TRANSPUBLIKA
Precise. Resilience. Felicitous.

Journal of Management, Accounting, General Finance and International Economic Issues
https://ojs.transpublika.com/index.php/MARGINAL
Online ISSN 2809-8013 | Print ISSN 2809-9222

https://doi.org/10.55047/marginal.v4i1.1503

Original Article

The Effectiveness of the Indonesia Smart Program (PIP) on the Participation of High School Students in Central Java

Haris Mendra[1]*, Nasri Bachtiar[2]

[1]The Department of Education, Youth, and Sports of Pariaman City, Indonesia
[2]Faculty of Economics and Business, Andalas University, Indonesia
Email: [1)] harismendra1984@gmail.com

Received : 28 October - 2024
Accepted : 24 November - 2024
Published online : 25 November - 2024

Abstract

The 2017 Susenas data revealed that the high school participation rate in Central Java was only 18.74%, leaving 81.26% of high school-aged children without access to secondary education. The Indonesia Smart Program (PIP) aims to support the education of children from low-income families; however, only 15.09% of students benefited from the program. This study examines the effectiveness of PIP on high school participation in Central Java using logistic regression analysis on 2017 Susenas data, with a sample size of 11,424 individuals. The results indicate that PIP successfully increased school participation, although other social assistance programs had a negative impact. Urban students and female students were more likely to participate in education compared to rural students and male students. These findings are crucial for formulating more effective education policies in Central Java.

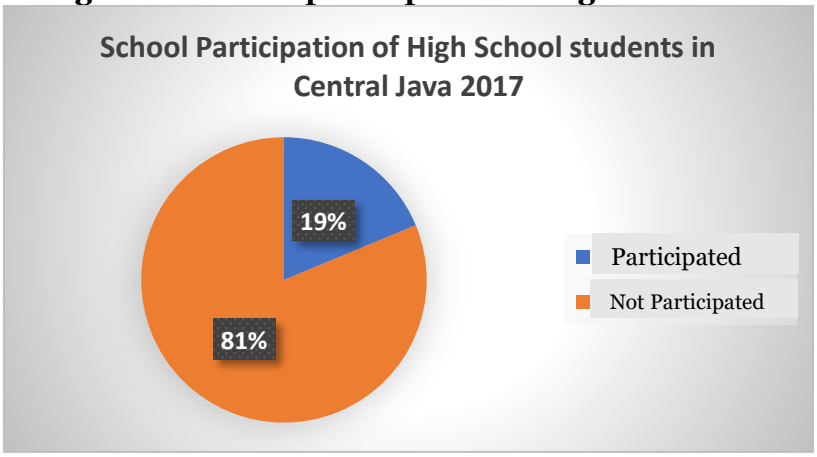
Keywords: Central Java, High School, Indonesia Smart Program, School Participation.

1. Introduction

Education plays a vital role in fostering social harmony and enhancing economic welfare. Countries with high-quality education are often considered developed or developing nations. Internationally, education has become a central issue within the Sustainable Development Goals (SDGs), continuing the agenda of Education for All and the Millennium Development Goals (MDGs). The fourth goal of the SDGs focuses on education, aiming to ensure inclusive and quality education while promoting lifelong learning opportunities for all. In Indonesia, one of the primary objectives is to advance the intellectual life of the nation, as stated in the Preamble to the 1945 Constitution of the Republic of Indonesia (Mulyani et al., 2023).

Secondary education, particularly at the high school level (SMA), plays a crucial role in human and economic development in Central Java. According to the 2017 National Socio-Economic Survey (known as Susenas) data, the high school participation rate in Central Java was approximately 18.74%, indicating that around 81.26% of high school-aged children had not accessed secondary education. Secondary education not only provides academic knowledge but also imparts critical and life skills essential for entering the workforce or pursuing higher education. In the context of economic development, high school graduates are more likely to secure better-paying jobs compared to those who only complete primary education.

Figure 1. Diagram of school participation of high school students 2017



A study by the World Bank indicates that each additional year of education can increase an individual's income by 10%, highlighting that improved participation at the high school level (SMA) can have a significant impact on household income and regional economies. Furthermore, secondary education plays a pivotal role in shaping a more productive, innovative generation that is prepared to contribute to various sectors, including industry, technology, and public services. With a population of approximately 34.26 million in 2017, Central Java faces significant challenges in ensuring adequate access to education for all children. Therefore, increasing high school participation is a priority for developing a high-quality workforce and fostering inclusive economic growth in Central Java.

The Indonesia Smart Program (PIP) is a strategic initiative launched by the Indonesian government to enhance access to education for children from low-income families. PIP, part of the Indonesia Smart Card (KIP) program, provides direct cash assistance to students across all education levels, from elementary school to high school/vocational school, aiming to reduce the financial barriers that often hinder school participation. According to the Ministry of Education and Culture, the primary goal of PIP is to ensure that all school-aged children can exercise their right to quality education without being constrained by economic limitations (Edrial et al., 2022).

Central Java, one of the most populous provinces in Indonesia, faces various social and economic challenges that affect its education sector. With a population exceeding 34 million in 2017, Central Java had a relatively high poverty rate. According to data from Statistics Indonesia (BPS), approximately 12.23% of the province's total population in 2017 lived below the poverty line, meaning more than 4 million people had insufficient income to meet their basic needs. This poverty directly impacts access to and participation in education, particularly at the high school level (SMA).

The Indonesia Smart Program (PIP) is a critical government initiative aimed at supporting children from low-income families to continue their education. However, data from the 2017 Susenas survey reveals significant anomalies in the implementation of this program in Central Java. Only 15.09% of students benefited from PIP, while 84.91% did not receive any assistance. Furthermore, in terms of regional distribution, 53.53% of students in urban areas participated in education compared to only 46.47% in rural areas. These figures raise critical questions about the program's effectiveness in reaching all students in need.

Additionally, other assistance programs show similar disparities. For example, the Rice for Prosperity (Rastra) program reached only 44.79% of students, leaving 55.21% without

support. The Family Hope Program (PKH) had an even lower reach, with only 9.13% of students receiving benefits, while 90.87% did not. Moreover, only 18.52% of students possessed Social Welfare Cards, leaving 81.48% without access to this form of support.

These data indicate issues in the implementation of assistance programs designed to enhance educational participation. These challenges are likely attributed to a lack of awareness and information about the programs, complex administrative procedures, and obstacles in aid distribution. Without significant improvements in outreach mechanisms, simplification of administrative processes, and enhanced distribution effectiveness, the goals of the Indonesia Smart Program (PIP) to increase access to education will remain unmet.

To address the significant challenges in the secondary education sector in Central Java, particularly concerning school participation, a thorough evaluation of the Indonesia Smart Program (PIP) is urgently needed. Considering the high poverty rates and various socio-economic barriers affecting educational access, this study is crucial to assess the effectiveness of PIP and other factors influencing high school participation. By providing a robust empirical foundation, this research aims to inform the formulation of more targeted and impactful policies, enabling more effective and sustainable improvements in educational access and quality in Central Java. Therefore, the study on "The Effectiveness of PIP on High School (SMA) Participation in Central Java" is essential to ensure that existing interventions effectively reach their intended targets and contribute to achieving inclusive and equitable education.

2. Literature Review

2.1. Education Investment

Education investment refers to the allocation of resources, whether in the form of time, money, or effort, aimed at improving the quality of education either partially or in its entirety. According to economic theory, investment in education is viewed as an investment in human capital. Gary S. Becker, one of the key figures in human capital theory, argued that education enhances individual skills and productivity, which in turn increases income and economic well-being (Surbakti et al., 2023).

The human capital theory posits that education is a form of investment that yields results in the form of increased productivity and income in the future. Schultz (1961) and Becker and Press (1964) emphasized that expenditures on education should be regarded as investments that provide long-term benefits, both for individuals and for society as a whole. Higher education enhances an individual's ability to secure better employment, which in turn contributes to overall economic growth.

Various studies have shown a positive correlation between education level and income. Psacharopoulos and Patrinos (2004) found that the global average return on education is approximately 10% per year of additional schooling. In developing countries, this return is even higher. In addition to individual benefits, investment in education also brings social benefits, such as improved health, reduced crime rates, and increased participation in democratic processes.

Educational intervention programs, such as the Indonesia Pintar Program (PIP), are concrete examples of education investments made by the government. PIP aims to expand access to education for children from low-income families by providing direct financial assistance. Human capital theory supports this intervention by asserting that improving access to and the quality of education will produce more productive and competitive individuals, which will ultimately drive economic growth.

2.2. Conditional Cash Transfer

Conditional Cash Transfer (CCT) is a social assistance program that was first introduced in the late 1990s in Latin America, with pilot programs such as Progresa in Mexico (launched in 1997) and Bolsa Familia in Brazil. This program provides cash transfers to poor families on the condition that they meet certain requirements, such as ensuring their children attend school and receive basic healthcare. The theory behind CCT combines the principles of economic incentives and human capital theory, which asserts that investments in education and health will enhance individual productivity and income in the future, as well as reduce intergenerational poverty (Millán et al., 2019).

According to human capital theory, popularized by economists such as Gary Becker, education and health are investments that enhance individual skills and productivity, which in turn improve long-term economic well-being. The CCT program aims to address the financial barriers that prevent poor families from investing in their children's education and health by providing direct incentives to encourage desired behaviors. A study by Fiszbein and Schady (2009) found that CCT successfully increased school participation and health outcomes in various countries, as well as having a positive long-term impact on the well-being of recipients.

In the context of Indonesia, the Indonesia Pintar Program (PIP) can be seen as an adaptation of the CCT model, focusing on improving access to education. PIP provides direct financial assistance to students from low-income families to ensure they remain in school. An evaluation of the effectiveness of PIP in increasing school participation can use the CCT framework to assess how this financial assistance influences family decisions regarding their children's education (Begum et al., 2021).

3. Methods

The data used in this study is sourced from the 2017 National Socio-Economic Survey (Susenas) conducted by the Central Statistics Agency (BPS). Susenas provides comprehensive data on the social and economic conditions of households in Indonesia, including information on school participation, receipt of various social assistance programs, and demographic characteristics. This study involves a sample size of 11,424. The characteristics of the research variables are presented in Table 1:

Table 1. Characteristics of the Research Variables

Variable	Category
Y: Participation	1: Participating 0: Not Participating
X1: PIP (Indonesia Smart Program)	1: Yes 0: No
X2: Gender	1: Male 0: Female
X3: Region	1: Urban 0: Rural
X4: Sejahtera Rice (Rastra)	1: Yes 0: No
X5: PKH Assistance	1: Yes 0: No
X6: Social Welfare Card (KKS)	1: Yes 0: No

The study employs the logit or logistic regression method, which is a statistical analysis technique used to model the relationship between a binary dependent variable and one or more independent variables (Mulyani et al., 2023). This method is used because the dependent variable in this study, namely school/Senior High School (SMA) participation (Y), is binary or dichotomous. This means that Y has only two possible values: participating or not participating in senior high school education. Logistic regression is an appropriate method for modeling the relationship between a binary dependent variable and one or more independent variables. The use of this method allows for the assessment of the impact of each independent variable on the probability of a child's participation in senior high school education. Furthermore, logistic regression can handle non-linear relationships between independent and dependent variables, which often occur in socio-economic contexts. The equation used in this study refers to the research by Mulyani et al. (2023) with modifications to the research variables :

$$Participation = \ln\left(\frac{p}{(1-p)}\right) = \beta_0 + \beta_1 x_{PIP} + \beta_2 x_{gender} + \beta_3 x_{residential\ area} + \beta_4 x_{rastra} + \beta_5 x_{pkh} + \beta_6 x_{kks} + \varepsilon$$

Where :
p : Probability of school attendance participation
$1-p$: Others
$\beta_{1\ldots}\beta_6$: $Regression\ coefficients$
ε : Error term

Logistic regression can be used with independent variables that are continuous, ordinal, or categorical. In this study, variables such as gender, marital status of the household head, and various social assistance programs can be included in the model without requiring complex transformations. This method also allows for multivariate analysis, which measures the simultaneous effects of several independent variables on the dependent variable. This is important because school attendance participation may be influenced by the combination of various socio-economic and demographic factors that interact with each other (Hasyim et al., 2022).

Overall, the logistic method is an appropriate choice for this study due to its ability to handle binary dependent variables, flexibility in using various types of independent variables, and ease of result interpretation. Through logistic analysis, researchers can identify significant factors influencing school attendance participation and provide evidence-based recommendations for educational policies in Central Java.

4. Results and Discussion

This study found that all variables, namely the Indonesia Smart Program (PIP), gender, residential area classification, subsidized rice, the Family Hope Program (PKH) assistance, and the social welfare card, have a significant impact on high school students' school attendance participation in Central Java. These results are consistent with previous research by Mulyani et al. (2023), which also found that PIP, gender, residential area classification, and social assistance significantly influence school participation. The similarity of these findings strengthens the evidence that these factors consistently affect children's education participation at the high school level.

Furthermore, the inclusion of new variables such as subsidized rice and social welfare cards in this study provides a more comprehensive perspective, demonstrating that various

forms of social support and demographic conditions collectively play a significant role in enhancing school attendance participation. This underscores the importance of holistic policies in supporting children's education, particularly in areas with various socio-economic challenges. The results of the partial regression and odds ratio are presented in Table 2:

Table 2. Results of Partial Test & Odds Ratio

Logistic regression					Number of obs	= 11,424	
					LR chi2 (6)	= 694.22	
					Prob> chi2	=0.0000	
Log likelihood	= -7159.8208				Pseudo R2	=0.0462	
School participation	Coef.	Std. Err.	Z	P > | z |	[95% Conf.	Interval]	Odss ratio
PIP (Indonesia Smart Program)	1.745728	.0899	19.40	0.000	1.5693	1.922	5.73007
Gender	-.3121252	.0400	-7.79	0.000	-.3906	-.2336	.7318899
Residential area	.2474827	.0419	5.91	0.000	.1653	.3296	1.280797
Subsidized rice (Rastra)	-.4107918	.0436	-9.42	0.000	-.4962	-.3253	.6631249
PKH (Family Hope Program)	-.323733	.0799	-4.05	0.000	-.4804	-.1670	.7234433
Social Welfare Card (KKS)	-.3623136	.0635	-5.70	0.000	-.4868	-.2377	.696064
_cons	-.3692959	.0440	-8.39	0.000	-.4556	-.2829	.6912208

Based on Table 2, the logistic regression output shows a total of 11,424 observations, a log-likelihood value of -7159.8208, and a Pseudo R^2 of 0.0462. It was found that the Indonesia Smart Program (PIP) has a highly significant positive effect on school participation. A coefficient of 1.745728 indicates that students who receive PIP assistance are more likely to participate in school compared to students who do not receive the assistance. Gender has a significant negative effect on school participation. This negative coefficient suggests that male students tend to have lower participation rates compared to female students. Students residing in urban areas are more likely to participate in school compared to students in rural areas, as reflected by the positive coefficient of 0.2474827.

Receiving subsidized rice assistance has a significant negative effect on school participation. A coefficient of -0.4107918 indicates that students who receive subsidized rice assistance tend to have lower participation rates compared to those who do not receive it. Receipt of the Family Hope Program (PKH) also has a significant negative effect on school participation, with students receiving PKH assistance being less likely to participate in school compared to those who do not receive this assistance. Furthermore, receiving the Social Welfare Card (KKS) has a significant negative effect on school participation, with students

holding an KKS tending to have lower school participation rates compared to those who do not hold the KKS.

The equation model is as follows :

$$\ln\left(\frac{p}{(1-p)}\right) = -.3692959 + 1.745728x_{PIP} - .3121252x_{gender} + .2474827x_{residential\ area} - .4107918x_{rastra} - .323733x_{pkh} - .3623136x_{kks} + \varepsilon$$

The MFX (Marginal Effects) table in logistic regression serves as a tool for understanding the direct impact of independent variables on the probability or likelihood of the outcomes in the regression model. In logistic regression analysis, where we are often interested in understanding how changes in independent variables affect the likelihood of a specific event or category occurring, the MFX table provides direct answers. Each entry in this table shows the extent of the change in the probability of the outcome when an independent variable changes by one unit, while holding other variables in the model constant. This information is highly valuable as it allows researchers or analysts to assess the relative impact of each independent variable on the observed outcome, as well as to identify the most significant variables influencing the probability or likelihood of the event under study. Thus, the MFX table is an important tool in the interpretation and analysis of logistic regression for making decisions based on robust empirical evidence (Aldama & Kristanti, 2022).

The following are the results of the MFX regression table:

Table 3. MFX Results

Marginal effects after logit y = Pr (schoolparticipation) (predict) = .36052608							
variable	dy/dx	Std. Err.	Z	P > | z |	(95% C.I.)		x
PIP*	.407524	.01735	23.48	0.000	.373513	.441535	.061275
Gender*	-.0719902	.00922	-7.81	0.000	-.090064	-.053917	.523022
Residential area*	.0567042	.00953	5.95	0.000	.038032	.075376	.574667
rastra*	-.0938636	.00983	-9.54	0.000	-.11314	-.074588	.445903
pkh*	-.0716851	.0169	-4.24	0.000	-.104804	-.038566	.109594
kks*	-.0806317	.01357	-5.94	0.000	-.107228	-.054035	.196166

(*) dy/dx is for discrete change of dummy variable from 0 to 1

First, the PIP variable has a significant positive effect on school participation. The results show that a one-unit increase in the PIP variable increases the probability of high school students' school participation in Central Java by 0.407524, with a highly significant level ($p < 0.001$). This indicates that the PIP program has a positive impact on enhancing high school student engagement in the region. Similarly, Mulyani et al. (2023) and Sihombing and Pratiko (2022) found a significant positive impact of the Indonesia Smart Program (PIP) on school participation, and Mulyani et al. (2023) specifically noted a higher likelihood of school participation among PIP recipients.

This assistance alleviates the burden of educational costs, such as school fees, the purchase of books, uniforms, and other school-related expenses, thereby enabling more children to stay in school and prevent dropouts. Furthermore, with the PIP program,

children's motivation and enthusiasm for learning increase as they feel supported by the government in achieving better education. The PIP also reduces the economic barriers that often serve as the primary reason for children not continuing their education to higher levels. As a result, school participation rates among high school students in Central Java have increased, which in turn contributes to the improvement of human resource quality in the region. This indicates that the intervention through PIP is highly effective in encouraging children to remain in school and pursue higher education (Surbakti et al., 2023).

Second, the gender (JK) variable shows a significant negative effect on school participation. The dy/dx coefficient of -0.0719902 indicates that female students have a higher probability of participation compared to male students in Central Java. Although the effect is not as large as that of the PIP program, this remains an important finding that highlights the gender disparity in educational participation. This is also consistent with the study by Sihombing and Pratiko (2022), which identified gender as a significant factor and found that female students have a higher probability of participation compared to male students.

The findings of this study, which show that female students have a higher probability of participation compared to male students in the PIP (Indonesia Smart Program) at the high school level in Central Java, can be explained from several perspectives. First, social and cultural norms in some regions may place greater emphasis on the importance of education for girls, viewing education as a means to improve their well-being and provide them with better opportunities in the future. Additionally, perceptions about education and gender roles may lead parents to be more supportive of their daughters' educational participation, as education is seen as a way to protect them from social risks such as early marriage and child labor (Kaarib et al., 2019). Second, the PIP program itself may be more effective in reaching girls through campaigns and outreach efforts that target issues specific to them. For example, there may be mentoring programs or facilitators that focus more on girls, encouraging them to take advantage of the program. Furthermore, statistical data and program evaluation reports often show that girls tend to be more motivated and disciplined in academic activities, which ultimately increases their participation in educational programs compared to boys. Overall, the combination of social, cultural, and programmatic factors that effectively address the needs of girls helps explain why female students have a higher probability of participation than male students in this study (Sihombing & Pratiko, 2022).

Third, residential area also significantly positively affects school participation (dy/dx = 0.0567042). This indicates that students living in urban areas are more likely to participate in school compared to students in rural areas. A series of studies have consistently found that students in urban areas are more likely to participate in school than those in rural areas (Koto, 2015; Sumarno, 2020; Zulfa Rahmatin & Ady Soejoto, 2017). This trend is further supported by the positive coefficient of 0.0567042 in the study examining the impact of various factors on school participation.

Fourth, economic factors such as the status of receiving subsidized rice (Rastra), PKH, and KKS show a significant negative effect on school participation. Students from families receiving Rastra assistance have a lower probability of participation (dy/dx = -0.0938636), as do families receiving PKH (dy/dx = -0.0716851) and KKS (dy/dx = -0.0806317). The findings suggesting that the implementation of social assistance programs such as Rastra, PKH, and KKS may negatively impact high school students' school participation in Central Java can be explained by several factors. First, social assistance is often focused on meeting basic needs such as food and health, so the funds received by the family may be primarily used for daily living expenses rather than education. Second, the availability of social assistance may lead some families to deprioritize education, especially if they feel their basic needs are met and

expect children to contribute to the family economy through work. Third, these programs may not be accompanied by adequate monitoring to ensure that the assistance is genuinely being used to support the children's education. Additionally, social assistance programs that are not integrated with educational policies may result in a lack of incentives for children to stay in school, particularly if they feel economic pressures have eased. All of these factors cumulatively help explain why the implementation of these social assistance programs could have a negative impact on school participation among high school students in Central Java (Sengkey et al., 2018).

5. Conclusion

Overall, the findings of this study indicate that the Indonesia Smart Program (PIP) has successfully increased school participation among high school students in Central Java. However, other social assistance programs, such as Rastra, PKH, and KKS, have had a negative impact on school participation, warranting further investigation to understand the underlying causes. Students in urban areas are more likely to participate in education compared to those in rural areas. Additionally, female students tend to participate more than male students. These findings are crucial for formulating more effective policies aimed at improving access to and participation in education in Central Java.

To ensure the effectiveness of the Indonesia Smart Program (PIP), it is essential to enhance the socialization and monitoring of this program. More intensive socialization can help raise awareness and understanding in the community about the benefits and procedures of PIP. This can be achieved through media campaigns, workshops at schools, and involvement of local communities. In addition, stricter monitoring should be conducted to ensure that PIP funds are indeed used for the children's educational needs, such as purchasing books, uniforms, and paying school fees.

To address the negative impact of social assistance programs such as Rastra, PKH, and KKS on school participation, there needs to be better integration between social assistance policies and education policies. The findings of this study show that students in urban areas are more likely to participate in school compared to students in rural areas. Therefore, it is necessary to develop specific support programs for rural students. These programs could include the provision of better educational facilities, such as libraries and internet access, as well as improving the quality of teachers in rural areas. Additionally, the government could provide free school transportation or subsidies for students who live far from schools. These support programs could help reduce the gap in school participation between urban and rural areas, ensuring that all children, regardless of their geographical location, have an equal opportunity to receive quality education.

6. References

Aldama, N. A., & Kristanti, F. T. (2022). Kinerja Keuangan, Komisaris Independen, Gender Diversity, Dan Financial Distress. *E-Jurnal Ekonomi Dan Bisnis Universitas Udayana*, *11*(02), 123.

Becker, H. S., & Press, F. (1964). *The other side: Perspectives on deviance* (Vol. 196). Free Press New York.

Begum, I. A., Alam, M. J., Akter, S., Haque, M. M., & Rahmatullah, N. M. (2021). Productive impacts of cash transfer and conditional cash transfer programs in Bangladesh. *Asian Development Perspectives (ADP)*, *12*(1), 46–60.

Edrial, E., Putrama, R., & Sujastiawan, A. (2022). Evaluasi Kebijakan Program Indonesia

Pintar (PIP) di SMA Negeri 1 Utan Tahun 2019-2020. *Jurnal Kapita Selekta Administrasi Publik*, *3*(1), 109–116.

Fiszbein, A., & Schady, N. R. (2009). *Conditional cash transfers: reducing present and future poverty*. World Bank Publications.

Hasyim, M. N. A., Puspitasari, F., & Veriyanto, A. (2022). Determinan Partisipasi Sekolah Pada Pekerja Anak Di Indonesia. *Jurnal Ilmiah Ekonomi Dan Pajak*, *2*(2), 18–25.

Kaarib, A., Kamarni, N., & Purwasutrisno, P. (2019). Determinan Partisipasi Angkatan Kerja Perempuan di Sumatera Barat. *Manajemen Dan Kewirausahaan*.

Millán, T. M., Barham, T., Macours, K., Maluccio, J. A., & Stampini, M. (2019). Long-term impacts of conditional cash transfers: Review of the evidence. *The World Bank Research Observer*, *34*(1), 119–159.

Mulyani, F., Ridwan, E., & Nazer, M. (2023). Efektivitas Program Indonesia Pintar terhadap Partisipasi Sekolah di Kawasan Barat dan Timur Indonesia. *Jurnal Informatika Ekonomi Bisnis*, 1328–1332.

Psacharopoulos, G., & Patrinos*, H. A. (2004). Returns to investment in education: a further update. *Education Economics*, *12*(2), 111–134.

Schultz, T. W. (1961). Investment in human capital. *The American Economic Review*, *51*(1), 1–17.

Sengkey, N., Sendouw, R. H., & Mantiri, J. (2018). Implementasi Kebijakan Bantuan Beras Sejahtera (Rastra) Di Desa Lalumpe Kecamatan Motoling Kabupaten Minahasa Selatan. *Jurnal Civic Education: Media Kajian Pancasila Dan Kewarganegaraan*, *2*(1), 65–71.

Sihombing, P. R., & Pratiko, W. (2022). Aplikasi Model Diffence in Difference Pada Regresi Binomial Logistik. *Jurnal Ekonomi Dan Statistik Indonesia*, *2*(3), 244–249.

Surbakti, S. P. P., Muchtar, M., & Sihombing, P. R. (2023). Analisis Pengaruh Tingkat Pendidikan terhadap Kemiskinan di Indonesia Periode 2015-2021. *Ecoplan*, *6*(1), 37–45.