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Effectiveness of Targeting and Implementation of Education Assistance Using Binary Logistic Regression: Evidence from Indonesia

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ABSTRACT

The dropout rate is higher at advanced educational levels. The Indonesian government seeks to ensure inclusive and equitable education by providing educational support to children, particularly those from low-income families in households and schools. The study analyzes the Smart Indonesia Program's (PIP) effectiveness in providing educational assistance to poor or vulnerable households. Due to budget constraints, it is crucial to target aid accurately; however, government-defined poverty criteria can lead to errors in both inclusion and exclusion in the distribution of social assistance. The data for this study were derived from the household surveys conducted in the National Socio-Economic Survey (Susenas) in Indonesia in March 2021. This research focused on sample households in Bogor Regency, West Java Province, and Nunukan Regency, North Kalimantan Province. The data were analyzed using Binary Logistic Regression to identify the factors influencing the receipt of the PIP. The regression analysis was performed using STATA 17.0. The findings indicate that identity ownership, status as a Family Hope Program (PKH) beneficiary, Family Welfare Card program (KKS) participation, and geographical region significantly impact the likelihood of receiving assistance. Households receiving the PKH had a 5.32 times higher probability of receiving the PIP assistance than those that did not. These findings align with the primary eligibility criteria of the PIP, which provides supplementary educational assistance to families enrolled in the PKH. Therefore, the results suggest that the targeting and distribution of the PIP assistance were significantly influenced by identity ownership status rather than the household characteristics traditionally used to define poverty and distributing aid.

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1. INTRODUCTION

The dropout rate represents school-aged children who are no longer attending school or have not graduated to a certain level of education (Diana, 2021). In Indonesia, the dropout rate has risen, especially at the primary and senior high school levels, as shown in **Table 1.** The data indicates that the higher the education level, the higher the percentage of out-of-school children. Children living in rural areas are more likely to experience school dropouts or inability to attend school due to poor economic status (Subanti in Diana, 2021). The household's socio-economic status significantly determines children's academic achievement (Vadivel et al., 2023). Data in Indonesia indicate that regional location also affects the dropout rate, as shown in **Table 2**. Data from the National Socio-Economic Survey in Indonesia in March 2021 confirm that the dropout rate increases at higher levels of education and is more prevalent in rural areas than urban areas. Both **Tables 1** and **2** demonstrate that the dropout rate increases at higher levels of education, highlighting the importance of education for developing character, competitiveness, and other human capabilities (Vadivel et al., 2023).

The government is responsible for providing public goods, ensuring the welfare of its citizens, and invest in human capital development (Kousar et al., 2023). This includes efforts to reduce poverty, provide access to education, offer healthcare services, and supply sanitary facilities and clean water. The government's commitment extends nationally and internationally, as reflected in the Sustainable Development Goals (SDGs) agenda. Quality education is the fourth goal of the SDGs, aiming to provide inclusive and equitable education. Inclusive education refers to an education system and services open to all students, embracing student diversity and ending social exclusion (Ainscow, 2020). Equitable education involves a system and quality of education that

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meets the needs of all students. This equalization not only focuses on teaching practices and school facilities but also considers other factors beyond educational institutions, such as regional demographics, history and culture, and the economic realities of the population (Ainscow, 2020). Thus, education aims to strive for inclusiveness and equity, supporting students in reaching their learning potential (OECD, 2012) and ensuring lifelong learning opportunities (Ferguson & Roofe, 2020).

The Indonesian government is dedicated to advancing education and enhancing human capital. This commitment is reflected in the fourth paragraph of the Preamble to the 1945 Constitution, which states, "...advancing the general welfare, and educating the nation's life." Several programs have been established to achieve this goal, including the Compulsory Education Program, School Operational Assistance (BOS), Poor Student Assistance (BSM), and the Smart Indonesia Program (PIP). The aim to improve human resource quality is also detailed in technical plans such as the National Medium-Term Development Plan (RPJMN) and the National Long-Term Development Plan (RPJPN).

Table 1. School Dropout Rates by Level of Education and Gender in Indonesia 2020-2022

Education Level	Year	Gender	Percentage
Elementary School	2020	Male	0.72
		Female	0.52
	2021	Male	0.75
		Female	0.55
	2022	Male	0.80
		Female	0.62
Junior High School	2020	Male	8.42
		Female	6.08
	2021	Male	7.56
		Female	5.96
	2022	Male	7.77
		Female	6.06
Senior High School	2020	Male	23.57
		Female	21.00
	2021	Male	23.14
		Female	19.76
	2022	Male	24.56
		Female	20.35

Source: Susenas March 2021, BPS, processed

Table 2. Dropout Rates by Education Level and Region in Indonesia in 2021

Education Level	Region	Percentage
Elementary School/Equivalent	Urban	0.07
	Rural	0.19
Junior High School/Equivalent	Urban	0.82
	Rural	1.00
Senior High School/Equivalent	Urban	1.04
	Rural	1.24

Source: Susenas March 2021, BPS, processed

Compulsory Education Program is a form of support to improve the quality of education and human capital. This program is implemented in various countries with different regulations as a state control system for children's education (Hasanah & Jabar, 2017). In Indonesia, the Compulsory Education Program is supported by educational assistance provided by the government to educational institutions and households. At the institutional level, support for the Compulsory Education Program comes from the School Operational Assistance (BOS) fund. This fund is intended to procure school facilities and infrastructure, reduce the cost of education for parents, and provide free education for poor students (Sulistyaningrum, 2016). At the household level, support

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comes from the PIP. This program enhances the Poor Student Assistance (BSM) program (Zamjani, 2019b). The PIP aims to support individual education expenses for children in households. Additionally, it serves as a complementary aid for beneficiaries of the PKH (Tim et al., 2015).

The PIP is an educational assistance initiative by the government that includes cash transfers, expanding access, and opportunities for students in poor or vulnerable households (Susilo & Wahyudi, 2020; Zamjani, 2019b). The cash transfer provided through the PIP is intended to meet personal needs not covered by the School Operational Assistance (BOS) fund, such as school supplies, fees, uniforms, or transportation from home to school. The PIP aims to help children in poor and vulnerable households by alleviating concerns about the cost and access to education and mitigating school dropouts (Hafrienda et al., 2023). According to Minister of Education and Culture Regulation No. 10/2020, PIP assistance is provided to children in households aged six to twenty-one years for education services at primary and secondary education levels.

The PIP recipients are students from poor or vulnerable households who meet specific criteria. The government designs these criteria to ensure the appropriate allocation of aid. Eligible students include those already receiving PIP funds and those from poor or vulnerable households with various special considerations. These considerations include possessing a KKS as a beneficiary of the PKH, having another type of KKS, being an orphan (living without both parents, without a father or a mother), being affected by natural disasters, and other similar conditions. The allocation of PIP funds is tailored to different education levels, ensuring that each level receives appropriate support according to its specific needs.

The PIP has been implemented since 2014. A study in Bandung revealed that the PIP was utilized for educational purchases and positively impacted students' learning motivation (Amroni et al., 2023). Another study found that the PIP significantly increased children's school participation (Mulyani et al., 2023). Recipients of the PIP have a greater opportunity to continue their education to the high school level compared to those who did not receive the program (Susilo & Wahyudi, 2020).

Social protection becomes crucial when many people experience chronic deprivation or vulnerability (Mishra & Kar, 2015). A good social protection program should be able to reduce household poverty traps (Grosh et al., 2008). The poverty trap is most prominent in extreme poverty, so it is essential to understand how to provide a better start and create a minimum level of investment to escape poverty (Ghatak, 2023)—understanding entitlement to aid leads to elaborating the problem and generating different policies (Pruce, 2023). The context of aid is crucial in determining the targeting model (Pruce, 2023; Salifu & Kufoalor, 2024).

Targeting beneficiaries is generally done due to the rationality of limited resources and is set for social security (Zulkhibri, 2016). When resources are limited, precise targeting is crucial to minimize inaccuracy (Devereux et al., 2017; Mishra & Kar, 2015). Recipients are limited based on quotas and eligibility criteria. Targeting serves as a mechanism to categorize those eligible and ineligible for resource transfer (Sabates-Wheeler et al., 2015). Data shows that targeting is accomplished by establishing criteria to identify, verify, and enroll individuals eligible for limited resources. Targeting uses several approaches: poverty level, individual assessment, group characteristics, and non-targeted parties (Slater, 2009; Zulkhibri, 2016).

The poverty level approach is conducted by measuring the welfare level of a particular community or group through proxy means tests, proxy indicators, and community-based assessment. The individual assessment approach uses indicators such as age, gender, and other personal characteristics. The group characteristics approach targets beneficiaries based on specific categorizations or identification of groups, such as geographic location, age range, and other criteria (Coady et al., 2002). The non-targeted approach is implemented universally or through market mechanisms. The various targeting approaches and inclusion and exclusion errors can occur when receiving conditional assistance (Devereux et al., 2017). This means that some individuals who should receive assistance may be excluded, while others who are not eligible may be included.

Inclusion error is the proportion of beneficiaries who are ineligible (Devereux et al., 2017; Sabates-Wheeler et al., 2015). It indicates a "leakage" of beneficiaries, whereby groups not eligible for assistance receive it. Inclusion error results in the depletion of the resources allocated for the assistance program, which could otherwise benefit eligible individuals. One study on various targeting approaches found that manipulation and imperfect information affect group-based targeting, leading selection committees to favor households within their group (Premand & Schnitzer, 2021). Seleka & Lekobane (2020) examined fifteen social transfer programs in Botswana also found there was inclusion error in targeting the poor. Consequently, the cost of inclusion error relates to financial costs.

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Exclusion error is the proportion of individuals who are not reached by the program (Devereux et al., 2017; Sabates-Wheeler et al., 2015). This error occurs when the program fails to include all individuals who should be eligible for assistance. Studies on several transfers in Indonesia found that targeting and implementation errors, especially those focused on urban-rural differences and identity ownership, hindered reaching eligible beneficiaries (Kusumawati, 2019). Another study on social transfer programs for families in Brazil concluded that monetary income is not the best measure of poverty and that new eligibility criteria are needed to reach beneficiaries (Corrêa et al. et al., 2022). Thus, the disadvantages of exclusion error relate to moral costs.

Previous studies on the PIP have often focused on the effectiveness of aid utilization or its impact rather than discussing how the targeting criteria were established to mitigate problems and ensure accurate aid targeting. This research aims to analyze the effectiveness of targeting the PIP assistance to children in Indonesia's households with elementary to high school/vocational high school education levels. The study examines the targeting and implementing the PIP assistance to households in Bogor Regency and Nunukan Regency. The empirical study addresses several key questions:

1. Are receiving the PKH and holding a KKS the only major factors affecting the receipt of the PIP?
2. Is the receipt of the PIP also influenced by the location of the household, household welfare criteria, and household size?

2. MATERIAL AND METHOD

Research Design

This study evaluated the effectiveness of the eligibility requirements for the PIP beneficiaries. The research utilized cross-sectional data collected at a specific time to provide an overview of the program's implementation and impact. The study aimed to assess the policy of the PIP, which offers complementary assistance for the education of children in poor or vulnerable households.

Population and Sample

The population comprised households surveyed in Indonesia's National Socio-Economic Survey (Susenas) in March 2021. The sample included households from Bogor Regency, West Java Province, and Nunukan Regency, North Kalimantan Province, surveyed during the same period—the Susenas survey employed random sampling techniques by the Indonesian Central Bureau of Statistics. The research adopted a multistage sampling technique due to the large population size, ensuring that the sample represented the population effectively. The selection method was based on regions that allocated PIP beneficiaries in 2021. Bogor Regency, representing the region with the largest number of beneficiaries, and Nunukan Regency, representing the region with the smallest number, were chosen to reflect households across Indonesia.

Data Collection

The data collection for this study used documentation techniques. Data was gathered through surveys and administrative records. The steps involved defining the research objectives, selecting variables representing household characteristics for the eligibility requirements of the PIP, and collecting household data from regencies with the most and least recipients of the program. The secondary data was obtained from the National Socio-Economic Survey (Susenas) conducted by the Indonesian Central Bureau of Statistics. The main requirements for PIP recipients include households that benefit from the PKH, those with a KKS, individuals with disabilities, orphans, disaster victims, and others. The Susenas questionnaire from March 2021 included questions representing these targeting requirements, such as whether households received the PKH, KKS, or disability assistance. Additional variables included regency to indicate the geographical area, household location to describe the demographic area, house ownership status to reflect household welfare (instead of income), and household size to represent the number of dependents. Supporting secondary data was sourced from books, research journals, and documents.

Data Analysis

This study employs a quantitative approach using Binary Logistic Regression analysis. The data were analyzed using STATA 17.0. Binary Logistic Regression is a statistical technique used to estimate the relationship between the dependent variable, i.e., receipt of PIP assistance, and independent variables, including receipt of PKH, receipt of KKS, receipt of disability assistance, regency, household location, house ownership status, and

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number of household members. This method was selected to determine the factors influencing the receipt of PIP education assistance.

Binary Logistic Regression can be applied to various types of data. Qualitative data on the dependent variable can be used as logit or probit regression (Gujarati,2003). According to Gujarati (2003), the dependent variables in a logit model are the log of the odds ratio, which is a linear function of the regressors. The logit model used in this research is:

$$Y_{ij}^{LM} = \beta_0 + \beta_1 X_{ij} + \varepsilon_{ij} \qquad \textbf{(1)}$$

Equation **(1)** indicates that Y_{ij}^{LM} is the dependent variable, where the cost of the heSmartIndonesia Program assistance. The variables X_{ij} are the independent variables affecting the dependent variable, such as the receipt of PKH, the KKS, the receipt of disability assistance, regency, household location, house ownership status, and the number of hhousehold members The variables ε_{ij} are error terms representing other potential influencing factors not included in the model. Thus, the Logistic Regression Model or Logit Model in this study is:

$$Y_{PIP}^{LM} = \beta_0 + \beta_1 PKH + \beta_2 KKS + \beta_3\, dis\_assist + \beta_4 regency + \beta_5\, location + \beta_5 ownstat + \beta_6 hhmembers + \varepsilon \qquad \textbf{(2)}$$

Table 3. Definition of Operational Variables

Variable	Notation	Definition	Description
Smart Indonesia Program	PIP	The presence of children in the household who have received PIP assistance for education.	0 = no 1 = yes
Family Hope Program	PKH	Households that have received assistance from the PKH.	0 = no 1 = yes
Family Welfare Card	KKS	Households that have received the KKS.	0 = no 1 = yes
Disability Assistance	dis_assist	Households that have received disability assistance.	0 = no 1 = yes
Regency	regency	Region based on regency.	0 = Nunukan 1 = Bogor
Location	location	The household's location during the survey.	0 = urban 1 = rural
House Ownership Status	ownstat	Ownership status of the house.	0 = Freehold Title (SHM) 1 = Others
Number of Household Members	hhmembers	Number of household members living in the residence for at least 6 months or intending to stay for 6 months or more.	0 = ≤ 6 1 = ≥ 7

Source: Indonesia Central Bureau of Statistics, processed and adjusted for this study.

Based on Table 3, the dependent variable in this study is the receipt of the PIP, which provides education assistance to cover educational expenses for children in poor and vulnerable households. Independent variables include the receipt of PKH, KKS, disability assistance, household regency, household location, house ownership status, and number of household members. These variables represent the eligibility criteria for the PIP.

The regency variable assesses geographical areas' impact on receiving education assistance. Household location measures the differences between urban and rural areas regarding receiving education assistance, which is not a primary program requirement. House ownership status provides an overview of household welfare, not solely based on income but also on household assets (Bourguignon & Chakravarty, 2019; Corrêa et al., 2022)—the number of household members variable measures whether the number of dependents influences the targeting of education assistance.

3. FINDINGS

Regression Model Fit Test

The Goodness of Fit Test for the regression model was performed using the Hosmer and Lemeshow Test, measured by the Chi-square value (**Table 4**). This test evaluates the suitability of the observational data with the model formed

Table 4. The Goodness of Fit Test Using the Hosmer and Lemeshow Test

Chi-square	df	Sig
8.01	7	0.3315

Source: Stata 17.0 output, processed

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The significance value of 0.3315 is greater than the 0.05 threshold, indicating that the model fits and is consistent with the observational data. Thus, with a 95 percent confidence level, the logistic regression model used is appropriate for explaining the effectiveness of the Smart Indonesia Program targeting in Indonesia.

Simultaneous Parametric Test

The simultaneous test measures the collective effect of all independent variables on the dependent variable.

Table 5. Simultaneous Parametric Test

LR chi2(6)	Prob > Chi2	Pseudo R2
102.72	0.0000	0.1388

Source: Stata 17.0 output, processed

They are based on **Table 5**. The simultaneous parameter test was conducted by examining the LR (Likelihood Ratio) value. The statistical LR value was compared with the significance level (α = 0.05). The probability value of the LR statistic is 0.000, which is less than 0.05. This indicates a rejection of H_0, meaning that the independent variables collectively affect the dependent variable. The pseudo-R-squared value of 0.1388 suggests that the independent variables collectively explain 13.88 percent of the variance in the dependent variable.

Partial Parametric Test

The Partial Parametric Test measures the relationship and influence of each independent variable on the dependent variable (**Table 6**).

Table 6 Partial Parametric Test

Independent Variables	Coefficient	S.E.
(1)	(2)	(3)
PKH	1.673088***	0.2736243
KKS	0.9850945***	0.2999403
dis_assist	0	omitted
regency	-0.8579769***	0.2380982
location	0.1026659	0.2441813
ownstat	0.1159465	0.3319456
hhmembers	-0.6380217	0.7417983
Constant	-2.957957***	0.2279908

. Source: Stata 17.0 output, processed

*p-value<0,1, **p-value<0,05, ***p-value<0,01

The coefficient values in **Table 6** show the effect of the variables PKH, KKS, regency, location, downstate, and members on the PIP variable. A negative coefficient indicates a negative relationship between the independent and dependent variables, while a positive coefficient indicates a positive relationship. The PKH, KKS, location, and ownstat positively correlate with the PIP dependent variable. Conversely, the regency and members negatively relate to the PIP dependent variable. The variable dis_assist was omitted due to no variation in data addressing the beneficiaries with disability assistance in Bogor Regency and Nunukan Regency. Thus, the regression equation formed is:

$$arensCparensap Y_{PIP}^{LM} = -2{,}958 + 1{,}673(PKH) + 0{,}985(KKS) - 0{,}856(regency) + 0{,}103(location) + 0{,}116(ownstat) - 0{,}638(hhmembers) + \varepsilon \quad \textbf{(3)}$$

The partial parametric test results also indicate the significance of each variable's influence. The PKH variable is positively and significantly correlated with the PIP dependent variable, with a probability value of 0.000 < 0.05. The KKS variable is also positively and significantly correlated with the PIP dependent variable, with a probability value of 0.001 < 0.05. The regency variable is negatively and significantly correlated with the PIP dependent variable, with a probability value of 0.000 < 0.05. The location variable is positively but insignificantly correlated with the PIP dependent variable, with a probability value of 0.674 > 0.05. The ownstat variable is positively but insignificantly correlated with the PIP dependent variable, with a probability value of 0.727 > 0.05.

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The hhmembers variable is negatively but insignificantly correlated with the PIP dependent variable, with a probability value of 0.390 > 0.05.

Odds Ratio Test

The Odds Ratio test measures the effect of each independent variable on the dependent variable, interpreting the likelihood ratio value to indicate how changes in the independent variable impact the dependent variable (**Table 7**).

Table 7. Odds Ratio Test

Independent Variables	Odds Ratio	S.E.
(1)	(2)	(3)
PKH	5. 328597***	1.458034
KKS	2. 678065***	0.8032597
dis_assist	1	(omitted)
regency	0.424019***	0.1009582
location	1.108121	0.2705825
ownstat	1.122936	0.3727536
hhmembers	0.528336	0.3919192
Constant	0.519249	0.0118384

Source: Stata 17.0 output, processed

*p-value<0,1, **p-value<0,05, ***p-value<0,01

Based on **Table 7,** the odds ratio values are interpreted assuming all other model variables remain constant. Households that received the PKH had a 5.32 times greater probability of receiving PIP assistance compared to households that did not receive the PKH. Households with a KKS had a 2.68 times greater probability of receiving PIP assistance than those without a KKS. The propensity ratio for disability assistance recipients was omitted due to no variation in the data for disability assistance in the sample households from the National Socio-Economic Survey in March 2021 in Bogor Regency, West Java Province, and Nunukan Regency, North Kalimantan Province.

Household characteristics were also included as independent variables and had varying effects on the dependent variable. Households in Bogor Regency, West Java Province, had a 0.42 times greater probability of receiving PIP assistance than those in Nunukan Regency, North Kalimantan Province. Households in rural areas had a 1.11 times greater probability of receiving PIP assistance than urban households. Households with SHM not in the name of a household member, other certificates, or no certificates had a 1.12 times greater probability of receiving PIP assistance than households with SHM in the name of a household member. The number of household members had a 0.53 times greater probability of receiving PIP assistance based on household size, indicating that larger households are more likely to receive the assistance.

4. DISCUSSION

The choice of targeting approach determines the effectiveness of the program and its impact on achieving the program objectives (Premand & Schnitzer, 2021). Determining the most relevant approaches and indicators to the program objectives is based on the community's definition of poverty. This study utilized several variables relevant to the poverty approach, such as the status of the PKH and KKS beneficiaries, and a geographical approach, including regency and household location. Additionally, other factors, such as household welfare, measured by house ownership status and the number of household members, were used to assess the distribution tendency of PIP beneficiaries. Van Oorschot (in Pruce, 2023) identifies five criteria of deservingness: control over neediness, where the less control one has over their neediness, the more deserving they are; need, where the greater the level of need, the more deserving the individual; identity, where the closer the individual is to the identity of 'us,' the more deserving they are perceived to be; attitude, where the more compliant and grateful the individual, the more deserving they are; and reciprocity, where the more the individual reciprocates (earns support), the more deserving they are.

Influence of PKH and KKS

The poverty approach is considered progressive because it targets a larger portion of poor beneficiaries than the universal approach (Slater, 2009). It categorizes eligible groups for education assistance, specifically

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targeting children from poor and vulnerable households. One of the poverty approaches used in determining eligibility for the PIP is based on the status in the PKH, and the ownership of a KKS provided to poor or vulnerable households. Beneficiaries of these programs have continuous access to complementary programs (Tim et al., 2015).

The results indicate that the PKH significantly impacts the receipt of education assistance. This study reveals that being identified as a PKH beneficiary affects the receipt of PIP assistance in households located in Bogor Regency, West Java Province, and Nunukan Regency, North Kalimantan Province. This correlation aligns with the requirement for education assistance recipients to be beneficiaries of the PKH. Furthermore, ownership of other identities, such as being recipients of the KKS, also strongly influences the receipt of PIP assistance in both regions. Consistent with these findings, beneficiary identity ownership significantly influences social aid acceptance (Kusumawati, 2019).

Influence of Disability Assistance on the Receipt of the Smart Indonesia Program (PIP)

People with disabilities are particularly vulnerable to poverty (Zamjani, 2019a). Devereux et al. (2017) emphasize inclusive eligibility criteria in categorical targeting to ensure that the most vulnerable groups, such as people with disabilities, receive the necessary support. Conditional cash transfer programs generally employ two approaches: targeting, which directly assists people with disabilities, and mainstreaming, which enables social assistance to accommodate children with disabilities (Mitra in Zamjani, 2019a).

In this study, the receipt of disability assistance was omitted due to the limited variety of disability assistance recipients in the sample household data. Despite the omission of disability assistance data in this study, it is critical to recognize its potential impact on receiving educational support. The eligibility requirements for the PIP indicate that individuals with disabilities are eligible for educational assistance. By including disability assistance as an eligibility criterion, the PIP aims to mitigate these challenges and promote equitable educational opportunities. Therefore, households with members who have disabilities or have received disability assistance potentially influence the receipt of the PIP. The findings of a study conducted by Zamjani (2019a) revealed that the PIP was only able to reach a small proportion of children with disabilities in the formal education system, and there was a lack of synchronization between the central and regional directorates. Thus, it is align with the results of this study that the necessity of synchronizing the data collection of children with disabilities who are in formal education, and even non-formal education to be the target of education assistance, to support the quality of their therapy or education.

Influence of Regional and Location on the Receipt of the Smart Indonesia Program (PIP)

The geographical approach is straightforward and can serve as an initial level of targeting (Devereux et al., 2017). Geographic targeting more often identifies households based on the residence and leads to better results when high vulnerability and poverty groups are concentrated in urban and rural areas (Fortin et al., 2016).This study used a geographical approach to analyze PIP beneficiaries' targeting tendency and distribution although the actual design of the PIP beneficiaries does not include geographic aspects as targeting.

The results showed that household location by regency significantly affects the receipt of education assistance, while household location by demographic area does not. Households in Bogor Regency, West Java Province, tend to receive PIP assistance more than those in Nunukan Regency, North Kalimantan. The regency variable negatively influenced the receipt of assistance, possibly due to different survey data amounts in the two regions. Bogor Regency has one of the largest beneficiaries in 2021, while Nunukan Regency has one of the smallest beneficiaries in 2021. Additionally, the study examined rural and urban locations. The data showed that households in rural areas receive more assistance than those in urban areas. However, the significance value of the geographical approach using location did not significantly affect the receipt of PIP assistance. Thus, it is clear from the results that the PIP beneficiaries criteria do not specify any geographical or demographic requirements. The differences in the proportion of the PIP allocation can occur not because of geographical factors but influenced by the proportion of children in poor or vulnerable households who are eligible

Influence of Household Welfare and Household Size on the Receipt of Smart Indonesia Program (PIP)

Poverty encompasses inadequacies in both monetary and non-monetary resources (Bourguignon & Chakravarty, 2019; Corrêa et al., 2022). Income alone cannot indicate well-being, with other indicators including housing, education, nutritional status, and individual characteristics (Bourguignon & Chakravarty, 2019). Many

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countries with limited budgets for assistance require targeting methods beyond geographical criteria (Premand & Schnitzer, 2021). Therefore, other factors reviewed in this study, besides poverty and geographical approaches, include household welfare indicators such as house ownership status and the number of household members. Household welfare is measured because socio-economic background is essential to children's education (Vadivel et al., 2023). The number of household members indicates the proportion of the household's responsibilities.

The findings indicated a positive correlation between house ownership status and PIP assistance receipt in Bogor Regency and Nunukan Regency. Households with house ownership under a household member's name, with a written agreement or other certificates, and even without certificates, tend to receive more assistance. The absence of housing assets indicates eligibility for the program. However, the significance of the value reveals that the status of house ownership did not significantly affect the receipt of the program in these regions.

Regarding household size, the findings indicated a negative correlation. However, the number of household members based on the significance value did not significantly affect the PIP assistance receipt in Bogor Regency and Nunukan Regency. The probability value showed that households with more than seven members become beneficiaries more often than those with fewer members. Larger household sizes indicate greater expenses and needs, including children's access to education (Perdana, 2015).

5. CONCLUSION

This study analyzed the determinants influencing the targeting of Indonesia Pintar Program assistance using Binary Logistic Regression to measure the factors affecting program receipt. Previous studies highlighted that rural-urban differences and identity ownership influence errors in targeting social assistance programs. Similar studies in other countries found inclusion errors in targeting low-income individuals, emphasizing the necessity of this research. This research focused on the effectiveness of targeting the Indonesia Pintar Program for children in households with elementary to high school/vocational high school education levels, specifically in Bogor Regency and Nunukan Regency. The results indicated that receiving PKH assistance and possessing a KKS had a more significant influence on receiving Indonesia Pintar Program assistance than other variables. This suggests that the program's targeting requirements heavily depend on identity ownership, making those closest to the requirements more eligible for aid. The findings also revealed geographical disparities: households in Bogor Regency, West Java Province, were more likely to receive assistance than those in Nunukan Regency, North Kalimantan Province. Factors such as the number of school-aged children, population size, and survey sample data might contribute to this disparity. Other household characteristics did not significantly affect program receipt, particularly in both regencies. Direct cash transfers or subsidies are effective but require careful planning, precise targeting, and appropriate distribution. Based on the results, several recommendations are proposed to improve targeting. First, the Indonesian government should consider additional indicators for measuring household welfare. Synchronizing data on poor or vulnerable households eligible for the PKH, the KKS, and other assistance impacting education aid under the Indonesia Pintar Program is crucial. Targeting inaccuracies can arise due to the government's narrow definition of poverty. Second, the government should reduce higher-level education assistance to minimize aggregate demand distortions. Instead, policies should focus on providing loans that individuals or households can repay, reducing dependency on continuous aid and encouraging self-sufficiency. Third, periodic evaluations of assistance recipients are necessary, involving stakeholders such as educational institutions, neighborhood association heads, and community leaders. This ensures that those whose welfare has improved no longer receive assistance, allowing others in need to benefit from the Indonesia Pintar Program quota provided by the government.

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