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Quantifying the Effect of Religion on Rural Development in Indonesia Using the Rural Islamic Religiosity Index: A Case Study in West Sumatera Province

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ABSTRACT

The role of religion in development is crucial for implementing policies that aim to achieve sustainable development goals. This study seeks to quantify the role of religion in rural development. The research was conducted across 802 villages in West Sumatra Province, Indonesia, drawing on data from the 2018 Village Potential Statistics. Firstly, the study constructed a Rural Islamic Religiosity Index measurement, adopting the Alkire-Foster method. This newly developed index serves as a composite indicator of worship, education, economy, and social dimensions. The study then employed the Ordinary Least Squares (OLS) method for estimation. The assembled index serves as the independent variable while the Village Development Index, encompassing three dimensions, acts as the dependent variable. The results indicate that religion exerts a positive and significant influence on rural development broadly, particularly on economic and social aspects of rural development. However, the impact of religion on rural ecological development is subject to debate. The study recommends prioritizing spiritual development by enhancing religious understanding in integrated rural development activities, increasing the role of religious organizations in rural development planning, and building the capacity of these organizations.

1. INTRODUCTION

Development aims to achieve multidimensional and comprehensive human welfare, encompassing both physical-material and moral-spiritual dimensions. The Global Attitude Survey 2019 conducted by the PEW Research Center revealed that, across the surveyed countries, a median of 62% stated that religion is essential in their lives, 61% agreed that God plays an integral role, and 53% expressed the same sentiment about prayer. Individuals in developing and emerging economies tend to be more religious than those in advanced economies [1]. Interestingly, an inverse relationship was found between GDP per capita and the percentage of the public that associates belief in God with morality. Among all countries, Indonesia emerged as the most religious, underscoring the crucial role of religion in development thinking and policies.

However, since the dawn of the 21st century, academic debates have largely overlooked the importance of religion as a determinant of development [2-4]. Prior to this, the study and role of religion in development were mostly ignored in mainstream thought, policies, and practices, often deemed a "development taboo". Major development agencies, such as USAID and CARE, were found to have largely disregarded issues of religion or spirituality in their policies [5-7].

The neglect, and even outright rejection, of the role of religion in development can be traced back to the dominance of the modernisation thesis in development theory. This thesis posits that economic growth, a key objective of development, is inextricably linked to secularisation [8]. Secularism holds that the rational values of modern society supersede traditional beliefs and worldviews, often perceived as backward [9]. The antithesis of the modernisation theory, Neo-Marxism, also overlooks the role of religion in development. One of Marx's renowned propositions is that religion is the "opium of the people," implying it discourages societal change [10].

Despite this, the crucial role of religion in development began to gain recognition due to a surge in academic interest and publications on the subject in the late 2000s. This trend was initiated with the publication of special issues on religion and development in leading development studies journals, and was further amplified by the UNDP's Human Development Report in 2004, followed by several books and research studies, including the Religion and Development Research Program at the University of Birmingham [11].

In recent years, the inclusion of religious considerations in development practices and programs has become more prevalent. Several major development agencies have updated their policy and program guidelines to account for important issues, including religion or spirituality [2, 4]. Development practitioners are experiencing a shift in perception, acknowledging that sustainable development can only be achieved when cultural values and beliefs are taken into account. Religious-based community organisations have proven to be highly effective agents in implementing development programs [9].

Development studies need to consider the role of religion [2]. Religious ideas, practices, identities, actors, and religious groups can promote or hinder sustainable development. It has three roles for religion in sustainable development. First, religion offers a wealth of universal values to inform their

sustainability practice, such as the teachings on sustainable consumption. Second, religion influences ecological and social activism, such as faith-based organiations (FBOs) objectives and methods in empowering the community. The third important role that religion and development play is in the more personal realm of self-development. It has become a source of preoccupation for many, such as Fritjof Capra and Amartya Sen [6].

Religion affects the cultural norms and beliefs of the community and is a source of social identification, playing a pivotal role in development performance [12]. There are five ways to understand the role of religion in the development process [13]. The five ways are: (i) religion is an instrument for development goals; (ii) the form of religious values and how religion is considered as the legitimacy of development; (iii) freedom of religion and worship are fundamental human rights that must be respected; (iv) religion is an essential part of human welfare as well as health, knowledge, and other dimensions; (v) religion is a political force that shapes the economic, social, and political structure of society.

The analysis of religion as a development study is expanding and involves many social science disciplines, including economics and the concepts and methodological tools it uses. This study of how the social sciences study religion reveals that an empiricist-positivist stance has commonly been adopted [3]. The reasons for the importance of studies on religion using quantitative data [14]. The use of quantitative methods in religious studies has at least three purposes, namely: (i) Religion is too complex to be classified and measured entirely; (ii) Quantitative methods can simplify and are very empirically used among non-positivistic epistemological frameworks.

Investigations into the relationship and influence of religion on economic development using quantitative methods have been engaging [15]. The influence and role of religion on development have been examined using a variety of development indicators. Initial attempts involved cross-country regression analyses to investigate the correlation patterns between religiosity and economic welfare, particularly economic growth. Subsequent studies explored the influence of religiosity on economic inequality, the intersection of religion and welfare, the correlation of religious affiliation with gender inequality, the impact of religion on the job market, and the connection between religion and saving behaviour.

Studies on the role of religion in economic development have several significant gaps, namely, not using many units of analysis between regions in a country. It is increasingly rare for studies to consider urban or rural areas. Many statistical analyses are based on nationally collected data or questionnaires, lacking empirical case-study material [16]. The study of the role of religion in village development becomes interesting concerning the theory of modernisation and secularisation, which is the discourse in the study of religion as a determinant of development. The modernisation theory revealed that religion became less important with increasing industrial and urbanisation processes, market economy expansion, and science and education advances. The process of industrialisation and urbanisation also influences the difference in religiosity between urban and rural communities [17].

In the context of Indonesia as the largest Muslim country and a developing country, the study of the role of Islam in development at the state and village levels emerges. Some Western scholars have accused Islam of being a religion that retards progress and hinders development. Aldashev and Platteau [12] stated that Islamic institutions hinder the development of Muslim regions stemming from Islamic teachings that make adherents fatalistic towards life, which encourages them to resist change.

Some Muslim scholars have presented opinions and empirical findings that challenge the perspectives of Western scholars concerning the relationship between Islam and development. Pramanik [18]'s research conducted at the macro level in Malaysia and micro level in Terengganu, Malaysia, reveals the compatibility of Islam and development to strengthen his theoretical argument on the misconception of development goals based on the secular worldview developed by Western scholars. Moreover, another study conducted by Ozcan [19] in Kelantan, Malaysia, suggest that development may have different meanings in traditional Muslim communities, and despite the underdeveloped status of a region, its people may be as ambitious and motivated as the rest of the world which challenges the image of Muslim fatalism.

The debate about the role of Islam in rural development requires more study. The use of quantitative methods for measuring the level of religiosity at the village level or in smaller areas is still relatively rare, especially in Indonesia, which is the largest Muslim country and the most religious country. On the practical side, a quantitative measure of religiosity can be a tool to assess the development of religious life and progress in mental and spiritual aspects. The level of religiosity makes the development of religious life more measurable so that it can be observed from time to time or compared between regions or communities. The measurement of religiosity becomes part of the tools for formulating and planning development policies.

The scarcity of religiosity measurement at the village or smaller regional level contrasts with efforts to develop measurements for rural development in Indonesia. Rural development measurements have been continually evolving in Indonesia as a response to the mandate of rural development reform, marked by the enactment of Law 6 Year 2014 on Villages. For this reason, two measures have been developed: *Indeks Desa Membangun* or Developing Village Index, abbreviated as IDM (hereinafter referred to as IDM) and *Indeks Pembangunan Desa* or Village Development Index, abbreviated as IPD (hereinafter referred to as IPD). The IDM was constructed by the Ministry of Villages, Development of Disadvantaged Regions, and Transmigration [20], while the IPD was is developed by the Ministry of National Development Planning and Statistic Indonesia [21].

On the practical side, this measure of village development reflects essential developments in assessing, monitoring, and evaluating village development. However, from the theoretical perspective of construction and development thinking, the two measures have not explicitly shown the importance of religion's role in integrating it as part of village development. The quantitative measure of village development that does not accommodate the components of the role of religion or measure the level of religiosity at the village level is a problem in reviewing, assessing, monitoring, and supervising the role of religion in village development.

By looking at the indicators and variables in the IDM and IPD, it can be seen that the increasingly important role of religion in developing development thinking, including village development, is relatively neglected. Dimensions and

variables of religion are not included in the measurement of village development. The essential service dimension of the IPD only provides indicators of the availability of schools and health facilities at various levels. Religious belief as a fundamental human right must also be fulfilled, such as the availability of indicators and access to worship infrastructure.

In the IDM, the role of religion is slightly accommodated by the presence of one indicator, religion, which is embraced mainly by villagers. However, this is only one indicator of the 14 indicators on the social capital variable, which is also part of the dimension of social resilience. So this indicator of the level of religiosity is only a minimal contributor to the formation of IDM in the aggregate.

Efforts to quantify the role of Islam in village development first require efforts to build a measure of religiosity at the village or community level. As the meaning of development is broad and multidimensional, religion is a multifaceted and contested concept. In Islamic economic development, efforts have been made to operationalise *maqashid*-based socio-economic development and its measurement. Maqashid al-Shariah refers to promoting, realising, and enhancing human well-being. The essential purpose of Islamic law consists of five dimensions: faith, human self, intellect, posterity, and wealth. Islamic perspectives advocate comprehensive human development by considering progress in multiple dimensions beyond GDP living standards and socio-economic progress. It should also have a higher purpose toward achieving human well-being in the short and long run [22]. These principles are considered in line with the meaning of sustainable development.

Measuring Islamic religiosity can be a key performance indicator in development planning. Improving the lives of religious people has become a mission in the medium-term development plans of many regions in West Sumatra Province and other regions. However, it is constrained by determining specific and measurable key performance indicators. Some regions, such as Agam Regency and Lima Puluh Kota Regency, build their religiosity index by conducting yearly surveys, which requires a budget.

In an initial effort to build a measurement of the level of religiosity at the community or community level, a composite indicator was selected for all villages in West Sumatra. Rural areas in West Sumatera Province called Nagari were chosen because they are known for their solid customs and culture based on Islam. Religious values become an integral part of the customs and culture of the rural community.

Nagari, along with the customs and culture of its people called the Minang tribe, have become a unit of analysis that has attracted the interest of many researchers, especially in the disciplines of sociology and anthropology, as reflected in a recent study by von Benda-Beckmann and von Benda-Beckmann [23], the two researchers who are considered the most authoritative on social change in Minangkabau and Naim [24] wrote a sociology-based dissertation on the voluntary migration culture of the Minangkabau people. Research with a development economics perspective remains limited, including studies conducted by Amar [25] on rural poverty in West Sumatra.

Based on this background, this paper quantifies the influence of Islamic religiosity at the community level on rural development. For this reason, a measure is first constructed in a composite index called the Rural Islamic Religiosity Index (RIRI). This study was conducted on villages in West Sumatra Province called Nagari as case studies.

2. METHODS

2.1 Study area and data

The study area of this research includes the administrative area of the rural government in West Sumatra called Nagari, which covers 802 of the 920 Nagari. In this case, the unit of analysis is limited to Nagari, which is located in 10 of the 11 regencies. In addition, it also does not include villages that are still in the status of preparatory villages. Based on the 2018 Village Potential Statistics, this research is a cross-sectional study that measures the level of religiosity and the level of development of the Nagari.

2.2 Constructing a rural Islamic religiosity index

Religiosity as a multidimensional concept has consequences for the vast and varied scope of previous research in understanding indications of Islamic religiosity, starting from building methods for constructing measures of Islamic religiosity to examining the influence, role, and correlation of religion and the development of a region.

Some studies have attempted to measure religiosity. Salleh [26] constructed an Islamic-based development theory to develop the Comprehensive Measure of Islamic Religiosity (CMIR) measure. He proposed five dimensions of Islam-based religiosity as exogenous aspects of development. The five dimensions of religiosity are divinity, dogmatic, holistic, integrative, and instrumentalistic. Omar et al. [27] built the Islamization Index to measure the trend analysis of Islamization in Malaysia. The preparation of dimensions and components of Islamization is based on the three essential pillars of Islam, namely faith (religious dimension), Islamic knowledge or teaching (human capital dimension), and Islamic economy or capital (capital dimension).

Various attempts have also been made to model and measure Islamic religiosity. Rahman and Askari [28] developed the Islamicity Index to measure the degree of Islamicity in 208 Muslim and non-Muslim countries based on four sub-indices: economy, law and governance, human rights and politics, and international relations. Ali and Hasan [29] constructed the Maqasid al-Shariah-based Development Index. Shaikh [30] constructed the Index of Socio-Economic Development. Ullah and Kiani [31] developed the Maqashid-al-Shariah-based Socio-economic Development Index (SCECDI).

In analysing individuals and households with a deprivation approach, Beik and Arsyianti [32] developed the CIBEST model to measure poverty and welfare indications by making worship a fundamental spiritual need to complement the fulfilment of basic material needs. Furthermore, Kasri and Ahmed [33] developed the Maqashid al-Shariah Multidimensional Poverty Index (MSMPI), which includes health, education, religion, economics, and social dimensions.

Improved religiosity is a concept of quality of life and human well-being that goes hand in hand with physical advances in social, economic, ecological, and infrastructure, as well as improved accessibility and transportation. The level of religiosity and its aspects have many dimensions. Therefore, to quantify the level of religiosity, it is considered a composite indicator. Joint Research Centre-European Commission (OECD) [34] argues that composite indicators are formed when individual indicators are compiled into a single index based on the underlying model of the measured

multidimensional concept. Composite indices that can compare the performance of regions are increasingly recognised as valuable tools in policy analysis and public communication [34].

Several methods have been utilised in constructing a socio-economic development index based on the objectives of Islamic Law. Amiruddin [35] uses three sub-indices as dimension that are classified into three levels of interests that are summarized into an index with unequal weights. Kasri and Habib [36] used the multidimensional poverty method with the same weights for the dimensions and indicators as Alkire and Foster used in developing the Multidimensional Poverty Index (MPI). Ali and Hasan [37] used the Alkire-Foster dual cut-off methodology, dividing it into poor and non-poor with specific criteria and values. Bedoui [38], Ghazal and Zulkhibri [39] adopt the same methodology as the HDI: indicators are normalised into sub-indices, then simply arithmetic and geometric means are used.

Ali [22] points out fundamental difficulties in creating an Islam-based socio-economic development method or measurement. Some of these critical obstacles include: to achieve a comprehensive index, it is important to establish essential indicators for each dimension. Additionally, accessibility to data must be ensured, as well as the creation of multiple aggregation techniques across dimensions and indicators. The resulting index should remain flexible, robust, and sensitive across time and space. It can be used as a signal in constructing the Rural Islamic Religiosity Index,

To build a RIRI, this study adopts the method used by Alkire and Foster [40] in designing the Multidimensional Poverty Index (MPI). Since 2018, the revised Multidimensional Poverty Index has been included in the UNDP Global Human Development Report [41]. This method is also used by Kasri and Ahmed [36] in constructing the Maqashid Sharia Multidimensional Poverty, and Ali and Hasan [37] in creating the Maqashid al-Shariah Index.

Adopting the Alkire-Foster method has advantages in building a rural Islamic religiosity index. The variety of data units, ranging from binary ordinal statements in the form of presence or absence to a scale in the form of a ratio scale, makes proxies for village Islamic indicators possible, given the relatively limited proxies that can be used in the Village Potential Data Statics [36]. This method avoids the possibility of dimension and indicator reduction if principal component analysis (PCA) is used [42].

2.3 Estimating the effect of rural Islamic religiosity on rural development

Many previous studies have examined the role of religion in development using various indicators of religiosity. Akdede examines the elasticity of the development of religious assets, namely the relationship between the stock of religious assets (religious buildings such as mosques, mascots, tubes, and others) and economic development, using cross-sectional data from all cities in Turkey. Two different regression analyses used religious buildings as the entire buildings and the percentage share of the vote of religious conservative parties as dependent variables. The independent variables consist of various measures of development. Akdede's research found that religious asset stock was negatively related to development. Mosques and schools are complementary rather than substitutes because they are statistically significant and positively affect each other [43].

In the context of developed countries, Barro and McCleary used cross-country panel data, including information at the state level on church attendance and religious beliefs. They used data from individual information collected by six international surveys between 1981 and 1999. The results found that religiosity tends to decline entirely with economic development but that partial relationships depend on specific dimensions of development. For example, a measure of religiosity is positively related to education, negatively related to urbanisation, and positively related to birth. Increased life expectancy appears to be negatively related to church attendance but positively related to religious beliefs [44].

Analysing the determinants of religiosity makes it possible to construct a set of instrumental variables to estimate religion's influence on economic growth. They found that economic growth responded positively to increases in religious belief, i.e., faith in heaven and hell, but negatively to church attendance. These results are consistent with how religious beliefs affect individual attitudes that improve economic performance. This belief, in turn, is the principal output of the religious sector as measured by worship.

Naveed and Wang examine the relationship between different religious groups and income inequality. They examine whether different religious groups (Christianity, Islam, Judaism, and Buddhism) impact income inequality from a global perspective. Using data from 130 countries from 1970 to 2013, they estimated panel data models, religious beliefs, savings rates, arable land rates, and population dependency ratios. The results indicate that religion plays an essential role in explaining income inequality. In particular, it was found that Islam and Judaism reduced income inequality, while Christianity and Buddhism increased it. Nevertheless, the effects of the Christian subgroup on inequality are mixed [15].

The model used in this study is based on the social welfare function, which is the aggregate of the production function. Village development is indicated by the quality of life of rural communities in various fields, namely in the form of a single index of rural development in the form of IDM, and its dimensions are the output of village development.

Based on the theoretical review of the determinants of rural development, the social welfare function is a function of human resources, capital, natural resources, and institutions, as adopted by Singh [45]. To focus the study on the relationship between Islamic religiosity and rural development, an aggregate production function is specified by taking the level of Islamicity as input, while rural development is taken as output. Rural development (RD) is characterised by the IDM's many objectives and dimensions.

It can be expressed in notational form as follows:

$$RD = f(RIRI, X), \tag{1}$$

where, rural development (RD) is a vector of the four dependent variables, i.e., rural development measures, namely IDM, and then the IDM dimensions are economy resilience (IDM-Eco), social resilience (IDM-Soc), and environment resilience (IDM-env), respectively. RIRI is religiosity using the Rural Islamic Religiosity Index, and X is a vector of other factors influencing rural development. Eq. (1) can be specified as:

$$RD = \alpha RIRI + \beta X + \varepsilon \tag{2}$$

The factors adversely affecting rural development are so varied that it is difficult to isolate a small number of crucial determinants [45]. Therefore, some other determinants of rural development must be considered in building the equation model as a control variable denoted by X in the village development function so that the model is underspecified and the best and most unbiased estimation results are obtained.

This study has explored various data available in the 2018 Village Potential Statistics that can be used as a proxy for other determinants that affect rural development and considered that the indicators used in the control variables are not redundant or have been used as indicators in IDM.

The control variables as determinants of village development used in this study consist of three variables. First, institutional variables in the form of social capital. This variable indicates the number of village community institutions, including women's groups, youth organisations, farmer groups, traditional institutions, and other community groups. Furthermore, this variable can be denoted by INST.

Second, is the village accessibility variable. Accessibility measures the ease of travel in fulfilling activities resulting from the interaction between land use and transportation network systems. Better accessibility provides direct benefits through convenience for various social, economic, and government service facilities [46]. In this study, village accessibility uses an indicator of travel time from the village leader's (*wali Nagari*) office to the sub-district office, expressed in minutes. TMC then denotes this variable.

Third, geographical location in relation to natural resources. The geographical location of village outside the forest reflects the relatively large amount of land that can be used for various needs with relatively less conflict with conservation policies, especially forests. This study uses an indicator of the location of the Nagari area in relation to the forest. Village potential is divided into three categories: inside the forest, on the edge/high of the forest, and outside the forest. This study simplifies it into two categories to make it a dummy variable, then denoted by D_FORS, namely 1 for Nagari located outside the forest and 0 others.

Considering the different units in several indicators, namely the number of institutions (INST) in units and travel time to the sub-district office (TMC) in minutes, the values were transformed into logarithmic form. Eq. (1) is then specified as:

$$RD_i = \alpha + \beta_1 RIRI_i + \beta_2 LOG\_INST + \beta_3 LOG\_TMC + \beta_4 D\_FORS + \varepsilon$$

The estimation of the parameter values will be done by the ordinary least squares (OLS) method. The OLS method in multiple linear regression models has the basic principle of minimising the sum of the squared deviations between the actual data and the estimated data. After estimating the regression coefficient parameters, testing the assumptions of the regression model is carried out before testing the model as a whole (F-test) and testing each regression coefficient (t-test) [47].

3. RESULTS AND DISCUSSION

The Rural Islamic Religiosity Index is built based on 2018 Village Potential Statistics data and will be updated in 2019. Every year, BPS also updates the village's potential statistics. It makes it possible for each Nagari to be comparable in its spiritual development every year. It is also possible to observe the role of religion in the development of the Nagari in particular and the village in general.

The full use of Village Potential Statistics data and its updating place this index using a data-driven approach. The data-driven approach can overcome the constraints imposed by the paucity of data in analysing the effect of religion on economic behaviour [48]. This construction can also address what is intended to address some difficulties with the data flexibility available across space and time [22], making it possible to become a monitoring, supervision, and evaluation tool in development planning and policies.

3.1 Data determination, dimension, and indicator selection

Data selection is the initial stage in building a composite index [34]. Several questions concerning Islam in the 2018 Village Potential Data Collection were inventoried. First, worship facilities Village Potential Statistics recorded the number of places of worship (Q.802), including the number of mosques and masalas. This indicator has also been used by Akdede, who refers to it as a variable for the stock of religious assets [43].

The primary function of mosques and *musala* is as a means of worship, especially congregational prayer, as well as to reflect the social cohesion and spirit of the collectivity of the Muslim community in an area. For this reason, mosques and muscles are used as indicators categorised under the dimension of religious facilities.

Second, Islamic education in the Village Potential Statistics on Education, data on the existence of educational facilities by the level of education in the village is provided, including details of religious education starting from Islamic kindergartens called Bustanul/Raudhatul Athfal. Under the authority of the village or Nagari, Bustanul or Raudhatul Athfal can be established by community group initiatives to indicate Islamic education for early childhood or preschool. Furthermore, at the formal education level, there is data on the number of Madrasah Ibtidaiyah (MI), equivalent to primary schools, Madrasah Tsanawiyah (MTs), and Islamic boarding schools. Following national education standards, Islamic basic education facilities in the form of madrasah ibtidaiyah are available in at least one unit at the village level. MTs and pesantren are fewer, and at least one unit is available at the sub-district level. It is the reason for combining the total number of schools, or madrasah diniyah, which includes MI/MTs/Pesantren, as an indicator of Islamic primary education.

In the Education Facilities Block, there is also a question about the presence or absence of a Quranic Education Centre (TPQ). The existence of TPQ is part of the type of informal Islamic education organised by the community in mosques or masala. The existence of TPQ is an integral part of improving the ability to read and understand the Quran as the holy book of Islam so that it can be a guide to behaviour for every Muslim. For this reason, the presence or absence of TPQ can be an indicator of Islamic education.

The three indicators, namely the existence of Islamic-based kindergartens (Raudhatul/Bustanul Athfal), primary Islamic education (madrasah ibtidaiyah, tsnawiyah, and pesantren), and non-formal education specifically for Quran literacy, can be united in the dimension of Islamic education.

The availability of Islamic education services contributes to achieving national education goals, namely the development

of the potential of students to become human beings who believe and fear God Almighty and have noble character. In the maqashid sharia approach, Islamic education aims to protect the intellect (*hifz al-aql*). Amiruddin [35] argues that some studies use religious education differentiated from general education to indicate Islamic-based education. On this basis, the various indicators available can be classified into the dimensions of Islamic education.

Third, the Islamic economy. In the economic data block, of the many questions, only one was explicitly related to the Islamic economy, namely the existence of a Baitul Maal Wa Tamwil (BMT). In addition to its existence, the distance and ease of access were also asked if there is no BMT in the village. The ease of access was divided into three options: straightforward, easy, challenging, and demanding.

Baitul Maal Wat Tamwil is a microfinance institution based on Islamic Sharia that has two functions: Baitul Maal as its social function and Baitut Tamwil as its business function. The existence of BMT in rural, which is independent and self-help, can be established under the legal entity of a cooperative. BMT plays a role in efforts to eliminate the practice of moneylenders in rural areas, both in small micro businesses and even in agricultural activities. The existence of and accessibility to BMT is part of sharia's objectives in safeguarding wealth. On this basis, the existence of and access to BMT are indicators that can be used in assessing rural Islamic religiosity in the economic field [49].

Another economic indicator that can reflect the application of Islamic economic principles is the existence of Nagari markets. The Nagari market and trade serve as the most characteristic expression of the behaviour of the Minangkabau people, who show strong enthusiasm for developing economic benefits while respecting customary law. The Nagari market is part of the Nagari asset. The Nagari Market is a market managed by the village government as a source of income for the village and stands on land owned by the village [50]. The Nagari market is collective ownership by the Nagari community, which reflects the togetherness and self-sufficiency of the Nagari community in developing economic and trade transactions. On this basis, the Nagari market's existence indicates the Islamic economy.

The existence and accessibility of the BMT and the existence of the Nagari market can be included in the Islamic economic dimension.

Fourth, social Islam, a critical principle in the Islamic social life order, is decision-making for public affairs based on the principle of deliberation. Masri [51] argues that deliberation is one of the characteristics of the Indonesian nation. The purpose of deliberation for consensus is to form a harmonious society closely related to the spirit of unity. In the social context of Minangkabau society, the research results of Aziz et al. [52] revealed that Minangkabau customs and culture are peacefully acculturated. One of the three forms of customary and cultural acculturation that aligns with religion is shown by the principles of deliberation and consensus.

The application of the principle of deliberation in village potential statistics can be indicated by the village or Nagari consultative body (*Badan Musyawarah*). The Data Collection Block on Village General Information asks about the existence of the Village Consultative Body, the number of its members, and the number of village deliberation activities carried out in the previous year. Then, the existence and intensity of deliberation by the Nagari Consultative Body can indicate the application of the principle of deliberation as an essential value in the order of social life in line with Islamic values.

Furthermore, in social life based on Islamic values, several scholars provide views on the purpose of the Islamic order. Material well-being pursued without regard to morality and cultural aspects will increase anomalous phenomena such as frustration, criminality, alcoholism, infidelity, divorce, mental disorders, and suicide. All these phenomena indicate a lack of inner happiness. Based on this, Chapra [53] introduced the concept of *falah* which refers to holistic well-being that includes spiritual, moral, social, and economic aspects in the lives of individuals and communities, happiness in both this world and the afterlife.

Azizy [54] presents a critique of the understanding of welfare that only includes worldly aspects while ignoring aspects of religiosity. Human development and high economic growth without an accompanying level of spirituality cannot be the measure of well-being envisaged in Islam simultaneously. With the example of Norway, a country with the very high human development and income per capita in the world, but at the same time has a high suicide rate of 28 people per 100,000 population. Comparatively, Egypt, which ranks only 112th in HDI, has a suicide rate of only 0.1 per 100,000 population.

Security and social order are critical indicators to consider. Sharia's essential purpose is to prevent, avoid, and eliminate various forms of harm and damage done by humans. With this in mind, the Village Potential Data Collection captures data on crime incidents in rural areas. The question asked is whether or not any crimes occurred in the village during the past year. These crimes include theft, fraud or embezzlement, arson, maltreatment, drug abuse, gambling, murder, and corruption.

In this study, criminal offences are limited to gambling and drug abuse because these two practices are carried out communally rather than individually. The practice of these two types of criminal offences also indicates weak social control and the role of social institutions, both customary and religious, and the Nagari government. These offences are linked to some Sharia objectives, such as protecting the mind and protecting lives and offspring. Social order can also be indicated by the absence of vertical and horizontal mass fights recorded in the village potential.

3.2 Selection of the method for developing the rural Islamic religiosity index

In determining the method used, the religiosity index preparation considered the indicators' measurement scale and the distribution of data from the Village Potential Data Collection questions in compiling the indicators. Based on the measurement scale, there are more indicators with ordinal scales than ratio scales. Even the ordinal-scale data is binary, i.e., either present or absent. Ratio-scale indicators, such as mosques and masalas, face the problem of a wide range. As for schools such as Raudhatul Athfal/Bustanul Athfal (RA/BA), Madrasah Ibtidaiyah, Madrasah Tsanawiyah, and the number of Islamic boarding schools, the ratio scale data has a low average value.

With the characteristics of the Islamic indication data, the measurement method used by Alkire and Foster [40] in compiling the Multidimensional Poverty Index provides indicator scores based on ordinal-scale data. The development of this method by Alkire and Jahan [41] has become part of the Human Development Report starting in 2019. This shows that the method is widespread and gaining recognition for

development measurement.

The Alkire and Foster method is a new approach to the weighting system for identifying poverty by understanding poverty as a multidimensional aspect. The total weight has a value from 0 to 1. Each dimension has the same weight, so if n dimensions are used, the weight for each is 1/n. If each dimension has several indicators, then the weight of each indicator in the same dimension has the same value. The advantage of this method is that the identification approach can be applied to ordinal variables. All capitalisations of ordinal variables yield the same conclusion when they use a cut-off, which is a point or value designed to determine whether or not the analysed unit is poor [40, 55].

The advantage of Alkire and Foster's method is that it is intuitive and easy to calculate for application by researchers and policy makers [56]. The same dimension weight and the same indicator weight in one dimension have objectivity, where the dimensions are considered equally important. This is what distinguishes the Alkire and Foster method from the weighting method given by other methods such as expert judgment in the Analytical Hierarchal Process (AHP) [57].

The relatively limited indication of Islam in the village needs attention in using methods and determining dimensions and indicators. In this case, it is subjectively determined based on methods for developing a composite index of socio-economic development, primarily based on Islam, using a sectoral or field approach, such as social, economic, health, education, and religion.

The limited number of indicators used does not allow for factor analysis, which tends to reduce the dimensions and indicators based on the loading factor value. With these considerations, this study determined four dimensions of indicators, as previously stated in the data inventory of Islamic indications. The four dimensions of this village's Islamic index are religious facilities, education, economy, and social.

Several Islamic-based socio-economic development index developments also apply the Alkire and Foster method, such as Kasri and Ahmed [36] and Ali and Hasan [37]. The difference with this research is the unit used in the community or rural area rather than individuals or households in the Alkire and Foster method.

Another difference between this research and the previous two is the approach used. This research uses a welfare approach, namely the fulfilment of each Islamic indicator of the existence or fulfilment of its minimum standards so that the score is closer to 1, meaning that the higher the Islamicity in a village or Nagari, the multidimensional poverty index uses a deprivation approach, or a state of not fulfilling basic needs, so that the score is close to 1, indicating higher poverty.

3.3 Determination of indicator fulfillment basis

Islamic indications with ratio-scale data must be converted to a binary ordinal scale. For this reason, it is necessary to determine the basis of assessment in determining whether or not several indicators are met. According to the culture and tradition of the Minangkabau people in West Sumatra, Nagari, as a unit of the customary law society, must fulfil several requirements regarding facilities and infrastructure. The infrastructure is a road system (transport), public baths, deliberation halls, mosques, and open fields for entertainment and sports [50].

The existence of a mosque is one of the legal requirements of a Nagari. However, one mosque for a relatively larger Nagari area must also be supported by at least one other mosque in fulfilling worship facilities in the congregation for Friday prayers and significant Islamic holidays. On this basis, the reference for fulfilling the mosque indicator is that there are more than one mosque or at least two mosques in a village. In its application, if there is more than one mosque in a village, a score of 1 is given.

Furthermore, for musala, the reference is that there is at least one musala per Jorong. Jorong is an administrative unit of government under the Nagari. Jorong is a group of neighbouring settlements not bounded by non-settlement land. On this basis, the concentration of the population in a smaller area and its Islamicity can be indicated by the presence of masala in Jurong. In application, the fulfilment of the masala indicator is if the number of mashallah per number of Jurong is equal to or greater than 1, then given a score of 1. If the ratio of muscle per Jurong is less than 1, give it a score of 0.

In the education dimension, the Quranic Education Park (TPQ) has an ordinal scale in whether it exists or not. For this reason, a score of 1 is given if there is a TPQ in a Nagari. Similarly, with the Raudhatul Athfal/Bustanul Athfal (RA/BA) indicator, if there is at least one RA/BA unit in a Nagari, it scores 1, ignoring the small number. The formal Islamic education level is limited to primary and junior secondary school. The reason for this is the Minimum Services Standard: one primary school or madrasah (SD or MI) is provided for one village, while a minimum of one junior high school or MT is provided for the sub-district. Pesantren are generally provided for SD/MI graduates. On this basis, if there is at least one Islamic-based formal school, either MI, MTs, or Pesantren, then a Nagari can be classified as having provided and fulfilled the need to obtain primary Islamic education, scoring 1.

In the economic dimension, the indicator for the Nagari market, which reflects community-based communal economic facilities, is expressed on an ordinal scale with three levels: there is a Nagari market, and it is functioning; there is a Nagari market, but it is not functioning; and there is no Nagari market. On this basis, a score of 1 is given or fulfilled if a Nagari market is functioning, while other answers are given a score of 1.

The Baitul Maal wa Tamwil (BMT) indicator does not only consider the existence of BMT in a Nagari. There are only 82 BMTs in the Nagari study. Therefore, even if there is no BMT in Nagari, easy access, which is asked in Podes, is also considered fulfilling the provision of BMT services. On that basis, Nagari has a BMT, or if there is no BMT, the access is effortless, and then they are given a score of 1. Meanwhile, if there is no BMT and access is challenging, they are given a score of 0. In more detail, the indicator dimensions and weights in the Islamic village index are presented in Table 1.

On the social dimension, village deliberation as an essential Islamic principle in decision-making for rural public policy can be indicated by the number of deliberations conducted during one year by the Village Consultative Body. The deliberations are implemented periodically, at least once per month. On this basis, the indicator of deliberation can be declared fulfilled if the number of deliberations is at least 12 in one year.

Several social indicators, such as the occurrence of mass brawls, the incidence of gambling offences, and the incidence of drug offences, are negative indicators. For this reason, if these conditions do not occur, they are given a score of 1; if they occur, they are given a score of 0.

The score of each indicator obtained forms the index of each dimension. Following the Alkire and Foster method, each dimension has the same weight. It reflects its objectivity compared to weighting with the AHP method. The exact dimension weighting also indicates the same level of importance. Next, each indicator score is multiplied by its indicator weight. Indicator weights have the same value if they are in the same dimension.

Table 1. Dimensions, indicators, and weights in the rural Islamic religiosity index

Dimension (Weight)	Indicator	Weight
Worship (1/4)	Mosque (the fulfilment of at least two mosques per Nagari)	1/8
	Musala (the fulfilment of at least one prayer room per 1 Jurong as a local government unit under village/Nagari)	1/8
Education (1/4)	the Presence of Al-Quran Education Park (TPQ)	1/12
	the presence of Raudhatul/Bustanul Athfal	1/12
	the presence of Madrasah Diniyah/Pesantren)	1/12
Economy (1/4)	the existence and functioning of the community-based village market	1/8
	The existence and easy access to Baitul Maal wa Tamwil (BMT) exist	1/8
Social (1/4)	Discussion and deliberation in the village (village council meetings at least 12 times per year)	1/16
	the absence of mass fighting	1/16
	the absence of crimes such as drug abuse and trafficking	1/16
	the absence of gambling crimes	1/16

Source: Author compilation

3.4 Calculation results of the rural Islamic religiosity index

The results of the RIRI calculation, indicated by the average value, obtained a value of 0.6402. The index value ranges from the lowest of 0.13 to the highest of 1. The standard deviation value, which shows the standard deviation, is 0.146. This standard deviation is relatively high at 22% of the average value. The range of values (range) is high, namely 0.880. The data described in the form of measures of concentration and distribution is presented in Table 2.

The median value of RIRI is 0.646, which is slightly higher than the mean value of 0.640. This result shows that the data distribution has a negative skew with a skewness value of -0.229, which indicates less symmetrical data.

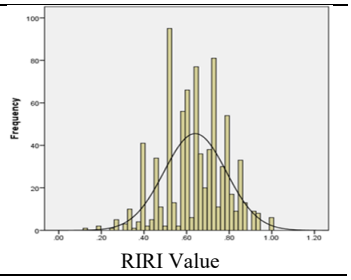
By paying attention to the distribution of the average RIRI Nagari value and its standard deviation, this study classifies Nagari based on their Islamic level into three classifications: Nagari with low, medium, and high Islamic levels.

Nagari with a RIRI value of less than five, an Islamic state of less than half, or a RIRI value of less than 0.5 is classified as low. Furthermore, 0.5 and 0.749 is classified as a medium level of Islamicity for the Nagari, while a RIRI value of at least 0.75 is classified as a high level of Islamicity. A similar range of judgments and classifications is also made in the IDM.

By classifying according to this range of values, this study found that the RIRI Nagari, when classified, shows that most Nagari, namely 492 Nagari, or 61.3%, are in the medium category (RIRI 0.500 to 0.749). The high category (RIRI 0.75 to 1) followed 190 Nagari or 23.7% of all Nagari analysed. The number of Nagari with a low Islamic level classification is 120 Nagari or 15%. This result indicates that the index can show a high variation in Islam at the Nagari level.

Table 2. Descriptive statistics of the rural Islamic religiosity index

Mean	0.640
Median	0.646
Mode	0.520
Std. Deviation	0.146
Variance	0.021
Skewness	-0.229
Range	0.880
Minimum	0.130
Maximum	1.000



Source: Processed

3.5 The effect of Islamic religiosity on rural development

The second objective of this paper is to quantify the effect of the village's or Nagari's Islamic religiosity on rural development. The estimation results using Ordinary Least Squares (OLS) on the effect of religion as an explanatory variable on various village development as the dependent variable are disaggregated into four measures, namely IDM in the first model, followed by its dimensions, respectively: social resilience (IDM-soc), economic resilience (IDM_eco), and environmental or ecological resilience (IDM_env).

In each model, the same three control variables were used: a dummy for the location of the Nagari concerning the forest (1 = outside the forest, 0 = other) and two variables whose data had been logarithmically transformed: the number of social institutions (LOG_INST) and the travel time from the office of the village head, in this case, the wali Nagari, to the higher government office, the district office, measured by the travel time in minutes (LOG_TMC). The estimation results are presented in Table 3.

In model 1, the results showed that all explanatory variables used for village development showed significant regression results. The coefficient of determination of 0.181 indicates that the diversity of the dependent variable can be explained by 18.1% of the independent variables, while other variables outside the model explain the remaining 81.9%. This coefficient of determination is acceptable considering the many determinants that affect rural development and the limited data and indicators used to be considered independent variables. Moreover, as the dependent variable, IDM contains 52 indicators, limiting it to using other indicators in the village potential data so that there is no repetition or overlap between the dependent and independent variables.

Table 3. Estimation result of effect rural Islamic religiosity rural development measure

Variabel	IDM	IDM_soc	IDM_eco	IDM_env
RIRI	0.091***	0.078***	0.234***	-0.039
LOG_INST	4.306***	4.981***	7.743***	0.192
LOG_TMC	-4.907***	-4.462***	-8.406***	-1.852
D_FORS	2.250***	1.304**	1.359	4.086***
Constant	57.466***	61.740***	43.677***	66.981***
R Square	0.181	0.140	0.220	0.029
F-stat	44.012***	32.443***	56.217***	5.857***

Source: Processed

Focusing on Nagari Islamicity's effect on village development generally, a coefficient value with a positive direction of 0.091 is obtained and is statistically significant at the 0.01 level. This result indicates that an increase in rural Islamicity is significant in increasing Nagari's development in West Sumatra Province. The calculated F value shows significance at the 0.01 level, which means that the Islamic village variable and other control variables in the model can influence village development with IDM indicators.

The results of Model 1 show that increasing rural Islamicity can improve the development of Nagari in West Sumatra. Rural development must also be directed at providing facilities and infrastructure for worship, Islamic education, and the Islamic economy, as well as increasing the role of Islam in social life. The approach to improving this Islamicity can be made individually through Islamic education and teaching that encourages self-development, and the economy can play an active role in various fields of Nagari development.

This result implies the importance of the various dimensions of the life of rural Muslim communities in West Sumatra being integrated between the dimensions of worship, education, economy, and social facilities. In other words, unity in understanding specific worship, such as prayer and recitation, with public worship, such as work, trade, school, and neighbourhood. Among them is the optimal functioning of the mosque, namely as a means of worship and a centre for Islamic education, community economic empowerment, and social functions with compensation programs from zakat, infaq, sadaqah, and waqf.

For village development stakeholders, these results emphasise the role of religious preachers and extension workers from the Office of Religious Affairs. Approaches through Islamic groups or organisations and social community organisations such as Muhammadiyah to be involved in the development planning process and to support the implementation of programs that align with the community organisations' programs.

In model 2, which estimates the effect of village Islamicity on village social development, the coefficient value is 0.078 and highly significant at the 0.01 level. The resulting coefficient of determination is 14%. These results indicate that the Islamicity of the village community has a positive and very significant influence on social development.

These results confirm that social cohesion and the embodiment of social capital can be influenced by religion through various channels. All religions teach principles of trust and benevolence that are emphasised as human virtues. Collective religious ritual practices, such as congregational prayer and majlis tackle, can foster social cohesion and promote cooperation and various forms of pro-social behaviour within religious groups.

The positive influence of religiosity on the social dimension can also be seen in its effect on mental health. Religious practices such as regular worship and charity increase feelings of self-control. A person's belief in his or her purpose in life, which he or she believes is in line with God's will, is positively correlated with life satisfaction, self-esteem, and optimism. Feelings of belonging to a religious group influence mental health stemming from feelings of belonging to a social group, which has a high potential for creating strong bonds and receiving social support from fellow members when facing problems.

Religion plays a positive role in the social dimensions of physical health and education. Numerous studies have shown the influence of religious dimensions on mortality, the risk of serious illness, and the incidence of sexually transmitted diseases. Another important mechanism is the health and education services provided by religious organisations such as hospitals, schools or boarding schools, orphanages, and nursing homes [2].

The effect of the Islamic level of the village on the social development of the village is a challenge in optimising religious practices and worship so that they have a social impact on society. Villages undergo a transformation or urbanisation process that has consequences for increasing social insecurity in order, harmony, and social solidarity, including the emergence of various forms of criminal acts such as drugs and gambling. The role of religious institutions, both formal and informal, through Islamic education and teaching in instilling Islamic norms and values is essential in anticipating various negative impacts of the village development transformation process. In addition to the cooperation built by the village government and customary institutions in compiling and enforcing laws and social norms against various violations of legal, customary, and religious norms that tend to become more complex over time.

In model 3, which estimates the effect of Islamic religiosity on rural economic development, more satisfying results are obtained. It is found that religion has a positive and highly significant effect at the 0.01 level. The value of the regression coefficient of 0.234 is relatively large compared to the value of the regression coefficient of Nagari religion in the social dimension and IDM.

This result may indicate that the strength of religious ideas in rural communities is positively correlated with specific development-relevant personal characteristics such as work ethic, risk aversion, or pro-market behaviour.

This result corroborates the general opinion that the entrepreneurial spirit of the Minangkabau people does not only stem from cultural encouragement and the means of the Nagari market. Nevertheless, it is also followed by the accompanying Islamic encouragement. Institutionally, Islamization as a process of socio-cultural change driven by Islam as the driving force in West Sumatra was brought about and started from trade transactions, followed by the spirit of spreading Islam [58].

The results of this study confirm that the strength of religious ideas embraced by a person or group of people for the economy has a positive correlation with the motive to give inheritance as an intergenerational welfare transfer and a longer planning horizon. Guiso et al. [59] found at a macro level that religion promotes economic welfare through its association with behaviours that support free markets and improve institutions; this result can also reject Weber's hypothesis in the context of rural areas in Muslim areas, especially in West Sumatra.

Model 4, which estimates the effect of Nagari Islamicity on rural ecological development, produces a negative and insignificant direction. An increasing level of Nagari's Islamicity can harm the environmental resilience dimension.

Various comprehensive research programs acknowledge the ambivalence of the relationship between religion and ecology. Basedau et al. [2] reveals that empirical evidence on the influence of religious and environmental dimensions appears mixed, inconclusive, and sometimes contradictory, as confirmed by this study's results. This ambivalence and contradiction may stem from the large variety of different measures of religion and environment. In addition to enormous

heterogeneity, such as unrepresentative samples, differences in empirical rigour, and control variables use.

Understanding results that are negative or different from expected requires knowledge of the IDM's environmental resilience indicators. The environmental resilience dimension of the IDM includes two variables: environmental quality and potential or proneness to natural disasters. Environmental quality has two indicators: the absence of water, soil, and air pollution; and the absence of rivers polluted by waste. The potential for natural disasters is assessed using indicators of natural disaster occurrence, actions against potential natural disasters, and efforts to anticipate and mitigate natural disasters.

In the practical and empirical realms, Islam can integrate the traditional conservation practices operated by local governance institutions (known as Nagari) through the many environmental principles contained within its precepts. Thus Islam already embodies the idea of sustainability within its doctrine of *khalifah*, whereby Muslims are urged to be stewards of the earth and thereby assume responsibility for all its resources within a sacred trust. In addition, the Qur'an contains numerous references that urge its followers to preserve and sustain the natural world, providing the potential to make a significant, positive impact by effectively imbuing daily life with specific practices that preserve biodiversity. Unfortunately, the many conservation principles within Islam are not necessarily well-known or disseminated throughout West Sumatra, locally or nationally. Therefore, programs to build local capacity by empowering and educating local teachers, religious leaders, and community members to spread this critical message in addition to putting the Islamic precepts and traditional knowledge into practice [54].

Some challenges remain in enhancing ecological resilience. Global efforts in biodiversity conservation and forest management have failed to prevent forest and biodiversity degradation caused by development. The increasing demand for land for development continues to convert natural forests into farmland, plantations, and human settlements. Although the Government of Indonesia formulated a national conservation strategy that advocates conservation and the sustainable use of biodiversity (Law No. 32 of 2009 on the Protection and Management of the Environment), deforestation continues throughout the country. The Indonesian Government's Decentralization Policy has also failed to prevent forest and biodiversity degradation [60].

4. CONCLUSIONS AND SUGGESTIONS

This research has developed the Rural Islamic Religiosity Index (RIRI) to measure the condition of villages in fulfilling development goals based on Islamic principles. This index was built to assess, monitor, and supervise village development policies while considering the role of Islamic religious aspects in knowledge, understanding, and application by rural Muslim communities.

The vital objective conveyed from the research results is Islamic religiosity's importance and positive effect on village development. Therefore, the approach in village development programs and activities needs to use a religious approach through individuals and religious groups to be actively involved in a series of rural development processes ranging from planning, implementing, and evaluating Nagari and village development.

The estimation results reveal that the Islamicity of the Nagari has a relatively diverse and significant favourable influence on rural development in general. The estimation of the influence of religion on the three dimensions of IDM shows a diverse influence. The level of Nagari Islamicity has a positive and highly significant effect on the economic dimension of development, a positive but insignificant effect on the social dimension, and a negative and significant effect on environmental development.

The influence of religion on village development in the economic and social fields, especially in the environmental field, the construction of worship facilities in the form of mosques and masalas, madrasas, and Quranic education parks for easy accessibility based on community self-help and the support of religious-based charitable institutions is needed as a means to foster a spirit of togetherness (collective action) and as part of a human development strategy. The existence and functioning of community-based Nagari markets and microfinance institutions such as Baitul Maal wa Tamwil (BMT) are needed as a means for fair and rent-free economic transactions.

For the West Sumatra Provincial Government and other provincial governments, district and city governments. The provincial and district-level Community and Village Empowerment Offices and all stakeholders, such as religious affairs offices, require cooperation to participate in and support rural development. Customary institutions, Nagari government officials, and religious organisations require increased capacity and effectiveness in establishing norms and encouraging village community behaviour in their involvement in various development activities by drafting village regulations.

This research also suggests giving attention to spiritual development by involving religious organisations in an integrated manner in various development activities. The empowerment programs are also directed at increasing religious organisations' capacity and the community's understanding of religious values in all rural development activities.

For future research, this study encourages the testing and development of various methods for measuring the level of Islamicity so that a robust and reliable measurement tool can be obtained while still paying attention to simplicity and being replicated or carried out periodically by utilising existing data. Quantitative research on the Islamic role of villages or Nagari can also test it with various development measures such as socio-economic status obtained from other government agencies or institutions, such as cash assistance recipients, health subsidies such as the Healthy Indonesia Card, or other development measures.

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