allocation is the value of expenditure made by the government in meeting all forms of physical needs for the community. If the state determines the policies used to buy goods and services in the health sector, then the state spending will reflect the costs incurred by the government in carrying out the specified program. Each country has a priority policy in allocating state spending, so the resulting output is also different. The allocation of state spending in the health sector has a causal relationship with human development. The health sector is concerned with the physical well-being of human beings as well as their minds and souls which enable them to engage in productive activities (R. Hakim et al., 2020). The

education sector is the basis for creating a better life for a country. The education sector is a fundamental factor in shaping quality human capabilities so that a financial commitment to education, can be implemented through policies that can encourage increased productivity. The state is responsible for realizing the improvement of the human condition through better educational opportunities and resources. Government spending on education is a tangible way to improve human resource development (Dzigbede, 2020).

### **Zakat Institution**

The arrangements put in place to ensure that the intended outcomes for stakeholders are defined and achieved is one definition of governance. With regards to zakat organizations. Governance is the system in place to ensure each is collected and distributed fairly and responsibly. Only a small number of academic works have addressed the topic of governance within the framework of zakat institutions and its relation to other factors. Case in point explored the connection between leadership and productivity at Indonesia's zakat and established that zakat institutions benefit from good management practices. There was a positive correlation discovered between governance and productivity (Samar, 2021). Kusumawardani, (2020), examined the connection between trust in zakat institutions and good governance among zakat contributors in Nigeria. Despite the similarities between their research and this one, the two studies were conducted in very different contexts due to the different requirements for each payment (a form of charity in Nigeria and a legal requirement in Saudi Arabia). Such a distinction necessitates a more thorough investigation into the function of governance, including the significance of each law and judicial process and procedures. The management of ZISWAF in Indonesia is currently regulated by the zakat management law and is carried out by BAZNAS and LAZ. Through the Amil Zakat Organization (LAZ) and the Muslim community (Ismail et al., 2013). Human development is closely related to zakat on the Islamic side. In this context, the distribution of zakat must be maximized. Zakat is currently an alternative means of human development. In the view of Islam, every person's wealth has other people's rights which must be given and distributed fairly, so that wealth will flow further and can help meet the needs of the people who are on the poverty line.

The Islamic microfinance model offers two integrated institutional models, namely zakat, *infaq*, and alms institutions and Islamic microfinance institutions. Integrated institutions can use combined funding sources from zakat, *infaq*, and alms funds as well as commercial funding sources. By using a pool of funding sources, each institution can provide commercial services as well as social services for the poor who economically have low- and middle-income incomes. Commercial microfinance services offer a variety of financial services such as savings products, funding schemes, and fee-based financial products for economically poor people with middle income. The hope is that after they get commercial financing, they can increase their income to a high-income level (Arwani, 2020). In Islam, zakat funds are used as social security. Instruments of social security in Islam include zakat which is included as one of the funding traditions, the obligation of zakat simultaneously is an instrument for liberating poverty. Social security financing schemes in Islam apart from zakat can be

taken from other Muslim assets such as endowments, infaq, alms, *ghanimah*, *fa'i*, *kharaj*, land rent, and *mal mustafad* (useful assets). One of the social security instruments is zakat, which is included as one of the funding traditions. The obligation of zakat is an instrument for alleviating poverty. In addition to zakat, social security funding schemes. The use of zakat for constructive purposes will be more significant because the benefits will be enjoyed indefinitely, thereby reducing poverty. If the basic needs of the ummah have been addressed, then zakat funds can be used for productive businesses to deal with poor families and improve the quality of the ummah's economy (Raies, 2020).

## CONCLUSION

The results of I-HDI calculations based on *maqāṣid al-sharī'ah* can be used as a benchmark for achieving overall human development through the material and non-material aspects. The indicators used in the calculation of I-HDI are indicators that are relevant and in line with the *maqāṣid al-syarī'ah* objectives, so that I-HDI can provide an overview of human development results. There are significant differences and quite large disparities between the results of the calculations of the Human Development Index (HDI) and the Islamic Human Development Index (I-HDI) which can be seen from the differences in rating scores in each province of Indonesia. The results of hypothesis testing show that the variables of economic growth, health fiscal policy, and zakat have a statistically significant effect on HDI and I-HDI. The education fiscal policy variable has a positive and significant effect on I-HDI and vice versa, education fiscal policy affects HDI. This condition occurred because the target and strategy for absorbing the education budget were not carried out optimally by the government. This research contributes to updating the indicators used to measure human development achievements. The Islamic Human Development Index (I-HDI) is here as a new concept to measure Islamic-based human development with the *maqāṣid al-sharī'ah* approach. I-HDI measures the achievement of human development with two aspects, namely material and non-material. The policy implication of the findings of this research is that the government can take advantage of the involvement of non-governmental organizations to be able to optimize human development funding, especially in the health and education sectors, such as the ZISWAF fund, and maximize its function. LAZ and BASNAZ. The limitation of this research is the unavailability of complete data for zakat variables. Some zakat annual reports do not contain the required information. Future research can develop this research by examining the impact of zakat on the welfare of *mustahik* in a wider scope including Islamic countries.

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## REFERENCES

- Abdul Rahim, Z., Syofyan, S., & Esya, L. (2022). The Influence of The Islamic Human Development Index (I-HDI) on Human Development. *UMRAN - International Journal of Islamic and Civilizational Studies*, 9(3), 83–103. <https://doi.org/10.11113/umran2022.9n3.579>
- Abdurrahman, A. (2020). *Maqâsid Al-Syari'ah As A Guide In Establishing The Law*. <https://doi.org/10.4108/eai.13-2-2019.2286047>
- Abendin, S., & Duan, P. (2021). International trade and economic growth in Africa: The role of the digital economy. *Cogent Economics and Finance*, 9(1). <https://doi.org/10.1080/23322039.2021.1911767>
- Agus Arwani. (2020). The Effect of Zakat, Infak, Sedekah (ZIS), Human Development Index and Unemployment on Indonesia's Economic Growth. *Al-Tijary: Jurnal Ekonomi Dan Bisnis Islam*, 5(2), 159–173. <https://doi.org/10.21093/at.v5i2.2220>
- Akmal, H., Lahuri, S. Bin, Ghazali, M., & Nurizal, N. (2021). Developing Halal Tourism Guidance in Indonesia Based on Maqâsid al-Sharī'a Approach. *Justicia Islamica*, 18(2), 243–259. <https://doi.org/10.21154/justicia.v18i2.2650>
- Altabaa, H., & Samsudin, A. H. (2021). Personal and Social Dimensions of Trust: A Maqasidic Approach. *Journals.Iium.Edu.My*, 5(1), 39–59.
- Alziyadat, N., & Ahmed, H. (2019). Ethical decision-making in Islamic financial institutions in light of Maqasid Al-Sharia: A conceptual framework. *Thunderbird International Business Review*, 61(5), 707–718. <https://doi.org/10.1002/tie.22025>
- Amri Amir, Rafiqi Rafiqi, Ary Dean Amri, & Evalina Alissa. (2022). Determinants of human development index and Islamic human development index regency/city of Jambi Province 2016 - 2020. *International Journal of Science and Research Archive*, 5(2), 018–031. <https://doi.org/10.30574/ijrsra.2022.5.2.0055>
- As-Salafiyah, A., Rusydiana, A. S., & Mustafa, M. I. (2022). Maqashid sharia-based mosque empowerment index. *International Journal of Ethics and Systems*, 38(2), 173–190. <https://doi.org/10.1108/IJOES-06-2021-0122>
- Ashraf, J., & Rauf, A. (2020). Waseela Foundation: Accounting for Zakat. *Asian Journal of Management Cases*, 17(1\_suppl), S55–S60. <https://doi.org/10.1177/0972820119884406>
- Banerjee, P., & Choudhury, S. (2020). *Agent Based Computational Model Aided Approach to Improvise the Inequality-Adjusted Human Development Index (IHDI) for Greater Parity in Real Scenario Assessments*. 6. <http://arxiv.org/abs/2010.03677>

- Basrowi, R. W., Rahayu, E. M., Khoe, L. C., Wasito, E., & Sundjaya, T. (2021). The road to healthy ageing: What has indonesia achieved so far? *Nutrients*, 13(10), 1-11. <https://doi.org/10.3390/nu13103441>
- Ben Jedidia, K., & Guerbouj, K. (2021). Effects of zakat on the economic growth in selected Islamic countries: empirical evidence. *International Journal of Development Issues*, 20(1), 126-142. <https://doi.org/10.1108/IJDI-05-2020-0100>
- Blundell, R., & Bond, S. (2000). GMM Estimation with persistent panel data: An application to production functions. *Econometric Reviews*, 19(3), 321-340. <https://doi.org/10.1080/07474930008800475>
- Caravaggio, N. (2020). Economic growth and the forest development path: A theoretical re-assessment of the environmental Kuznets curve for deforestation. *Forest Policy and Economics*, 118(July), 102259. <https://doi.org/10.1016/j.forpol.2020.102259>
- Chen, L., Cai, W., & Ma, M. (2020). Decoupling or delusion? Mapping carbon emission per capita based on the human development index in Southwest China. *Science of the Total Environment*, 741, 138722. <https://doi.org/10.1016/j.scitotenv.2020.138722>
- Choudhury, M. A. (2010). Islamic Perspective of Socioeconomic Development. *Journal of Islamic Economics, Banking and Finance*, 6(3), 1-18.
- Chowdhury, M. S. A., Arafat, Y., & Islam, S. (2020). Impact of Rural Development Scheme of Islami Bank Bangladesh Limited (IBBL) Upon Economic Development of the Rural Poor of Bangladesh. *The Millennium University Journal*, 5(1), 1-14. <http://www.themillenniumuniversity.edu.bd/journal/index.php/TMUJ/article/view/31>
- Dasic, B., Devic, Z., Denic, N., Zlatkovic, D., Ilic, I. D., Cao, Y., Jermsittiparsert, K., & Le, H. Van. (2020). Human development index in a context of human development: Review on the western Balkans countries. *Brain and Behavior*, 10(9). <https://doi.org/10.1002/brb3.1755>
- Doran, C. M., & Kinchin, I. (2020). Economic and epidemiological impact of youth suicide in countries with the highest human development index. *PLoS ONE*, 15(5), 1-11. <https://doi.org/10.1371/journal.pone.0232940>
- Dzigbede, K. D., & Pathak, R. (2020). COVID-19 economic shocks and fiscal policy options for Ghana. *Journal of Public Budgeting, Accounting and Financial Management*, 32(5), 903-917. <https://doi.org/10.1108/JPBAFM-07-2020-0127>
- Hakim, M. A. A., Suryantoro, A., & Rahardjo, M. (2021). Analysis of the Influence of Tourism Growth on Economic Growth and Human Development Index in West Java Province 2012-2018. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, 4(1), 160-169. <https://doi.org/10.33258/birci.v4i1.1561>

- Hakim, R., Muslikhati, M., & Aprilianto, F. (2020). Islamic Economics Ethics Perspective on Economic Development in the Time of Coronavirus Disease (Covid-19). *Falah: Jurnal Ekonomi Syariah*, 5(2), 111–127. <https://doi.org/10.22219/jes.v5i2.14019>
- Hasan, Z. (2020). Human development in Muslim countries : Need fulfillment versus basic universal income from Islamic perspective. *Munich Personal RePEc Archive*, 2(102936), 0–14.
- Hasballah, K., Darna, A., Said, W., Akbar, H., Makinara, I. K., & Fauzan, F. (2021). Identifying 'Illat through Munasabah in Islamic Law: A Perspective of Imam Al-Ghazali. *Samarah*, 5(2), 598–618. <https://doi.org/10.22373/sjhk.v5i2.10914>
- Huda, M., Haryadi, I., Susilo, A., Fajaruddin, A., & Indra, F. (2020, February 14). Conceptualizing Waqf Insan on i-HDI (Islamic Human Development Index) Through Management Maqashid Syariah. *Confrence Proceedings*. <https://doi.org/10.4108/eai.13-2-2019.2286206>
- Ikhwan, I., Akbar, N., & Rusydiana, A. S. (2020). Efficiency Analysis of Local Government Expenditures Based on Islamic Human Development Index : *Jurnal Ekonomi Islam Indonesia*, 2(3), 2–9.
- Ishak, M. S. I., & Asni, F. (2020). The role of maqasid al-Shari'ah in applying fiqh muamalat into modern Islamic banking in Malaysia. *Journal of Islamic Accounting and Business Research*, 11(9), 2137–2154. <https://doi.org/10.1108/JIABR-12-2019-0224>
- Ismail, Abdul Ghafar, B. T. P. (2013). Theoretical Model for Zakat -Based Islamic Microfinance Institutions in Reducing Poverty. *International Research Journal of Finance and Economics*, 103, 136–150. <http://www.internationalresearchjournaloffinanceandconomics.com>
- Jin, H., Qian, X., Chin, T., & Zhang, H. (2020). A global assessment of sustainable development based on modification of the human development index via the entropy method. *Sustainability (Switzerland)*, 12(8). <https://doi.org/10.3390/SU12083251>
- Karuni, M. S. (2020). Pengaruh Dana Zakat Terhadap Pembangunan Manusia. *I-Finance: A Research Journal on Islamic Finance*, 6(2), 125–135. <https://doi.org/10.19109/ifinance.v6i2.6469>
- Koyimah, I., Mahri, A. J. W., & Nurasyiah, A. (2020). Analysis Of Human Development With The Islamic Human Development Index (IHDI) In West Java Province In 2014-2018. *Review of Islamic Economics Amd Finance*, 3(2), 91–108. EL
- Kusumawardani, I. K. (2020). The Effect of Quality of Public Governance, Accountability, and Effectivness of Intention to Pay Zakat in Zakat Institutions With Trust As Moerating Variables. *International Journal of Economics, Business and Accounting Research*, 4(1), 266–282.



- Larasati, S. D. A., Nisa, K., & Herawati, N. (2021). Robust Principal Component Trimmed Clustering of Indonesian Provinces Based on Human Development Index Indicators. *Journal of Physics: Conference Series*, 1751(1), 0–8. <https://doi.org/10.1088/1742-6596/1751/1/012021>
- M. Zidny Nafi' Hasbi. (2021). *Kebijakan Fiskal Dalam Spektrum Maqashid As- Kitab Al-Muwafaqat*. 1, 1–13.
- Mahmudov Baxriddin Jurayevich, & Mullabayev Baxtiyarjon Bulturbayevich. (2020). The impact of the digital economy on economic growth. *International Journal on Integrated Education*, 3(6), 16–18. <https://doi.org/10.31149/ijie.v3i6.394>
- MB Hendrie Anto. (2013). Introducing an Islamic Human Development Index (I-HDI) to Measure Development in OIC Countries. *Islamic Economic Studies*, Vol. 19 No.2, Life 1, 69–95.
- Mensi, W., Hammoudeh, S., Tiwari, A. K., & Al-Yahyaee, K. H. (2020). Impact of Islamic banking development and major macroeconomic variables on economic growth for Islamic countries: Evidence from panel smooth transition models. *Economic Systems*, 44(1). <https://doi.org/10.1016/j.ecosys.2019.100739>
- Mohammad, A. (2022). *International Journal of Asian Social Science RELATIONSHIP BETWEEN FISCAL POLICY AND ISLAMIC FINANCE : A CASE STUDY OF THE JORDAN ISLAMIC BANK* Keyword s. 12(7), 249–263. <https://doi.org/10.55493/5007.v12i7.4545>
- Mounsey, S., Veerman, L., Jan, S., & Thow, A. M. (2020). The macroeconomic impacts of diet-related fiscal policy for NCD prevention: A systematic review. *Economics and Human Biology*, 37, 100854. <https://doi.org/10.1016/j.ehb.2020.100854>
- Muhafidin, D. (2020). The role of fiscal policy and monetary policy in environmental degradation in Indonesia. *International Journal of Energy Economics and Policy*, 10(3), 504–510. <https://doi.org/10.32479/ijeeep.9586>
- Munifatussa, A., & Saleh, K. (2020). Indonesia Monetary Policy During COVID-19 Outbreak : In Islamic Economic Open Access Indonesia Monetary Policy During COVID-19 Outbreak : In Islamic Economic Perspective. *American Journal of Humanities and Social Sciences Research (AJHSSR)*, 4(October), 56–63.
- Nawawi, A., Jaya, W. K., Sumanto, M., & Pangaribowo, E. H. (2021). The Impact of Fiscal Policy on Welfare Improvement in Indonesia: Study of Impact of Premium Assistance Beneficiaries on The National Health Insurance, Physical Special Allocation Fund for Health Sector, Education Sector, and Village Funds to Human Develop. *Populasi*, 29(2), 46. <https://doi.org/10.22146/jp.71691>
- Prasojo, Yadiati, W., Fitrijanti, T., & Sueb, M. (2022). The relationship between risk-taking and maqasid shariah-based performance in Islamic banks: Does shariah governance matter? *Banks and Bank Systems*, 17(1), 137–149. [https://doi.org/10.21511/BBS.17\(1\).2022.12](https://doi.org/10.21511/BBS.17(1).2022.12)

- Rahim, S., Murshed, M., Umarbeyli, S., Kirikkaleli, D., Ahmad, M., Tufail, M., & Wahab, S. (2021). Do natural resources abundance and human capital development promote economic growth? A study on the resource curse hypothesis in Next Eleven countries. *Resources, Environment and Sustainability*, 4(December 2020), 100018. <https://doi.org/10.1016/j.resenv.2021.100018>
- Raies, A. (2020). Islamic versus Conventional Fiscal policy: The effect of zakat on education and employment. *Academic Journal of Interdisciplinary Studies*, 9(1), 27–33. <https://doi.org/10.36941/ajis-2020-0003>
- Rama, A., & Yusuf, B. (2019). Construction of Islamic human development index. *Journal of King Abdulaziz University, Islamic Economics*, 32(1), 43–64. <https://doi.org/10.4197/Islec.32-1.3>
- Samsudin, C. M. (2020). Economic Growth: Quality And The Digital Economy. *Academicia Globe: Inderscience Research*, 68(1), 1–12. <http://dx.doi.org/10.1016/j.ndteint.2014.07.001><https://doi.org/10.1016/j.ndteint.2017.12.003><http://dx.doi.org/10.1016/j.matdes.2017.02.024>
- Sarkodie, S. A., & Adams, S. (2020). Electricity access, human development index, governance and income inequality in Sub-Saharan Africa. *Energy Reports*, 6, 455–466. <https://doi.org/10.1016/j.egy.2020.02.009>
- Sawmar, A. A., & Mohammed, M. O. (2021). Enhancing zakat compliance through good governance: a conceptual framework. *ISRA International Journal of Islamic Finance*, 13(1), 136–154. <https://doi.org/10.1108/ijif-10-2018-0116>
- Sengayi-Muchengeti, M., Joko-Fru, W. Y., Miranda-Filho, A., Egue, M., Akele-Akpo, M. T., N'da, G., Mathewos, A., Buziba, N., Korir, A., Manraj, S., Lorenzoni, C., Carrilho, C., Hansen, R., Finesse, A., Somdyala, N. I. M., Wabinga, H., Chingonzoh, T., Borok, M., Chokunonga, E., ... Parkin, D. M. (2020). Cervical cancer survival in sub-Saharan Africa by age, stage at diagnosis and Human Development Index: A population-based registry study. *International Journal of Cancer*, 147(11), 3037–3048. <https://doi.org/10.1002/ijc.33120>
- Sueb, M., Prasojo, Muhfiatun, Syarifah, L., & Nur Anggara Putra, R. (2022). The effect of shariah board characteristics, risk-taking, and maqasid shariah on an Islamic bank's performance. *Banks and Bank Systems*, 17(3), 89–101. [https://doi.org/10.21511/bbs.17\(3\).2022.08](https://doi.org/10.21511/bbs.17(3).2022.08)
- Tan, C. T., Mohamed, A., Habibullah, M. S., & Chin, L. (2020). The Impacts of Monetary and Fiscal Policies on Economic Growth in Malaysia, Singapore and Thailand. *South Asian Journal of Macroeconomics and Public Finance*, 9(1), 114–130. <https://doi.org/10.1177/2277978720906066>
- Troya, J. V. (2017). United Nations Development Programme (UNDP) views on managing LMEs in Latin America and the Caribbean. *Environmental Development*, 22(April), 214–216. <https://doi.org/10.1016/j.envdev.2017.04.002>

- Viana Espinosa de Oliveira, H., & Moutinho, V. (2022). Do renewable, non-renewable energy, carbon emission and KOF globalization influencing economic growth? Evidence from BRICS' countries. *Energy Reports*, 8, 48-53. <https://doi.org/10.1016/j.egy.2022.01.031>
- Yumashev, A., Kondrashev, S., Mikhaylov, A., & Slusarczyk, B. (2020). Global Indicators of Sustainable Development: Evaluation of the Influence of the Human. *Energies*, 13.
- Zhang, W., Zhao, S., Wan, X., & Yao, Y. (2021). Study on the effect of digital economy on high-quality economic development in China. *PLoS ONE*, 16(9 September), 1-27. <https://doi.org/10.1371/journal.pone.0257365>