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# Poverty Analysis in Indonesia Based on AI (Artificial Intelligence) with ARIMA Method

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***A B S T R A C T***

*Poverty in Indonesia is a complex and multidimensional problem, because poverty levels can be an indicator of success for the country in terms of both its development and economy. This is an important point for the government to predict or predict poverty so that it can provide a more appropriate alternative. Based on this problem, a method is needed, namely using the forecasting method (Forcasting). In this study, researchers used a model from Box Jenkins, namely the Auto Regressive Moving Average (ARIMA) to predict the future level of poverty in Indonesia. AI (Artificial Intelligence) is not widely used in terms of economy, especially on poverty issues, but AI is one of the alternatives for countries to overcome poverty. Quantitative research in this study uses the ARIMA (Auto Regressive Moving Average) analysis. The poverty dataset used is sourced from the Central Bureau of Statistics (BPS) with test data from 2010 to 2023 to 2029. AI can provide alternative recommendations to deal with poverty in the future and in addition to looking at the forecast (Forcasitng) of poverty levels for the next 5 years. Conclusion: The government can make AI one of the tools to find solutions in the form of alternatives to solve poverty problems. Thus, through AI, it can be considered by the government in providing policies for poverty problems*

***Keywords:*** *Poverty, ARIMA, Government*
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## INTRODUCTION

In today's era of rapid technological development, information and news spread very quickly. These advances in technology have changed many aspects of life. In this era of society, we are witnessing transformations that affect the various jobs previously done by humans, now starting to be replaced by machines. Along with this, advanced activities seek to provide easier, faster, and more accurate digital services, in line with economic development. Various new innovations, such as artificial intelligence, Internet of Things (IoT), and big data, are emerging to offer more efficient services. These updates can help competition in the increasingly competitive modern era. Technology has now become an important part of people's lifestyles, and digital platforms can contribute significantly to creating effective and efficient services for many people. In this context, artificial intelligence emerged as one of the main promising solutions (Sulistyowati et al., 2023).

The problem of poverty can be considered one of the significant social problems, especially in developing countries. Poverty is a complex social issue and is of great concern around the world. Indonesia, as a developing country, is also inseparable from this problem of poverty (Nadira & Safitri, 2024). Lowering the poverty rate is a priority in the National Long-Term Development Plan (RPJPN 2005-2025), which is in line with the Millennium Development Agenda (MDGs) adopted by 189 countries at the Millennium Summit in New York, 2000. The MDGs consist of eight goals: reducing poverty and hunger, basic education for all, gender equality, lowering child mortality, improving maternal health, fighting HIV/AIDS and other diseases, environmental sustainability, and global partnerships for development (BPS, UNICEF, 2009).

Poverty is the inability to meet proper living needs in accordance with the average living standards of people in a region. This condition is characterized by low income to meet basic needs. The problem of poverty is complex and has a similar impact in almost all countries. Poverty is also a socioeconomic phenomenon that crosses religious, tribal, and citizenship boundaries. As a developing country, Indonesia has the goal of improving welfare and improving the quality of life of the people in accordance with the mandate of the fourth paragraph of the Opening of the 1945 Constitution. Therefore, the government is trying to increase Indonesia's economic development to the maximum extent possible to achieve this goal (Firmansyah, 2023).

Poverty can be caused by internal and external factors. Internal factors include the inability to meet basic daily needs as well as difficulty in addressing social problems. Meanwhile, external factors are related to public policies that have not been evenly distributed in reaching the poor, as well as lack of supervision on the implementation of these programs (Daulay, 2024).

One of the goals of sustainable development (SDGs) is to eliminate poverty in all its forms by 2030. However, recent research from the World Bank shows that the impact of the COVID-19 pandemic is expected to continue to be felt by many countries until 2030. Poverty has also been a widespread problem in Indonesia for more than ten years, and remains a major topic often discussed and debated to this day. The government continues to seek solutions to reduce poverty throughout the country (Manik & Hanafiah, 2024).

The approach to poverty reduction has been considered to have many disadvantages, including: first, a focus that is more on the economic aspect than on the wider poverty dimension; second, a more caritative approach rather than productivity improvement; third, The poor are often viewed as objects rather than subjects; and fourth, the government acts more as a ruler with a centralized and top-down

program, rather than as a facilitator. Multidimensional poverty reduction requires a balanced approach between economic and non-economic aspects (Arifin, 2020).




Source: Badan Pusat Statistik

**Figure 1.**
**Research Variables**

In helping the government to realize sustainable development, it is necessary to forecast this one problem, namely poverty, because poverty is a determining factor in the welfare of a country. Forecasting is the activity of estimating what will happen in the future (Pujiana et al., n.d.). Forecasting is necessary because there is a time difference (timelag) between the awareness of the need for a new policy and the timing of its implementation. The longer the time difference, the more important the role of forecasting to determine when an event will occur, so that the necessary measures can be prepared properly. Forecasting methods will aid in analyzing past data patterns or behaviors, which allow for finding more systematic and pragmatic approaches, solutions, and steps, and provide higher confidence in the accuracy of forecast results created (Sadik et al., 2024).

Forecasting is an important issue that can cover many areas including business and industry, government, economics, environmental science, medicine, social science, politics, and finance (Hasri, 2020). Many models or methods can be used for forecasting, but this method is still single, meaning it cannot train on compound data. Therefore, the use of the method in the forecasting should match the type of data available. Forecasting can be done in several ways, one of which is using the ARIMA method chosen because it has the best accuracy in predicting for short-term research. It is hoped that with the use of this ARIMA model, it will be able to produce the best level of accuracy in predicting the level of poverty in Indonesia. In this study, the ARIMA model was used to predict poverty data in Indonesia based on urban, rural and national areas.

Explaining the problem's formulation should cover the following points: (1) Problem recognition and its significance; (2) clear identification of the problem and the appropriate research questions; (3) coverage of problem's complexity; and (4) well-defined objectives.

## LITERATURE REVIEW

Poverty is no longer talking about how to increase people's per capita income, but the availability of jobs as well

as to ensure that people can fulfill their needs. poverty is a problem that needs to be addressed together that has not been resolved so far that some researchers conducted research to predict poverty in the future as (Adryan et al., 2022). conduct research by analyzing poverty using the ARIMA method. That method is to predict poverty in the future. In his research, the results of the data test conducted showed that poverty has a positive trend in the curve. However, in the research conducted by (Hasri, 2020). Poverty has a negative trend, meaning that it has decreased more and more years by using the ARIMA analysis.

The ARIMA method is not only used to predict the level of poverty in response to the ARIMA method being used to determine the number of passengers in their research (Susilawati & Sunendiari, 2022). convey that the modelling that has been done using ARIMA for data on the number of train passengers in Java (Jabodetabek and non-Jabodetabek) in January 2016 – December 2020 has obtained fourteen possible ARIMA models. After an assessment of the model parameters and a diagnostic check for the fourteen possible ARIMA models was made, it was found that no ARIMA model was suitable for use in forecasting.

The ARIMA method is a method that produces predictions based on historical data patterns. The ARIMA method is also a combination of the AR (Autoregressive) model, a model that describes the movement of a variable through the variable itself in the past and the MA (Moving Average) model, a model that looks at residual movement in the past. In research conducted by (Rezaldi, 2021). A method used in determining models, performing forecasting, and determining more accurate software in the data identification phase is the Box-Jenkins ARIMA time-routing method using Minitab's software.

Artificial Intelligence (Artificial Intelligence) generally refers to the ability of a system to understand and process data to achieve a particular goal. AI has contributed to the advancement of software, Internet technology, and computers that have transformed people's lives into more modern ones. However, artificial intelligence cannot completely replace human roles, as humans have empathy that the system cannot. AI, on the other hand, can support human performance in a variety of ways. Currently, artificial intelligence has been widely applied to facilitate various human activities, including in the industrial manufacturing sector through the use of robots for automation.

## METHODOLOGY

This study used a descriptive quantitative approach (Creswell, 2014). The data used in this study are 13-year annual time series data, ranging from 2010 to 2023, which include poverty data. The data was obtained from the website https://bps.go.id/. This study involves several stages to obtain the best level of accuracy in predicting poverty levels in Indonesia using the Box-Jenkins (or ARIMA) method, which is an analysis technique for data that changes over time (Rahman et al., 2025). This method does not focus on finding relationships between data and external factors, but rather identifies patterns that exist within the data itself. Thus, we can observe the upward trend, specific seasons, or surprises that arise. In short, this method "listens" to what the data itself conveys (Gujarati, 2003).

The Box-Jenkins procedure is a standard method often used in the construction of ARIMA models. This procedure involves four interative stages in the preparation of the ARIMA model for time-routed data, namely the identification, estimation, diagnostic examination, and forecasting stages.

According to the Box – Jenkins model, the ARIMA model generally con-

sists of:

***AR (Autoregressive) Model***

The assumption that this model has is that period data is now influenced by data in previous periods. It is called the Autoregressive model because in this model it is regressed against the previous values of the variable itself. Autoregressive models with order p abbreviated to AR(p) or ARIMA (p,0.0) Model:

$$Z_t = \mu + \phi 1\, Z_{t-1} + +\phi 2\, Z_{t-2} + \ldots + \phi_p\, Z_{t-p} - a_t$$

where $Zt$ as stationary time series, μ as constant, $Zt-p$ as free variables, $\phi p$ as p-th autoregressive parameter coefficient, and $at$ as remaining at the t-th moment.

***MA (Moving Average) Model***

The Moving Average (MA) model was first introduced by Slutzky in 1973, with the q-order written MA (q) or ARIMA (0.0,q) and developed by Wadsworth in 1989.

Model:

$$Z_t = \mu + a_t - \theta 1\, a_{t-1} - \ldots - \theta q\, a_{t-q}$$

where $Zt$ as stationary time series, μ as constant, $at-1$ as free variable, $\theta q$ as q-th moving average parameter coefficient, and $at$ as remaining at the t-th moment.

***Autoregressive Moving Average (ARMA) Model***

The Autoregressive Moving Average (ARMA) model is a combined model of Autoregressive (AR) and Moving Average (MA). And this model has the assumption that the current period data is influenced by the previous period data and the residual value of the previous period.

Model:

$$Z_t = \mu + \phi 1 Z_{t-1} + \ldots + \phi p Z_{t-p} + at - \theta 1 a_{t-1} - \ldots - \theta_q a_{t-q}$$

where $Zt$ as stationary time series, μ as constant, $Zt-p$ as free variables, $\phi p$ as p-th autoregressive parameter coefficient, $at-1$ as free variable, $\theta q$ as q-th moving average parameter coefficient, and $at$ as remaining at the t-th moment.

***ARIMA (Autoregressive Integrated Moving Average) Model***

The Autoregressive Integrated Moving Average (ARIMA) model is built on the assumption that the time series data must be stationary, meaning its statistical properties, such as the mean and variance, remain constant over time. However, when data is non-stationary, certain issues arise that make traditional modeling less effective. To address this, the data is often differenced a process that transforms non-stationary data into a stationary form by calculating the changes between observations.

Traditional models like Autoregressive (AR), Moving Average (MA), and Autoregressive Moving Average (ARMA) are limited in handling non-stationary data because they do not include a mechanism for differencing. To overcome this limitation, the ARIMA (p, d, q) model was introduced, where:

p represents the number of autoregressive terms,

d denotes the number of differencing steps needed to achieve stationarity,

q stands for the number of moving average terms.

This integrated approach allows the ARIMA model to more effectively handle non-stationary time series by incorporating both past values and past forecast errors. As a result, the stationary series is expressed as a linear combination of its own past values, past errors, and the differencing process used to stabilize the data.

Model:

$$\Phi p\,(B) Dd\, Zt = \mu + \theta q\,(B) at\,)$$

where $\varphi p$ as p-th autoregressive parameter ophthalmology, $\theta q$ as q-th moving average parameter coefficient, B as Backshift operator, D as Differentiating, μ as constant, $at$

as leftovers at the t-th, p as autoregressive degrees, d as process level differentiating, and q as moving average degree.

From the stage of research conducted, the initial stage of research was conducted by inputting poverty data in Indonesia, the data used were sourced from the Central Statistics Agency (www.bps.go.id). After inputting the data, the next step is to identify the model by using the stationarity and differentiation tests of the data to obtain the ARIMA model's conjecture (Prasetyono & Anggraini, 2021).

The next step after the ARIMA model is obtained is to estimate the model parameters using ACF (Autocorrelation Function) and PACF (Partial Autocorrelation Function).

The next step is followed by a diagnostic check with AIC (Akaike Information Criterion) and SBC (Schwarz Bayes Criterion) parameters to see the best model parameters. Step Where poverty data is a reference in forecasting using the Back Propagation type Back Propagation (JST) method in Training and Testing. This study used accuracy parameters such as Mean Absolute Deviation (MAD), Squared Error (MSE), Mean Absolute Percentage Error (MAPE), and Root Mean Squared Error (RMSE) to see the comparison or accuracy of the training.

Furthermore, an error parameter test was conducted with three categories, namely RMSE (Root Mean Square Error), MAE (Mean Absolute Error), and MAPE (Mean Absolute Percentage Error), to assess which ARIMA model has the least error value and best accuracy. Once the ARIMA model is found with the best accuracy and least error, then the data can be used for the forecasting process.

## RESULTS AND DISCUSSION

The Figure 1 shows that the data tested did not pass at the Level stage but at

**Figure 1.**
**Stationary Test**

Null Hypothesis: D(INDO) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=3)

| | | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -3.548675 | 0.0241 |
| Test critical values: | 1% level | -4.057910 | |
| | 5% level | -3.119910 | |
| | 10% level | -2.701103 | |

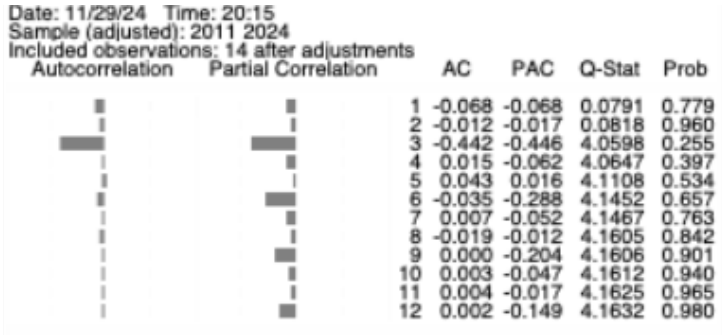
Source: processed by Eviews 12

**Figure 2.**
**AR Model Testing**

| | | | |
|---|---|---|---|
| R-squared | 0.004583 | Mean dependent var | 627.0879 |
| Adjusted R-squared | -0.176402 | S.D. dependent var | 13685.36 |
| S.E. of regression | 14843.42 | Akaike info criterion | 22.23620 |
| Sum squared resid | 2.42E+09 | Schwarz criterion | 22.37314 |
| Log likelihood | -152.6534 | Hannan-Quinn criter. | 22.22352 |
| F-statistic | 0.025322 | Durbin-Watson stat | 2.008475 |
| Prob(F-statistic) | 0.975053 | | |
| Inverted AR Roots | -.06 | | |

Source: processed by Eviews 12

**Figure 3.**
**ACF and PACF Testing**




Source: processed by Eviews 12

the 1 First Different stage. The data can be viewed from prob <o,o5 so that in the above interpretation the data pass in the first stage. Then followed by the next stage.

The Figure 2 is the basis for determining the best model whether the AR or MA model is the basis for predicting poverty data in Indonesia.

The Figure 4 is the basis for testing at the last stage, which is forcasting, but before forcasting is carried out, it is necessary to determine the best model first so that it can quickly get its forecast value.

From the Figure 5, it shows that the MA model cannot be forcasting because grades 1 and 2 should drop but what happens in the MA model increases so that it cannot be forcasting on that model.

Judging from the results of forcasting poverty data owned by Indonesia, it has increased every year, which was previously fluctuating, then after forcasting the diagram, it increases every year. This can be used as a material for the government to find alternatives to solve this problem (Rahmasari et al., 2019).

Based on the results of testing each data, the best ARIMA model as shown in Figure 6 was obtained. After finding the optimal ARIMA model, the next step is the forecasting process. Figure 6 shows the forecast results of testing poverty data in Indonesia divided by urban, rural, and national areas. The results of this forecast are carried out using ARIMA modeling for the period 2024 to 2029. Based on the tests conducted in this study, it can be concluded that the results of the ARIMA model test of poverty data in Indonesia are in the category of good testing (Musadat et al., 2023).

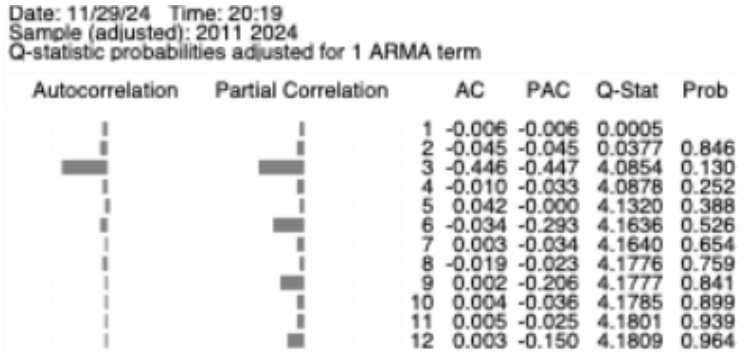
Rural areas face distinct challenges, including that they rely more on biomass and that they cannot access electricity networks, in contrast to urban areas

**Figure 4.**
**MA Second Phase Testing**

| | | | |
|---|---|---|---|
| R-squared | 0.005067 | Mean dependent var | 627.0879 |
| Adjusted R-squared | -0.175830 | S.D. dependent var | 13685.36 |
| S.E. of regression | 14839.81 | Akaike info criterion | 22.23579 |
| Sum squared resid | 2.42E+09 | Schwarz criterion | 22.37273 |
| Log likelihood | -152.6506 | Hannan-Quinn criter. | 22.22312 |
| F-statistic | 0.028008 | Durbin-Watson stat | 1.996573 |
| Prob(F-statistic) | 0.972450 | | |
| Inverted MA Roots | .07 | | |

Source: World Bank (processed data, 2024)

**Figure 5.**
**ACF and PACF Testing**

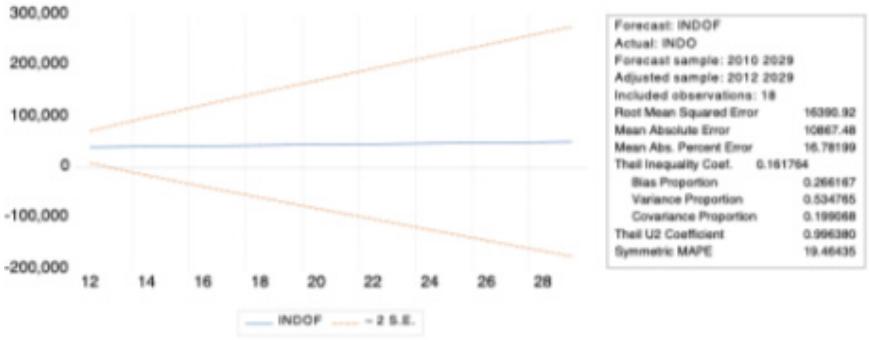


Date: 11/29/24 Time: 20:19
Sample (adjusted): 2011 2024
Q-statistic probabilities adjusted for 1 ARMA term

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| | | 1 | -0.006 | -0.006 | 0.0005 | |
| | | 2 | -0.045 | -0.045 | 0.0377 | 0.846 |
| | | 3 | -0.446 | -0.447 | 4.0854 | 0.130 |
| | | 4 | -0.010 | -0.033 | 4.0878 | 0.252 |
| | | 5 | 0.042 | -0.000 | 4.1320 | 0.388 |
| | | 6 | -0.034 | -0.293 | 4.1636 | 0.526 |
| | | 7 | 0.003 | -0.034 | 4.1640 | 0.654 |
| | | 8 | -0.019 | -0.023 | 4.1776 | 0.759 |
| | | 9 | 0.002 | -0.206 | 4.1777 | 0.841 |
| | | 10 | 0.004 | -0.036 | 4.1785 | 0.899 |
| | | 11 | 0.005 | -0.025 | 4.1801 | 0.939 |
| | | 12 | 0.003 | -0.150 | 4.1809 | 0.964 |

Source: World Bank (processed data, 2024)

**Figure 5.**
**Forcasting**




Source: World Bank (processed data, 2024)

which have better infrastructure yet battle with affordability. For high income countries, rural areas often have potential for renewable energy sources, like solar or wind and micro-hydropower. Rural areas in developing countries encounter difficulties regarding energy access because extending the national grid can be less cost-effective and sustainable. Due to how many rural areas are lacking connection to the national grid, electricity access is sporadic, or it is nonexistent. There may be few chances for health, education, and economic growth. Biomass is often relied on by rural area residents. They use it on many occasions. Deforestation in addition to indoor air pollution plus respiratory illnesses are undesirable outcomes when using biomass for cooking and heating besides time wasted on other productive activities (Donou-Adonsou et al., 2025).

The central government has drafted and ratified the Government Regulations on poverty reduction, which include various programs to address poverty issues. One of the important provisions listed in this Government Regulation is the determination of poverty reduction measures that must be implemented by governments throughout Indonesia, as stipulated in Article 14 of Government Regulation No. 1. 5 years of 2015 including.

1. Food Aid

Food aid that has been distributed by local governments is: a. Social Help; b. Direct cash assistance; c. Non-cash food

aid

2. Health Aid

Health assistance is provided in the form of PKH Health. The presence of the PKH program tries to lower the number of malnutrition in infants and improve health in pregnant women. In accordance with the Decree of the Minister of Health Number 903/MENKES/PER/V/2011 concerning Guidelines for the Implementation of Health Assistance Programs is given in the form of Health PKH. The presence of the PKH program tries to lower the number of malnutrition in infants and improve health in pregnant women. In accordance with the Decree of the Minister of Health Number 903/MENKES/PER/V/2011 concerning Program Implementation Guidelines.

3. Educational Aid

Education assistance is also from PKH for education. The PKH in the education sector provides better opportunities for children to access education services. Education assistance is provided in the form of PKH education which is received once in 3 months. Assistance is provided according to the education level of children's schools.

4. Housing aid

5. Skill improvement help

Skill improvement is an educational program organized to provide learning opportunities for people to acquire knowledge, skills, and develop mental development. In Pelayan Indah Village, the improvement of skills for the community provided by the government is sewing. This is a form of training provided by the government to the community, so that the community has capital in building life by working.

6. Business capital assistance

7. Aiding the protection of a sense of security

The government established Public Security and Order (Kamtibmas), to protect the public. Then, the government's role in implementing Medan City Regional Regulation Article 14 Number 5 of 2015 concerning Poverty Reduction is: a. Inaccurate Data Collection and Program Targets; b. The public is less active; c. Help is used consumptively

Efforts made by the government to reduce or eliminate homeless and beggar problems are preventive, repressive, and rehabilitative. Although it is the government's responsibility to protect its citizens in order to achieve social welfare, support from the community, both as a group and individual, is still needed. The government has shown its commitment in dealing with poverty, one of which is through the formation of the Poverty Reduction Committee (KPK)(Hairul Rahman et al., 2025). The law also provides a space for the public to conduct social welfare businesses in accordance with government policies. Some of the steps taken by the government to overcome poverty include by building the agricultural sector, improving the quality of human resources, distributing income more evenly, and building state infrastructure (Manik & Hanafiah, 2024)

To improve the well-being of people around the world, countries have committed to support a set of goals known as the Sustainable Development Goals (Sustainable Development Goals (SDGs). One of the TPB/SDGs is eliminating poverty. Poverty is still a problem that continues to hit Indonesia, including in Central Java, and has long been a problem in various regions. Given that poverty has always been the focus of attention, many have sought mechanisms to overcome this problem and have tried to reduce it (Siramaneerat & Agushybana, 2023)

Poverty problems are complex and multidimensional issues, so poverty alleviation efforts must be carried out thoroughly, covering various aspects of people's lives, and implemented in a coordinated manner. In Central Java, poverty reduction is implemented through five pillars known as the "Grand Strategy". The first pillar is the expansion of employment opportunities,

which aims to create economic, political, and social conditions that allow the poor to have opportunities to meet basic rights and improve the quality of life in a sustainable manner. The second pillar is community empowerment, which focuses on accelerating the strengthening of social, political, economic, and cultural institutions, and expanding the participation of the poor in public policy decision-making that ensures the protection and fulfillment of basic rights. The third pillar is capacity building, which aims to develop the basic capabilities and business skills of the poor so that they can take advantage of the opportunities. The fourth pillar is social protection, aimed at providing a sense of security and protection for vulnerable groups and poor people, both men and women, affected by natural disasters, economic crises, or social conflicts.

To find out the extent to which poverty will decrease or increase in the coming year, a forecasting process is needed based on data on the number of poor people from the previous year. Forecasting is the process of estimating future events using relevant data from the past and applying them to the future through a mathematical model (Jana, 2020).

There's research done statements The relationship between built environment as well as potential operations by way of pathways that happened to be complex and interrelated. Mediation analysis shown accessibility results imported role affect poverty outcomes when spatial opportunity exhibitions exist. Resident effectiveness is considerably affected by urban opportunities and amenity accessibility. The analysis of different built environment characteristics realized varying impacts across poverty dimensions. Particularly strong relationships within health outcomes and economic status were found. Land use diversity came about as a factor with importance because it's cut poverty across multiple dimensions consistently (Gachanja & Yang, 2025).

In this case, it will be associated with AI (Artificial Intelligence) capabilities if forcasting makes poverty something that needs to be dealt with carefully. From AI's ability to overcome poverty, namely the following: Overcoming poverty in the next 5 years is a big challenge but it is very possible to achieve it with a proper and comprehensive strategy. The following approaches can be considered.

Increase in Income: Empowerment of MSMEs by providing training, capital access, and a wider market network for MSMEs. Job Creation through investment in potential sectors such as infrastructure, tourism, and creative industries. Skills Program to provide vocational training that suits the needs of the job market. Modern Agriculture by promoting the use of modern agricultural technology, product diversification, and access to better markets.

Reduction of Burden Charge: Social Assistance Program by providing conditional cash assistance (Conditional Cash Transfer) or food assistance for poor families. Basic Service Access by ensuring easy and affordable access to education, health, and sanitation. Price Control to control the price of basic necessities to reduce the life burden of the poor.

Infrastructure Development: Basic Infrastructure by building roads, bridges, irrigation, and electricity in underdeveloped areas to improve productivity and connectivity. Public Transportation by improving public transportation accessibility to reduce transportation costs.

Education and Training: Quality Education to improve the quality of education at all levels to improve human resources. Skill Training that provides skill training relevant to the needs of the job market.

Community Empowerment: Community Involvement in planning and implementing poverty alleviation programs. Strengthening Community Institutions such as cooperatives and farmer groups.

Data and Evaluation: Data Collection to collect accurate and up-to-date data on poverty to monitor the progress of the program. Program Evaluation to conduct a regular evaluation of running programs to identify successes and deficiencies.

Synergy Between Sectors: Coordination to improve coordination between government, private, and public institutions to avoid overlapping programs. Partnership to build partnerships with different parties to strengthen poverty alleviation efforts.

Applicable Program Example: Family Hope Program (PKH) which provides conditional cash assistance to poor families on the condition that their children go to school and conduct health checks, Smart Indonesia Card (KIP) which provides education expenses to children from poor families, and Tax Special Effort (Upsus) which helps farmers increase productivity through the provision of subsidized fertilizers, superior seeds, and market information.

Challenges to Overcome: Regional inequality in the form of differences in development rates between urban and rural areas as well as between islands of Java and outside Java, Climate Change which impacts agriculture and natural resources, and Population Growth where increasing population can increase pressure on resources.

It is important to remember that poverty alleviation is a complex and time-consuming process. There is no instant solution, but with strong commitment and proper strategy, poverty alleviation targets in the next 5 years can be achieved. As individuals, we can also contribute to poverty reduction efforts by supporting local MSMEs by buying MSMEs products and promoting them, participating in social activities by volunteering or donating some of the income to social activities, and raising public awareness by sharing information about the importance of poverty alleviation and ways to contribute.

The answer from AI is not something bad, meaning AI can also help for poverty alleviation programs so that aspirational assistance can be used through AI. Technological progress should be able to change a country's condition for the better, so that the influence of technology can be positive.

## CONCLUSIONS

Technological advancement is not something to avoid but to be utilized properly because the technology is now an opportunity for its users. However, the usefulness of technology depends on the object in use. This study uses the touch of tenology as a material to find problem resolution. This study conducted a test on poverty data in Indonesia using the ARIMA method from 2010 to 2023 to 2010 and 2030 has a positive trend. Then from the results of the test, researchers need AI as a supporter to solve the poverty problem that has occurred so far in Indonesia. AI can also provide some suggestions for poverty alleviation and the input is not so bad but rather good enough for the Indonesian government to use.

This study is only the scope of poverty in Indonesia as a whole region considering that poverty has different potentials. Research was not conducted one by one per region because the central government had an active role in determining policies for each region that still had poverty potential.

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