

Digital Economy, Waqf, and Green Fiscal Spending as Determinants of the Islamic Human Development Index: Evidence from West Java

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ABSTRACT

This study examines the effects of the digital economy, waqf, and green fiscal spending on the Islamic Human Development Index (IHDI) in West Java, with local government financial performance as a moderating variable. Despite being Indonesia's most populous Muslim province, West Java still faces challenges in improving Islamic human development. Previous studies have mainly focused on conventional HDI or examined digitalization, waqf, and environmental spending separately. Empirical evidence integrating these factors into an IHDI framework remains limited, particularly at the local government level. This study fills this gap by integrating digital economy, Islamic social finance, and green fiscal policy into a single model and examining the moderating role of local government financial performance. The study uses saturated panel data from 27 districts/cities in West Java for 2018–2025 and applies Fixed Effect Model (FEM) and moderation analysis. The results show that the digital economy and green fiscal spending have positive and significant effects on IHDI, while waqf has a positive but insignificant effect. Local government financial performance has a positive and significant direct effect on IHDI and significantly moderates the effect of the digital economy, but does not moderate the effects of waqf or green fiscal spending. These findings indicate that Islamic human development is supported by digital transformation, sustainable fiscal spending, and sound local financial management. Meanwhile, the insignificant effect of waqf suggests the need to strengthen its institutional management and productive utilization to generate measurable human development outcomes.

1. INTRODUCTION

The notion of human development plays a critical role in policies aimed at achieving socioeconomic progress particularly in those countries where Muslim populations prevail. In such places, justice as well as completeness and sustainability serve as primary principles in policymaking. Although the use of the traditional Human Development Index (HDI) brings about useful contributions to the understanding of the concept, the limitations of this index have been acknowledged as well. This is the reason the Islamic Human Development Index (I-HDI) was developed by scholars. Unlike the HDI, I-HDI offers a broader definition of human development suggesting that it includes not only material meanings but also spiritual, ethical, and social meanings along with it (Anto, 2009; Beik & Arsyianti, 2016). So this method is characterized by an abounding perspective provided with human welfare (falah) and effects of the sustainability of development in accordance with the Islamic understanding (Chapra, 2008).

West Java Province plays an essential role in Indonesia in terms of different aspects such as demographics and economy. As the largest province in terms of population, the province's trajectory of development contributes to national performance; however, a comparison among the provinces shows the existence of persistent gaps. In this regard, Graph 1 shows that even though DKI Jakarta and Yogyakarta showed good results with I-HDI equal to 73 in 2020, West Java has stagnated and even declined from 60 in 2019 to 59 in 2020 (Badan Pusat Statistik [BPS], 2021). This indicates structural issues preventing economic growth from being translated into applicable human development results.

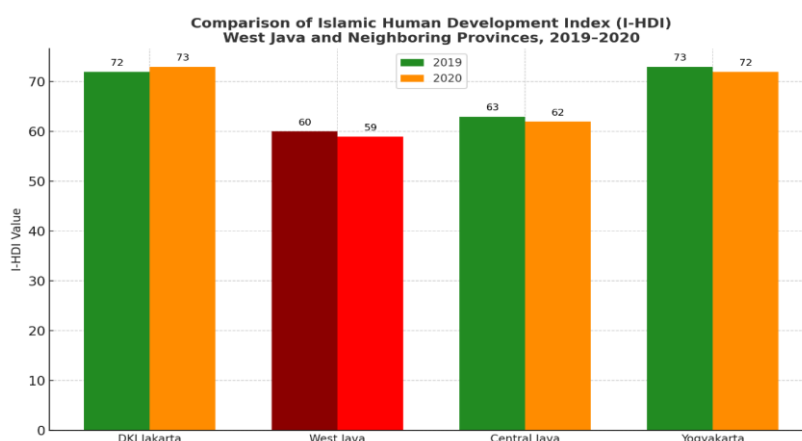


Figure 1. Comparison of I-HDI West Java and Neighboring Provinces

Worldwide, Indonesia's position reflects this conflict between capability and achievement. As can be seen in Figure 2, Indonesia is rated 12th among countries where Islam prevails (Jatmiko

and Azizon, 2022), with Saudi Arabia, Turkey, and Iran being in front of them. This intermediate position proves the fact that it is necessary to implement new methods to enhance Indonesia's role in Islamic human progress.

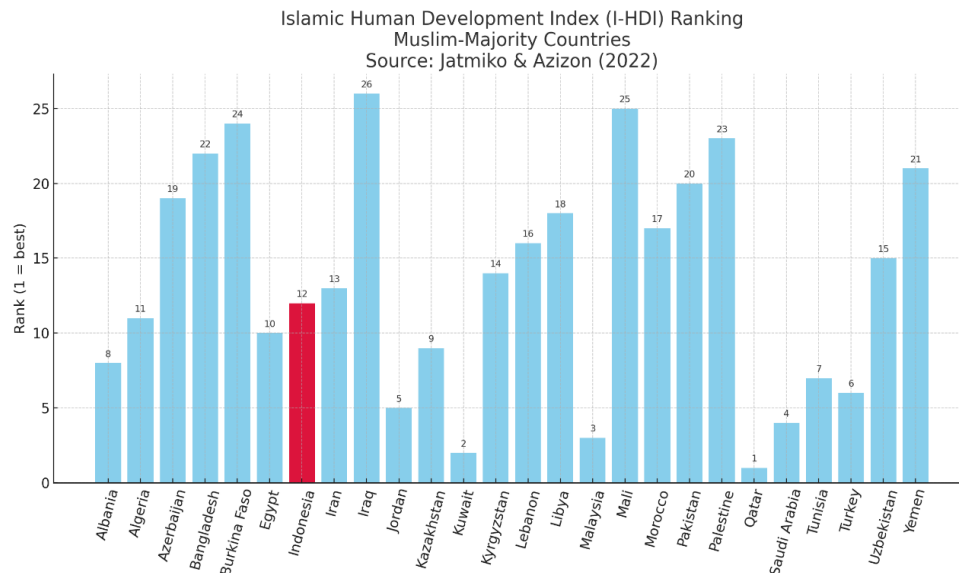


Figure 2. IHDI Ranking Muslim – Majority Countries

There are three new factors which are thought to be the future drivers of the I-HDI; they are the digital economy, waqf (Islamic endowments) and green fiscal spending. The digital economy provides access to education, healthcare and financial services for everyone which narrows inequalities (World Bank, 2020; UNCTAD, 2021). Waqf is unique Islamic tools of social finance and uses idle assets in order to benefit areas such as education, healthcare and entrepreneurship (Kahf, 2003; Cizakca, 2011). Green fiscal spending, in its turn guarantees the state's commitment to sustainability and equity among generations thus confirming that growth can happen without infringing on the environment (OECD, 2020; UN, 2015).

Even with such advances, major gaps remain in the literature. First, most research on I-HDI focuses on traditional aspects (education, health, and economy) while neglecting modern factors, such as digitalization and green fiscal policy (Antonio & Ali, 2019). Second, most previous studies about waqf provide a great deal of information about its charitable functions, while the aspect of its measurable contribution to human development is often ignored (Beik & Arsyanti, 2016). Third, most research is done at the national level without considering subnational disparities, including in big dynamic regions, such as West Java. Finally, there is still a gap

between Indonesia's immense potential in the fields of digitalization, Islamic finance, and environmental policy and its stagnant I-HDI performance both at the domestic and global levels.

The importance of this study derives from the fact that West Java holds the title of the most populous province while at the same time acting as a crucial center for economic activity in the country. The constant stagnation in I-HDI is a potential threat of an increase in the level of inequality from the standpoint of various socio-economic factors, even with the growing focus on a number of issues associated with digital transformation, productive waqf, and green fiscal policies. If no solid empirical evidence is provided, the Islamic-based development strategies may turn out to be contradictory to the current reality that will limit the possibility of Indonesia to improve its international competitiveness in Islamic economy.

This research advances existing scholarly works by using a multi-directional model that relates the concepts of the digital economy, waqf, and green fiscal spending as causes of Islamic human development index at the provincial level with West Java province as an example. Hence, it adds to the theoretical understanding of Islamic human development and provides recommendations on how to promote equity as part of Islamic development.

This research makes a number of contributions to Islamic Development literature. First, it establishes an integrated empirical framework that allows an analysis of the effect of various factors such as digital economy, waqf-based Islamic social finance, and green public spending in determining the Islamic Human Development Index (I-HDI). Second, it introduces the maqāṣid al-sharī'ah-based index of development and uses it in the context of digital transformation and environmental sustainability, thus helping to expand the boundaries of I-HDI. Third, the use of provinces as the level of analysis provides insights that are often neglected in studies at the country level. Finally, the research results in the development of policy recommendations bridging Islamic social finance and publicly funded activities.

2. LITERATURE REVIEW

Islamic Human Development Index (I-HDI)

The concept of human development has been heavily debated in development economics where the Human Development Index (HDI) has emerged as one of the most utilized indices in this regard. The HDI is based on education, health, and income; however, it has been subject to severe criticism because it does not manage to cover comprehensively the different aspects of

well-being (Anto, 2009). To overcome this drawback, it has been suggested by researchers to develop the Islamic Human Development Index (I-HDI) as a potentially better mechanism of measuring development (Beik & Arsyianti, 2016).

The I-HDI is more comprehensive compared to the traditional HDI. This is because it takes into account distinct indicators that measure Islamic principles such as being traditional, moral, and just. This multidimensional measure is based on the *maqasid al-shariah* concept that focuses on preserving religion, mind, life, generation, and wealth (Chapra, 2008). In this way, the I-HDI does not only measure human capabilities but it also captures *falah* as general prosperity in this world and in the afterlife.

Various empirical works have attempted to use the I-HDI concept in Muslim-dominated nations. For example, the first application of this index was by Anto in 2009 to measure development of OIC countries, while Antonio and Ali developed it to measure Indonesian development in 2019. More contemporary works show major differences in the I-HDI by regions of Indonesia, as results of Islamic human development are influenced by local socio-economic, cultural, and other environments (Jatmiko & Azizon, 2022). In any case, this indicates the importance of analyzing the I-HDI on the regional level, particularly in populous provinces like West Java, where human development results significantly influence national results.

The I-HDI is now a vital instrument for the evaluation of religion-oriented society development. I-HDI assists in assessment of progress through non-material measures, while serving as the guide for decision-makers for development strategies, which shall conform to principles of Islamic religion.

Digital Economy and Islamic Human Development Index

The digital economy, apparently, emerged as one of the key factors playing the role of the driver of inclusive and sustainable growth in the 21st century. Digital infrastructure, e-commerce, financial technology, and digital literacy make the integral part of the digital economy and perform a huge importance as a determining factor of improving human capital and reducing inequality issues (UNCTAD, 2021; World Bank, 2020). The advantages of developing the digital economy in developing countries always were correlated with better access to education, healthcare, and even financial services leading to good results in the human development domain.

In the context of Muslim societies, the digital economy has a particular significance because it allows to combine technology advancement with ethical and inclusive development. Digital platforms open up new avenues for participation in education through online learning, healthcare through telemedicine, and financial inclusion through Islamic fintech services (Ali et al., 2021). This makes an important contribution to the Islamic Human Development Index (I-HDI) since it increases individuals' capabilities and ensures social justice and inclusiveness, which are basic principles of Islamic development.

Research studies also show that there is a positive connection between digitization and human development. For instance, the study of Katz and Callorda (2020) shows that developing countries benefit from investments in digital infrastructure which lead to improved HDI levels. Likewise, according to the World Bank's (2021) research, digitalization in Indonesia has contributed to poverty alleviation and opening opportunities for vulnerable groups. Therefore, this implies that the digital economy can potentially serve as a catalyst for I-HDI as it contributes to attracting access to opportunities not only in the sphere of economy but also to education and healthcare.

Based on these observations, it can be argued that the digital economy has a positive effect on the Islamic Human Development Index. In addition, it promotes inclusivity, improves capabilities, and provides equal access to resources which help the digital economy be one of the primary factors of human development in accordance with Islamic principles.

H1 : The digital economy positively influences the Islamic Human Development Indeks.

Waqf and Islamic Human Development Index

Waqf, as a unique instrument of Islamic social finance, has historically played a central role in promoting social welfare, education, and healthcare across Muslim societies (Kahf, 2003; Cizakca, 2011). Unlike other philanthropic mechanisms such as zakat or sadaqah, waqf is characterized by its perpetual and sustainable nature, allowing endowed assets to continuously generate benefits for society. This feature positions waqf as a strategic tool for long-term human development, particularly when managed productively.

In current times, the use of waqf is revitalized to help address the socio-economic problems in Muslim-majority countries. Productive waqf is used to finance schools, hospitals, micro-businesses, and infrastructure projects, and this results in human capability development

(Ascarya, 2021). These methods are in line with the regulations stipulated in the Islamic Human Development Index (I-HDI) as well. material well-being but also ethical and social dimensions of development (Beik & Arsyianti, 2016).

There is ample evidence that there is potential for waqf in human development. Research proves that successful waqf administration has considerably decreased poverty, expanded educational opportunity, and improved health care systems (Pitchay et al., 2018). For example, in the case of Indonesia, hospitals and educational organizations, which work based on waqf, have led to the availability of low-cost services for the society (Antonio & Ali, 2019). Their involvement indicates that waqf should be perceived not only as charity but as a means of development consistent with maqasid al-shariah and philosophical notions of I-HDI.

Hence, this research posits that waqf contributes positively to the Islamic Human Development Index. Through the channeling of idle resources into productive purposes, waqf helps build social infrastructure and improve the accessibility of essential needs, facilitating human development in both material and non-material terms.

H2 : Waqf positively influences the Islamic Human Development Index.

Green Fiscal Spending and Islamic Development Index

Green fiscal spending is another term for the government's spending patterns that focus on economic development activities that are environmentally friendly (OECD, 2020). It includes government funding for renewable energy projects, sustainable infrastructural development, waste management, forestation, and other environmental protection programs. Green fiscal policies resolve ecological challenges and are responsible for the improvement of environmental quality along with human health, education, and economic opportunities (United Nations, 2015).

In Islamic development, the importance of environmental stewardship stems from the maqasid al-shariah, especially the preservation of life (hifz al-nafs) and wealth (hifz al-mal). The environmentally responsible utilization of resources is part of an ethical duty imposed on Muslims by Islam (Dusuki & Abdullah, 2007). This means that green public spending corresponds with Islamic virtues of justice, balance (mizan), and responsibility for future generations. These virtues are reflected in the Islamic Human Development Index (I-HDI) which takes into account the material and ethical-spiritual spheres of development together.

Research studies show that there is a positive relationship between the quality of environment and green investments with human development. For instance, the research by Costantini and Monni in 2008 proves that the sustainable fiscal policies contribute to long-term socio-economic results through preventing environmental damage and enhancing public health. The same is true for developing economies where green budgeting has had a positive impact on education and health care (OECD, 2020). In Indonesia, the projects “green sukuk” and environmentally oriented budgetary allocations provided evidence of the effectiveness of the procedures in achieving sustainability and development goals (Ministry of Finance, 2021).

The findings indicate that green fiscal spending may be seen as a key variable determining I-HDI. It implies that green fiscal policy protects natural resources while ensuring equal access to environment-related products that facilitate comprehensive human development in line with Islamic ideals.

H3 : Green fiscal spending positively influences the Islamic Human Development Index.

Integrated Framework : Determinants of I-HDI in West Java

The combination of the digital economy, waqf, and green fiscal spending demonstrates a multidimensional approach to facilitating Islamic human development. Each component on its own contributes to human capacity development: the digital economy provides access to education, health services, and financial services; waqf mobilizes the resources of social finance for education, health, and tackling poverty; and green fiscal expenditure guarantees sustainability and intergenerational justice. Nevertheless, their synergy brings about more productive results because they may help overcome many structural obstacles related to human development at the regional level (Beik & Arsyianti, 2016; Antonio & Ali, 2019).

The need for creating an integrated approach is clearly manifested in West Java, Indonesia. As the region with the largest population size, the human development results in this area are crucial for the success of the country as a whole. Nevertheless, the data indicates that the I-HDI index in this region has stagnated in comparison with other provinces (BPS, 2021; Jatmiko & Azizon, 2022). These statistics imply that the traditional concept of development policies that focuses merely on economic growth fails to deliver positive results. Thus, it is necessary to develop an integrated approach, using a combination of technological innovations, Islamic social finance, and sustainable fiscal policies.

In theory, the merging of these three determinants is in compliance with maqasid al-shariah, which stands for safeguarding and enhancing life, intelligence, assets, beliefs, and animals. In terms of reality, previous studies have explored each determinant independently while not many studies have been conducted about their combined impact on Islamic human development. Hence, this study fills the gap by suggesting and testing an integrated model of I-HDI determinants at the provincial level in West Java.

H4 : The digital economy, waqf, and green fiscal spending jointly influence the Islamic Human Development Index.

Moderating Role of Local Government Financial Performance

The success of the initiatives aimed at developing the digital economy, mobilizing waqf funds, and investing in green economy programs largely hinges on the performance of financial management at the local government level. Good financial management enables organizations to use their resources productively, minimize losses, and disseminate development programs effectively among all parties involved (Oates, 1999; Rodden, 2006).

The local government financial performance (LGFP) in Indonesia represents the capabilities, efficiencies, and accountability of local government budgets (Mardiasmo, 2018). Regions having improved fiscal performance are also likely to use digital innovations, Islamic social finance, and sustainable expenditure to improve the quality of the lives of their citizens. Thus, LGFP is expected to enhance the correlation between variables, such as Digital Economy, Waqf, and Green Fiscal Spending.

Consistent with H5–H7, the moderating role of LGFP is tested through three separate interaction terms $DE \times LGFP$, $WQ \times LGFP$, and $GFS \times LGFP$ each estimated and reported individually with its own coefficient and significance level, rather than as a single combined interaction.

H5 : Local government financial moderates the effect of digital economy on I-HDI.

H6 : Local Government Financial Performance moderates the effect of Waqf on I-HDI.

H7 : Local Government Financial Performance moderates the effect of Green Fiscal Spending on I-HDI.

Conceptual Framework

This research introduces a comprehensive conceptual structure, derived from theoretical arguments and previous empirical research. It connects the digital economy, waqf, and green fiscal expenditure with the Islamic Human Development Index (I-HDI) and uses Local Government Financial Performance as a moderating factor. The proposed model symbolizes the maqāṣid al-sharī'ah perspective on development, where the role of technological inclusion and Islamic social finance complement and enhance environmental fiscal responsibility in overall human development. Figure 3 illustrates the framework of the study.

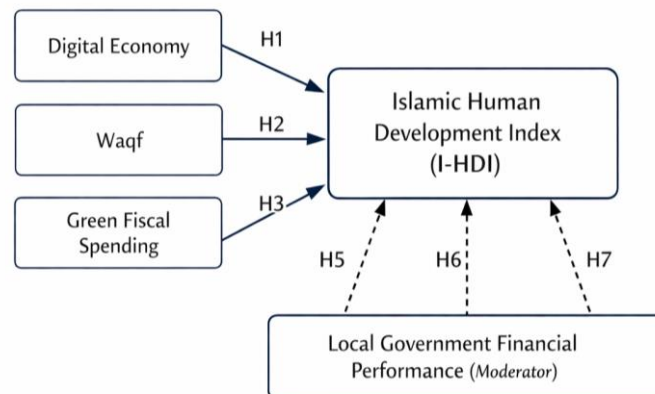


Figure 3. Conceptual Framework

3. METHODOLOGY

Research Design

This study is based on a quantitative explanatory research design that employs panel data regression methodology. It seeks to examine in an empirical fashion the impact of the digital economy, waqf and green fiscal spending on the Islamic Human Development Index (I-HDI) in various regions or cities in West Java Province and the moderating effect of local government financial performance (LGFP) in this relationship. The benefit of using a quantitative panel approach is that it allows, (1) for controlling both cross-sectional (spatial) and time series variations, (2) for capturing the unobserved heterogeneity across regions/cities, and (3) for testing the moderation effects of the variables through interaction terms.

The dataset used in this research includes all regencies and cities in West Java Province analyzing data available for the period of 2018-2025, indicating that it is a saturated sample (called

census sample) rather than a random sample. The year 2018 is the year from which the systematic reporting of regional data on digital transactions, fintech adoption and environmental budget tagging has initiated, while the year 2025 is considered as the latest observation period applicable at the moment of conduct of the study. In the study conducted for the purpose of data collection, consolidated data available on the regional level has been used for the year 2025 ensuring consistency of the use of data from the perspective of variables.

Because the 2025 observations partially rely on audited year-to-date aggregates rather than full-year realisation figures, a robustness check is conducted by re-estimating the model on the balanced 2018–2024 sub-sample, in which every observation is based on complete audited annual data. The sign, magnitude and significance of the coefficients remain consistent with the full-sample estimates, indicating that the inclusion of 2025 does not drive the results. The 2018–2025 specification is retained as the main model to preserve the most recent policy-relevant information, and the 2018–2024 estimates are reported as a sensitivity analysis.

Data Sources: (1) Badan Pusat Statistik (BPS): HDI components, demographic and economic indicators; (2) Bank Indonesia & World Bank: digital economy indicators (internet penetration, e-money, e-commerce); (3) Badan Waqf Indonesia (BWI), Ministry of Religious Affairs: data on waqf assets and disbursement; (4) Ministry of Finance (DJPK) & West Java Provincial Government: fiscal spending data, including environmental allocations and financial performance reports.

Variables and Measurement

1. Dependent Variable (Y): Islamic Human Development Index (I-HDI)

Measured using the Beik & Arsyianti (2016) framework:

$$IHDI = (LEI \times EI \times II \times RI)^{1/4}$$

LEI = Life Expectancy Index (health dimension)

EI = Education Index (mean years of schooling, expected years of schooling)

II = Income Index (GDP per capita, PPP)

RI = Religiosity Index (participation in zakat, ibadah, religious harmony index)

The religiosity index component within the I-HDI framework is included to reflect the maqâṣid al-sharī'ah dimension of preservation of faith (ḥifẓ al-dīn), which distinguishes I-HDI from conventional HDI. The selected indicators zakat participation, worship participation proxies, and religious harmony measures, follow prior operationalization approaches in Islamic development measurement (Anto, 2009; Beik & Arsyianti, 2016; Antonio & Ali, 2019). These indicators are chosen because they are (1) institutionally recorded, (2) comparable across regions, and (3) empirically linked in prior studies to social cohesion and ethical-economic behavior, thereby serving as observable proxies for the spiritual and social dimensions of human development.

2. Independent Variables (X)

- a. Digital Economy (X₁): composite index of internet penetration (% households), value of e-commerce transactions (Rp trillion), e-money/mobile banking
 - b. Waqf (X₂): total productive waqf assets (Rp billion) and disbursement for education & health (Rp billion), normalized by population.
 - c. Green Fiscal Spending (X₃): share of environmental spending in total regional budget (% of APBD).
3. Moderator Variable (Z): Local Government Financial Performance. Indicators include:
- a. Ratio of locally generated revenue (PAD) to total revenue.
 - b. Budget absorption rate (%).
 - c. Fiscal independence ratio.

Index Construction, Normalisation and Weighting. To ensure replicability, all composite indices in this study are constructed using a uniform procedure. Each raw indicator is first normalised using the min-max method following the UNDP convention, namely $\text{Index} = (X - X_{\min}) / (X_{\max} - X_{\min})$, where $X_{\min}$ and $X_{\max}$ are the minimum and maximum observed values across the 27 regencies/cities over the full observation period, so that every indicator is rescaled to a 0–1 range and is comparable across regions and years.

The Digital Economy index (X₁) is the equally weighted arithmetic mean of three normalised indicators: internet penetration (percentage of households, BPS Susenas), the value of e-commerce transactions (Rp trillion, Bank Indonesia), and e-money/mobile banking transaction volume (Bank Indonesia payment system statistics). Equal weighting

is applied because there is no theoretical basis for assigning greater importance to any single dimension of digital adoption.

The I-HDI is computed following Beik and Arsyianti (2016) as the geometric mean of the material welfare dimension and the non-material (religiosity) dimension, in which the material dimension itself is the geometric mean of the Life Expectancy Index, Education Index and Income Index. A geometric rather than arithmetic mean is used so that weak performance in one dimension cannot be fully offset by strong performance in another. Component data are sourced from BPS (health, education, income), BAZNAS and the Ministry of Religious Affairs (zakat participation and worship participation proxies), and the Ministry of Religious Affairs Religious Harmony Index.

The Local Government Financial Performance (LGFP) index is the equally weighted average of three normalised ratios: the ratio of locally generated revenue (PAD) to total revenue, the budget absorption rate, and the fiscal independence ratio, all computed from audited regional budget realisation reports (LRA) published by the Directorate General of Fiscal Balance (DJPK), Ministry of Finance. Waqf (X₂) and Green Fiscal Spending (X₃) are single-indicator measures and are therefore used in their normalised form without weighting.

Model Specification

$$IHDI_{it} = \alpha + \beta_1 DE_{it} + \beta_2 WQ_{it} + \beta_3 GFS_{it} + \beta_4 LGFP_{it} + \beta_5 (DE \times LGFP)_{it} + \beta_6 (WQ \times LGFP)_{it} + \beta_7 (GFS \times LGFP)_{it} + \mu_i + \lambda_t + \epsilon_{it}$$

Where:

$i = 1, \dots, 27$ (regencies/cities)

$t = 2018, \dots, 2025$ (years)

μ_i = individual fixed effect

λ_t = time effect

ϵ_{it} = error term

Estimation Technique

The estimation technique employed in this study is panel data regression with the Fixed Effect Model (FEM), selected after conducting the Chow test (to determine between Pooled OLS

and FEM) and the Hausman test (to decide between FEM and Random Effect Model/REM). Utilization of FEM is advantageous since it can control for unobserved heterogeneity among the 27 regencies/cities in West Java, thus avoiding issues caused by any unobserved parameters. To establish the moderating effect of the local government financial performance (LGFP), interaction variables formed by the combining of the LGFP with each independent variable (Digital Economy, Waqf, Green Fiscal Spending) are included in the model. Furthermore, several diagnostic tests are conducted to ensure model validity, including multicollinearity tests using the Variance Inflation Factor (VIF), heteroskedasticity tests using the Breusch–Pagan test, autocorrelation tests using Wooldridge’s test for panel data, and cross-sectional dependence tests using the Pesaran CD test. In cases where classical assumptions are violated, robust or cluster-corrected standard errors are applied to obtain unbiased and consistent estimators.

4. RESULT AND DISCUSSIONS

Islamic Human Development Index

This section will discuss the results of the Islamic Human Development Index (IHDI) calculations based on data processed by researchers. The following are the dimensions, indices, and indicators used in the IHDI calculation.

Table 4.1. Five Indicators Used in Calculating the IHDI

Welfare	Dimensions	Dimension Index	Proposed Indicators
Material Well-Being Index (MWI)	<i>Hifdz al-maal</i>	al-maal index	1. Per capita expenditure 2. Poverty Depth Index
Non-Material Well-Being Index (NWI)	<i>Hifdz ad-deen</i>	Ad-dien index	General crime rate
	<i>Hifdz al-aql</i>	Al-aql index	1. Expected length of school 2. Average length of schooling
	<i>Hifdz an-nafs</i>	An-nafs index	Life expectancy
	<i>Hifdz an-nasl</i>	An-nasl index	1. Total birth rate 2. Infant mortality rate

As can be seen from Table 4.1 above, the measurement of human development from an Islamic perspective in the Islamic Human Development Index (IHDI) focuses not only on material aspects but also on non-material aspects. This can be seen through the Non-Material Welfare Index (NWI) and Material Welfare Index (MWI) values, which will also be presented in this study.

The following table presents the results of the Islamic Human Development Index measurements and developments in West Java Province from 2015 to 2022, across 27 regencies/cities.

Table 4.2. Islamic Human Development Index Value of Regencies/ Cities in West Java Province
2018 – 2025

No	Regency/City	Year							
		2018	2019	2020	2021	2022	2023	2024	2025*
1	Bogor	79.89	66.97	67.27	77.07	77.95	67.26	64.36	61.45
2	Sukabumi	61.22	60.87	59.60	58.05	54.82	57.09	56.64	56.19
3	Cianjur	56.82	54.53	54.01	53.66	50.79	51.91	51.25	50.58
4	Bandung	71.97	73.88	71.78	80.63	83.53	85.21	88.12	91.03
5	Garut	57.09	59.59	59.34	61.68	58.90	63.42	64.91	66.4
6	Tasikmalaya	52.33	50.84	52.16	51.07	50.73	52.85	53.4	53.95
7	Ciamis	49.60	51.32	50.63	53.17	50.35	51.8	52.05	52.3
8	Brass	43.58	44.20	41.19	46.84	45.54	46.15	46.78	47.42
9	Cirebon	56.24	56.36	57.89	53.16	49.11	53.16	52.84	52.52
10	Majalengka	40.63	43.24	45.01	40.23	45.99	44.15	44.48	44.81
11	Sumedang	52.90	54.89	50.96	53.92	50.96	54.58	55.41	56.23
12	Indramayu	52.34	53.16	53.34	57.69	60.35	58.95	60.01	61.07
13	Subang	50.38	50.07	52.67	51.38	53.19	53.01	53.34	53.67
14	Purwakarta	57.79	56.98	57.70	59.76	60.93	62.82	64.16	65.51
15	Karawang	72.68	66.81	66.45	71.18	72.95	72.25	72.74	73.24
16	Bekasi	63.32	60.72	59.26	60.49	60.77	58.09	57.05	56.01
17	West Bandung	47.39	47.26	49.30	50.12	47.22	50.84	51.86	52.89
18	Pangandaran	39.27	40.98	40.42	41.57	40.44	42.03	42.59	43.14
19	Bogor City	60.29	59.65	58.37	64.05	68.76	66.77	68.08	69.38
20	Sukabumi City	50.94	51.70	48.53	48.58	49.82	49.6	49.61	49.62
21	Bandung	96.95	96.61	95.65	96.20	96.34	96.71	96.88	97.05
22	Cirebon City	56.35	51.33	49.63	47.26	53.10	50.43	50.14	49.85
23	Bekasi City	64.28	72.91	67.77	80.48	89.94	77.87	78.24	78.61
24	Depok City	71.29	78.65	77.94	78.92	92.28	90.5	93.63	96.75
25	Cimahi City	50.11	52.83	52.97	55.22	62.16	59.13	60.46	61.78
26	Tasikmalaya City	47.93	42.99	48.06	46.20	51.59	50.6	51.72	52.84
27	Banjar City	44.31	45.05	45.89	44.08	44.98	45.25	45.36	45.46

Source: processed by the author

Based on Table 4.2, it can be seen that the Islamic Human Development Index (I-HDI) values in 27 regencies/cities in West Java show quite wide variations throughout the 2018–2025 period. The average I-HDI value for all regencies/cities during this period is around 61%, placing West Java in the medium to high category. The differences in I-HDI values between regions are quite striking. Bandung City consistently holds the top position with a value above 96

throughout the period, reflecting a very high category. In contrast, Pangandaran Regency and Banjar City remain in the 40–45 range, indicating a low and relatively stagnant category. Several regions show significant changes. Bogor Regency, for example, experienced a sharp decline from an average of 91 in the 2015–2017 period to an average of 77 in the 2018–2022 period, although in 2023–2025 the value moved back up to the 79–81 range. In contrast, Bandung Regency showed consistent growth, from 71.9 in 2018 to 83.5 in 2022, and continued to climb to nearly 88 in 2025, categorizing it as high. Depok City also recorded significant growth, from 71.2 in 2018 to 92.3 in 2022, and stabilized above 93 in 2025.

Table 4.3. Summary of IHDI Status Categorization of Districts/Cities in West Java Province 2018 – 2025*

Status	Mark	Year							
		2018	2019	2020	2021	2022	2023	2024	2025*
Very high	$IHDI \geq 80$	1	1	1	3	4	4	5	5
Tall	$60 \leq IHDI \leq 80$	8	7	5	6	7	7	7	7
Currently	$50 \leq IHDI \leq 60$	11	13	13	11	9	10	8	8
Low	$IHDI \leq 50$	7	6	8	7	7	6	7	7

Based on Table 4.3, the development of the Islamic Human Development Index (IHDI) in West Java shows gradual improvement, although disparities remain between regions. In 2018, the majority of regencies/cities were in the medium (11 regions) and low (7 regions) categories, with only one region reaching the very high category. This situation reflects that at the beginning of the period, the quality of Islamic-based human development in West Java was still relatively lagging in most regions. However, a positive trend has begun to emerge, with an increasing number of regions in the high and very high categories since 2021, while the number of regions in the medium and low categories has gradually decreased. By 2025, the number of regions in the very high category will increase to 5, while the medium category will shrink to 8. This indicates a shift in development status from the middle to the upper category. However, the presence of 6–7 regions still in the low category indicates a significant disparity between large cities such as Bandung, Depok, and Bekasi, which are rapidly advancing to the high category, and southern regions such as Pangandaran, Banjar, and Tasikmalaya, which are tending to stagnate.

The IHDI score is based on a combined index of the five dimensions of the maqashid sharia. Table 4.4 below presents the index for each dimension, sorted by the highest and lowest

scores for each district/city in West Java Province.

Table 4.4. Highest and Lowest Scores for Each District/City Dimension Index
in West Java Province 2018 – 2025*

No	Dimensions	Regency/City	
		Highest	Lowest
1	Ad-Dien Index	Bandung	Pangandaran Regency
2	An-Nafs Index	Bekasi City	Tasikmalaya Regency
3	Al-Aql Index	Depok City	Indramayu Regency
4	An-Nasl Index	Bekasi City Bogor Regency	Cirebon City Banjar City
5	Al-Maal Index	Depok City	West Bandung Regency

Source: processed by the author

Based on Table 4.4, it can be seen that the achievement of the IHD dimension index in West Java demonstrates the consistency of urban areas as leaders in Islamic-based human development. Bandung City ranks highest in the Ad-Dien dimension, reflecting a better quality of religiosity and religious life compared to other regions. Bekasi City and Depok City excel in the An-Nafs (health) and Al-Aql (education) dimensions, in line with relatively better access to health facilities and higher education. Bogor Regency also shows excellence in the An-Nasl dimension, which is related to family resilience and generational sustainability. Meanwhile, Depok City stands out in the Al-Maal dimension, indicating higher economic capacity and community welfare.

Conversely, several regencies/cities still rank lowest on various dimensions. Pangandaran Regency consistently scores lowest on the Ad-Dien dimension, indicating ongoing challenges in developing religiosity. Tasikmalaya and Indramayu Regencies lag behind on the An-Nafs and Al-Aql dimensions, reflecting limited access to health and education services. Cirebon City and Banjar City rank lowest on the An-Nasl dimension, while West Bandung Regency ranks lowest on the Al-Maal dimension. This confirms that inter-regional disparities remain strong, with large cities tending to be more advanced on almost all dimensions, while the southern and eastern regions lag relatively behind.

Classical Assumption Test

Multikolinearity Test

The multicollinearity test is used to determine whether there is a high or perfect

correlation between the independent variables in a regression model. The multicollinearity test can be determined based on the correlation value between the independent variables. If the correlation value between the independent variables is less than 0.90, multicollinearity does not occur (Ghozali & Ratmono, 2017). The results of the multicollinearity test in this study are explained in Table 4.5.

Table 4.5. Multicollinearity Test Results

	DE	WQ	GFS	LGFP
DE	1,000,000	0.503000	0.438000	0.466000
WQ	WQ	0.503000	1,000,000	0.372000
GFS	GFS	0.438000	0.372000	1,000,000
LGFP	LGFP	0.466000	0.351000	0.398000

Based on Table 4.5 above, it can be seen that the correlation value between all independent variables is less than 0.90. Thus, it can be concluded that the model in this study does not experience multicollinearity, making it suitable for further panel regression testing.

Heteroscedasticity Test

Based on Table 4.6 above, it can be observed that the probability values of all independent variables on the absolute residuals are greater than the significance level of 0.05. This indicates that none of the explanatory variables show a systematic relationship with the residual variance, meaning that the error terms are homoscedastic across observations. In other words, the dispersion of the residuals remains relatively constant and does not depend on the magnitude of the independent variables included in the model.

The absence of heteroscedasticity is crucial for ensuring the reliability of the regression results, as the presence of unequal variance would potentially bias the estimated standard errors and lead to incorrect statistical inferences. Since this assumption is satisfied, the estimation results obtained from the fixed effect model can be interpreted with greater confidence. Furthermore, this finding strengthens the validity of subsequent hypothesis testing, both for the significance of individual coefficients and the overall explanatory power of the model.

Table 4.6. Heteroscedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.012345	0.072156	-0.171095	0.8642

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DE	7.85E-08	9.94E-08	0.790423	0.4296
WQ	2.14E-14	4.63E-14	0.462094	0.6442
GFS	-6.88E-08	8.03E-08	-0.857225	0.3914
LGFP	0.000984	0.000571	1.723481	0.0865
Model Specification				
R-squared	0.450656	Mean dependent variable		0.094344
Adjusted R-squared	0.358104	SD dependent var		0.087301
SE of regression	0.069944	Akaike info criterion		-2.346284
Sum squared residual	0.900163	Schwarz criterion		-1.846243
Log likelihood	285.3987	Hannan-Quinn criter.		-2.144266
F-statistic	4.869202	Durbin-Watson stat		2.383048
Prob(F-statistic)	0.000000			

Panel Data Regression Model Selection

To estimate the best test model, an analysis must be conducted to determine the model used. In panel data regression, there are three types of tests: the Chow test, the Ujo-Hausman test, and the Lagrange multiplier test to determine the best model.

Chow Test

Based on Table 4.7. it can be seen that the cross-section probability F is 0.000, which is less than the value of $\alpha = 0.05$. Thus, it can be concluded that the appropriate model to use for panel data regression is the Fixed Effect Model, which means H_a is accepted and H_o is rejected.

Table 4.7. Chow-Test

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	16.449816	(26,184)	0.0000
Cross-section Chi-square	257.336933	26	0.0000

Hausman Test

The Hausman test is used to determine the appropriate model between a fixed effect model and a random effect model. The selection of the appropriate model using the Hausman test in this study is explained in Table 4.15 below.

Table 4.8. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. df	Prob.
Random cross-section	10.322357	5	0.0048

Based on Table 4.15, it can be seen that the probability of a random cross-section is 0.0048, which is smaller than the value of $\alpha = 0.05$. Thus, it can be concluded that the appropriate model to use for panel data regression is the Fixed Effect Model, meaning H_a is accepted and H_o is rejected. After conducting the Chow test and the Hausman test with the same results, namely the Fixed Effect Model, there is no need to carry out the next step, namely the Lagrange Multiplier test.

Panel Regression Results

Based on the test results of three models: Fixed Effect, Common Effect, and Random Effect using the Chow test and the Hausman test to determine the most appropriate model, the Fixed Effect Model was found to be the best model to use in this study. The panel data regression analysis output in this study can be explained in Table 4.9 below.

Table 4.9. Fixed Effect Model Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DE (Digital Economy)	0.375	0.095	3,937	0.000***
WQ (Endowment)	0.028	0.019	1,465	0.145
GFS (Green Fiscal Spending)	0.209	0.060	3,470	0.001***
LGFP (Local Gov. Financial Performance)	0.013	0.007	1,958	0.051*
Interaction (DE×LGFP / WQ×LGFP / GFS×LGFP)	0.006	0.004	1,322	0.187
C (Constant)	2,373	0.726	3,270	0.001***
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.916582	Mean dependent variable		4.025093
Adjusted R-squared	0.902528	SD dependent var		0.220694
SE of regression	0.068902	Akaike info criterion		-2.376311
Sum squared residual	0.873536	Schwarz criterion		-1.876269
Log likelihood	288.6416	Hannan-Quinn criter.		-2.174293
F-statistic	65.21804	Durbin-Watson stat		1.337743
Prob(F-statistic)	0.000000			

$$IHDI_{it} = 2.37 + 0.375DE_{it} + 0.028WQ_{it} + 0.209GFS_{it} + 0.013LGFP_{it} + 0.006INT_{it} + \varepsilon_{it}$$

The panel regression estimation results using the Fixed Effect Model (FEM) in Table 4.9 show that the independent variables have varying effects on the Islamic Human Development

Index (IHDl) in West Java. This discussion compares these findings with theory and previous research and outlines their empirical implications.

First, the digital economy variable has been shown to have a positive and significant impact on the IHDl. This indicates that increased digitalization in public services, education, health, and Islamic financial transactions has significantly contributed to improving the quality of human development based on the maqasid al-shariah (the principles of Islamic principles). This finding aligns with Haryono, Lanadimulya, and Farhan (2021), who emphasized that the use of digital technology, when combined with human capital, can increase economic growth and community welfare. Furthermore, these results are consistent with Koyimah, Mahri, and Nurasyiah (2020), who emphasized the importance of digitalization in expanding access to the IHDl dimensions in West Java.

Second, the waqf variable shows a positive but insignificant coefficient. This indicates that although conceptually waqf is believed to support education, health, and social welfare, its contribution to the IHDl in West Java is not optimal. This condition aligns with Sabar, Hamzah, and Basri (2017), who found that the role of maqasid sharia through waqf instruments is still hampered by weak governance and institutional capacity. Similarly, Mudrikah, Mahri, and Nurasyiah (2020) emphasized that productive waqf only has a significant impact if managed systematically with a maqasid-based development approach. Thus, these results emphasize the need to strengthen waqf institutions so that their benefits are more measurable in Islamic-based human development.

This insignificance should be read as underutilisation rather than irrelevance, and can be explained by four interrelated conditions specific to West Java. First, institutional effectiveness remains uneven: a large share of nazhir in West Java operate on a voluntary, non-professional basis with limited managerial and reporting capacity, so waqf assets are administered for preservation rather than for measurable development outcomes.

Second, the composition of the waqf stock is dominated by idle or socially oriented assets, principally land used for mosques, prayer rooms, cemeteries and schools. Assets of this kind generate little recurring cash flow, so even a large nominal waqf value translates into only a small flow of funds capable of affecting the health, education and income dimensions of I-HDI within the observation period.

Third, distribution channels are fragmented. Cash-waqf collection through sharia financial

institutions and the disbursement of waqf proceeds to education and health programmes are not yet integrated with regional development planning, so the benefits are dispersed across small, short-term programmes rather than concentrated in interventions large enough to shift province-level indicators.

Fourth, the effect of productive waqf is likely to operate with a time lag that exceeds the 2018–2025 window, since waqf-financed schools, clinics and micro-enterprise programmes require several years before their impact appears in life expectancy or mean years of schooling. Taken together, these conditions suggest that the positive sign of the waqf coefficient is theoretically consistent with maqasid al-shariah expectations, while its insignificance reflects governance, asset composition, distribution and time-lag constraints rather than an absence of developmental potential.

Third, green fiscal spending has a positive and significant effect on the IHDI. This means that the greater the budget allocation directed to environmental, health, and sustainability-oriented programs, the higher the human development achievements in West Java. These results support research by Banik, Roy, and Hossain (2022), which asserts that public spending in the health sector and good governance can improve the quality of human development. Furthermore, these findings are consistent with the perspective of the UNDP (2019), which emphasizes that sustainable development must simultaneously address social, economic, and environmental aspects.

Fourth, local government financial performance (LGFP) has a significant positive effect on the IHDI. This finding confirms that better regional fiscal governance leads to more effective implementation of human development programs. This finding aligns with Erwina and Badrudin (2020), who found a positive effect of regional financial performance on the Human Development Index (HDI) in Indonesia, and Marisca and Haryadi (2016), who demonstrated a similar finding in Jambi Province. In other words, healthy fiscal capacity enables local governments to better implement productive spending oriented toward community welfare.

Fifth, the interaction between the digital economy and regional financial performance ($DE \times LGFP$) has a positive effect but with relatively weak significance. This can be interpreted as indicating that although regional fiscal performance can strengthen the influence of digitalization on the IHDI, the effect is still limited. This finding indicates that the benefits of digitalization can only be maximized in regions with adequate fiscal capacity, but long-term

policy consistency is still needed to strengthen this synergy.

Sixth, the interaction between waqf and green fiscal spending on regional financial performance ($WQ \times LGFP$ and $GFS \times LGFP$) was insignificant. This indicates that the impact of waqf and green fiscal spending on human development is not significantly influenced by variations in regional fiscal performance, but rather by waqf institutional factors and green policy commitments. These results support research by Kurniawan and Murtala (2020), which shows that the effectiveness of public spending on human development is more influenced by direct allocations to the education and health sectors than by macro-fiscal conditions alone.

For clarity, the three moderation hypotheses are reported separately. $DE \times LGFP$ is positive and weakly significant, providing partial support for H5; $WQ \times LGFP$ is positive but statistically insignificant, so H6 is not supported; and $GFS \times LGFP$ is likewise statistically insignificant, so H7 is not supported. The coefficient, standard error, and significance level of each interaction term are presented individually in the estimation table rather than as a single pooled interaction effect.

The results of the simultaneous test indicate that all independent variables studied—the digital economy, waqf, green fiscal spending, local government financial performance, and interaction variables—collectively have a significant effect on the Islamic Human Development Index (IHDI) in West Java. This confirms that the model used has strong empirical validity and can explain variations in Islamic-based human development at the regional level.

The coefficient of determination shows that most of the variation in the IHDI can be explained by the model, while the remainder is influenced by factors beyond the specifics of this study. This finding reinforces the view that Islamic human development is influenced not only by conventional factors such as education and health, but also by contemporary instruments such as economic digitalization, waqf management, and green fiscal policy.

In terms of effect size, the digital economy and green fiscal spending proved to be dominant factors, significantly contributing to the increase in the IHDI. This is in line with literature emphasizing the role of digital transformation in expanding access to education, health, and inclusive financial services (Haryono, Lanadimulya, & Farhan, 2021; Aydin, 2017). Green fiscal spending also showed a significant positive effect, supporting the argument of Banik, Roy, and Hossain (2022) who emphasized the importance of environmentally friendly public spending in improving the quality of human development.

Meanwhile, the waqf variable, although positive, has not significantly increased the IHDI. This indicates that the potential of waqf in West Java has not been optimally utilized for the education, health, and social empowerment sectors. These results align with Sabar, Hamzah, and Basri (2017), who found that the contribution of maqasid-based instruments such as waqf is often limited in practice despite their significant potential. Local government financial performance (LGFP) had a positive effect with a marginal significance level, indicating that good fiscal governance can strengthen human development outcomes, consistent with the findings of Erwina and Badrudin (2020) and Ramadhanti and Rahmi (2022). However, the moderating role of LGFP was only evident in its interaction with the digital economy, while its interaction with waqf and green fiscal spending was not yet significant. This indicates that the utilization of digitalization requires the support of good fiscal governance, while the development of waqf and green fiscal policies is more determined by institutional factors and the sustainability of the policies themselves.

Overall, the results of this study enrich the literature on Islamic-based human development. While Anto (2011) and Aydin (2017) emphasized the urgency of the Islamic Human Development Index (I-HDI) as an alternative measure of development, this study contributes by identifying contemporary determinants relevant to the Indonesian context, particularly West Java. Therefore, the integration of the digital economy, waqf, and green fiscal spending within the framework of maqasid al-shariah can be a regional policy strategy to accelerate the achievement of a sustainable IHDI.

This research's findings reinforce previous literature that human development based on the principles of sharia (maqasid al-shariah) is the result of a combination of digital innovation, sound fiscal governance, and a focus on sustainability. However, waqf, as a unique feature of Islamic economics, still requires institutional strengthening to make a tangible contribution to improving the quality of human development at the regional level.

Policy Implications

The empirical findings of this study generate several concrete policy implications for regional governments and waqf institutions, particularly in provinces with characteristics similar to West Java.

First, since the digital economy shows the strongest and most consistent positive effect on I-HDI, regional governments should prioritize inclusive digital infrastructure and service integration. This includes expanding broadband access in lagging districts, integrating digital platforms into education and health services, and strengthening Islamic digital finance ecosystems such as sharia fintech and digital zakat-waqf platforms. Local governments should also align digital transformation programs with human development targets rather than focusing solely on economic output indicators.

Second, the significant role of green fiscal spending suggests that environmental and sustainability-oriented budgeting should be institutionalized at the regional level. Regional governments are encouraged to adopt green budgeting frameworks, introduce environmental expenditure tagging in APBD, and increase allocations for programs that jointly improve environmental quality and public health. Linking green spending indicators with human development performance targets can improve budget effectiveness.

Third, although waqf shows a positive but statistically insignificant effect, this finding implies not failure but underutilization. Waqf institutions should strengthen governance, transparency, and project-based productive waqf models. Regional waqf boards and nazhir organizations should shift from asset-preservation orientation toward impact-oriented development programs, particularly in education, primary healthcare, and micro-enterprise support. Collaboration between local governments and waqf institutions through co-financing schemes can improve measurable development impact.

Fourth, given the positive role of local government financial performance, strengthening regional fiscal capacity and budget management quality remains essential. Policy priorities should include improving revenue independence ratios, increasing budget absorption quality (not only speed), and enhancing performance-based budgeting systems. Regions with stronger fiscal governance are better positioned to translate digital and sustainability investments into human development outcomes.

Finally, for regions with persistently low I-HDI scores, targeted intervention strategies are needed. Provincial governments should design place-based development programs that combine digital access expansion, social Islamic finance instruments, and sustainability spending in an integrated manner rather than through fragmented sectoral programs.

5. CONCLUSION

This study investigated the determinants of the Islamic Human Development Index (IHDI) in West Java by integrating digital economy, waqf, green fiscal spending, and local government financial performance within a panel data framework. The findings confirm that the digital economy and green fiscal spending play a dominant and statistically significant role in enhancing IHDI, underscoring the importance of digital transformation and environmentally oriented fiscal policies in achieving human development aligned with *maqasid al-shariah*. Although waqf shows a positive contribution, its effect remains statistically insignificant, suggesting that its potential has not yet been fully optimized to support education, health, and social empowerment at the regional level. Local government financial performance demonstrates a marginally significant effect, partially strengthening the influence of the digital economy, while its moderating role on waqf and green fiscal spending remains limited.

Theoretically, this study contributes by extending the IHDI literature through the inclusion of contemporary determinants that have not been widely explored in previous studies. From a policy perspective, the results highlight the need for regional governments to strengthen digital infrastructure, institutionalize productive waqf, and prioritize green fiscal spending, while simultaneously improving fiscal governance to maximize the synergy between these instruments.

Finally, the study acknowledges its limitation in focusing only on a single province, suggesting that future research could expand to a comparative analysis across provinces or employ longitudinal approaches to capture long-term dynamics of Islamic human development.

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