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Indonesia social progress: the role of access to basic education in escaping from poverty trap

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Abstract: As Indonesia enters the post-pandemic world, it faces high uncertainty, especially in terms of access to basic education. According to the Central Bureau of Statistics (BPS), the education sector grew by 0.42%, the second-lowest of all sectors. However, its contribution to economic growth was the highest at 3.02%, surpassing six other sectors with higher growth. Despite this potential, access to education remains low. This research aimed to examine the role of access to basic education in alleviating poverty in Indonesia with the social progress perspective. The analytical framework for this research was based on the approach of Amartya Sen, who view poverty as capability deprivation. This research used educational data from BPS in 2022 from 34 provinces in Indonesia. The data were used to construct a social progress index, which measures access to basic education. The index was developed using nine indicators, namely primary school enrolment, secondary school attainment, population with no schooling, gender parity in secondary attainment, teacher-student ratio, teacher qualification, school proportion, classroom condition, and availability of water and sanitation. The index of access to basic education was then regressed along with other variables that are relevant to capability deprivation, as proposed by Hick. These variables include the Happiness Index, Democracy Index, Level of Health Inequality, and Crime Rate. The results indicated that all these variables had a significant impact on the poverty level. Among all the variables, access to basic education demonstrated the greatest influence compared to the other four variables. This suggests that access to basic education plays a critical role in poverty reduction. The research findings highlight the potential of using the Social Progress Index as a comprehensive metric for development, which offers a more inclusive understanding of progress. This index encompasses a broad framework comprising 60 indicators, and does not rely solely on GDP measurements.
Keywords: Social Progress; Poverty Trap; Access to Basic Education
JEL Classification: I3, I25

Introduction

In 2022, Indonesia still grappled with a staggering 5.59 million people living in extreme poverty. Notably, this figure remained relatively unchanged compared to the preceding year when the count was approximately 5.8 million. Such a sluggish rate of improvement is concerning, particularly in light of Indonesia's ambitious goal to achieve "zero extreme poverty" by 2030 as part of the Sustainable Development Goals.

Despite remarkable advancements in knowledge and technology, the plight of individuals trapped in poverty persists, leaving us to question the underlying two reasons. First, one crucial aspect contributing to this issue is the inaccurate conceptualization of poverty itself. Presently, prevalent poverty measurements, both globally and in Indonesia, rely on The World Bank concept (2009) which posits that well-being hinges on access to resources. Poverty, by this definition, is measured by comparing household incomes or consumption to a poverty line representing the minimum level needed to fulfill basic needs.

The commonly employed methodologies, such as the cost of basic needs approach and the food energy intake method, estimate the cost of securing sufficient food for adequate nutrition, including essentials like clothing and shelter. However, these methods, namely the cost of basic needs method (CBN) and the food energy intake (FEI) method, face limitations in accurately and consistently measuring poverty. A study by Ravallion and Bidani (1994) in Indonesia uncovered significant disparities in poverty measurements, with CBN indicating higher poverty rates in rural areas by 23.6% compared to urban areas and FEI method indicating the opposite, with higher rates in urban areas by 16.8% and lower rates in rural areas at 14.3%. This discrepancy calls the reliability of these measurements into question. However, despite the study conducted by Ravallion and Bidani over a decade ago, the fundamental concepts underpinning these measurements remain in use, particularly by the Indonesia's Central Bureau of Statistics.

Nevertheless, relying solely on a single poverty measurement may not adequately capture the multifaceted deprivations experienced by impoverished individuals. Even those categorized as non-poor based on income or consumption criteria can face significant deprivation when assessed through a multidimensional poverty lens. A study by Artha and Dartanto (2018) in Indonesia unveiled that individuals deemed non-poor based on income or consumption still grappled with non-monetary deprivations, including health-related issues, illiteracy, inadequate housing, limited access to clean drinking water, sanitation problems, insufficient cooking fuel, and lack of asset ownership. Astonishingly, almost 20% of non-poor individuals encountered health-related deprivations, while 8% suffered from education-related deprivations. Over 20% lacked access to clean drinking water, and nearly 40% endured inadequate sanitation, insufficient cooking fuel, and lack of essential assets. These findings expose the shortcomings of conventional poverty statistics in comprehensively assessing human deprivation, particularly in terms of non-monetary indicators.

At this juncture, it becomes evident that the measurement of poverty is often myopic in its approach, overlooking its inherent multidimensional nature. Hick (2012) aptly found that poverty transcends mere income or consumption levels, asserting that it should be perceived as a multidimensional concept. Therefore, poverty analysis should shift its focus to individuals' capabilities and opportunities, emphasizing what they can achieve rather than what they possess (Sen, 1999, as cited in Hick, 2014). Poverty, under this perspective, is seen as a lack of capabilities or the inability to attain valuable functioning.

Second, another significant factor perpetuating poverty traps in developing countries is structural in nature. A study conducted by Balboni et al. (2021) discovered that 23,000 households in Bangladesh faced difficulties escaping poverty due to limited opportunities for asset management. This research highlights that poverty traps are not exclusively a result of resource scarcity; they often stem from structural impediments.

Historical evidence further substantiates this point by demonstrating that current developed countries did not necessarily possess natural resource advantages; instead, their success was underpinned by inclusive institutions that fostered equal opportunities for all (Robinson, 2014). Consequently, it becomes clear that resource constraints are not the sole reason behind persistent poverty. Factors like the quality of human resources, particularly quality of education, play pivotal roles in this context (Muttaqin, 2018).

The quality of human resources, as influenced by the quality of education, can be assessed through various indicators. One widely utilized indicator is the Human Development Index (HDI), employed in numerous countries. However, HDI still presents limitations, notably in the realm of education, where access to basic education is often overlooked despite its crucial role.

Access to basic education is indispensable for enhancing the lives of individuals, both children and adults, across the globe. It serves as the foundation for success in various life domains, from school and work to overall well-being. While higher education can undoubtedly benefit those pursuing specific careers or specialized knowledge, basic education holds unparalleled importance in laying the groundwork for overall well-being. It equips individuals with the fundamental knowledge, skills, and abilities necessary for making informed decisions, solving problems, and interacting effectively with others (Arkorful et al., 2020).

The significance of access to basic education in breaking the cycle of poverty is underscored by the findings of Miletzki (2017), who emphasized education as a fundamental human right crucial for fostering economic growth and development. Furthermore, Bird and Shepherd's (2003) research in rural areas of Zimbabwe identified a robust correlation between poverty traps and limited access to basic education. Regions with the highest poverty rates consistently exhibited the lowest levels of educational access.

In Indonesia, a study conducted by Iffani (2017) echoed these challenges. The hurdles faced by children from impoverished families in accessing basic education resulted in their isolation, subsequently hindering their prospects for improved economic opportunities. This predicament forced them to grow up and marry within the same socio-economic strata, thereby perpetuating stagnant socio-economic conditions. In essence, the absence of educational access not only restricted their ability to secure better employment but also entrapped them in an unyielding cycle of poverty.

Despite the compelling evidence pointing to the critical role of access to basic education in escaping from poverty, it remains a relatively neglected concern in developing countries

like Indonesia. Startling statistics from BPS for 2022 indicated that the education sector's growth ranked second-lowest at 0.42%, yet its contribution to economic growth was the highest at 3.02%, surpassing six other sectors with higher growth rates. Nevertheless, this potential remains largely untapped as access to basic education still lags, exacerbating poverty conditions in Indonesia.

However, there is hope on the horizon. Utilizing the Social Progress Index (SPI) as a potential instrument, one can illuminate a path towards change. SPI measures how effectively a country fulfills its citizens' basic needs, establishes the foundations for well-being, and creates opportunities for all. By focusing on key indicators such as access to clean water, sanitation, housing, nutrition, child mortality, and, most crucially, access to basic education, one can pinpoint areas of improvement.

Nevertheless, there have been limited studies, and there has not been any research yet to implement the Social Progress Index measurement in Indonesia. This is unfortunate, as SPI has the potential to provide a more comprehensive understanding of social progress in Indonesia. SPI comprises 12 dimensions and 60 indicators, enabling a more thorough exploration of how individuals can reach their highest potential. Certainly, this measurement is significantly more comprehensive when compared to the Human Development Index, which includes only three dimensions and four indicators, and remains the primary social measurement indicator in Indonesia.

To fill this knowledge gap, this research novelty serves as an initial experiment with the aim of examining social conditions in Indonesia through the lens of access to basic education from a different measurement perspective. Due to the limited number of studies conducted, this research represents the authors' first step in experimenting with SPI, with a specific focus on access to basic education. Access to basic education has been chosen as the starting point because education is found as a crucial factor in producing, reproducing, or mitigating inequality among social groups defined by class, ethnicity, gender, and other social categories, making it possible to have significant impact on poverty reduction (Stauber & Parreira do Amaral, 2015). Through this research, we aspire to provide a more comprehensive analysis, especially for the government in addressing the poverty trap. Our objective extends beyond a concentration on economic indicators or development outcomes. The research aims to consider social indicators, especially access to basic education as indispensable inputs for development, with the specific goal of enabling Indonesia to make meaningful strides towards achieving its Sustainable Development Goal of 'zero extreme poverty' by 2030.

Research Method

Data

This research was based on quantitative data collected from the educational statistics of Indonesia for the year 2022, as provided by the Central Bureau of Statistics. These data spanned all the 34 provinces in Indonesia and covered a variety of data such as primary

school enrolment, secondary school attainment, population with no schooling, gender parity in secondary attainment, teacher-student ratios, teacher qualifications, school proportions, classroom conditions, as well as the availability of water and sanitation. The reasons for using these specific data will be explained in the measurement variable.

The data from the year 2022 were selected for two main factors. First, there had been a noticeable decline in the Social Progress Index (SPI) related to access to basic education over the past three years in Indonesia, starting in 2020. According to the Social Imperative Report (Social Progress Imperative, 2022) in 2020, SPI score stood at 73.44, then dropped slightly to 73.23 in 2021, and significantly declined to 72.69 in 2022. Therefore, this research sought to uncover the reasons behind this substantial decline in 2022.

Second, when considering the fact that even a small growth in the education sector in 2022 could make up to six time larger contributions to Indonesia's income distribution than its growth (Badan Pusat Statistik, 2023). Therefore, by constructing a Social Progress Index focusing on access to basic education, this research shed light on how enhancing access to basic education can be a potential solution for the government to address poverty trap. This solution has the capacity to reduce both those individuals classified as experiencing material (measurable) poverty and those facing non-material (non-measurable) poverty. This insight was based on data reflection from 2022, as reported by BPS, indicating that the decrease in poverty remained relatively unchanged compared to the previous year (2021).

Measurement Variable

This research employed the capability approach, developed by Amartya Sen (Cohen & Sen, 1995) as the overarching conceptual framework. It acknowledges the multifaceted nature of human lives and recognizes two pivotal concepts within this framework: material poverty and multiple deprivation.

The concept of multiple deprivation suggests that it is possible to identify shared goals that people value, even amidst their individual variations (see also Drydyk. J, 2012; Brandolini & D'Alessio, 1998). For instance, there is a consensus that quality of life depends on access to healthcare, access to basic education, political participation, social and natural environment, as well as personal and economic security (Hick, 2014). Recognizing these primary goals provides a solid foundation for understanding and addressing multiple deprivation, without diminishing the importance of individuals' ultimate ends.

To effectively assess well-being through multiple deprivation, five principal variables were incorporated in this research.

First, Access to Basic Education. This variable was measured using the dimensions and indicators found in the Social Progress Index that was related to access to basic knowledge (Figure 1), as the primary focus of this research. This variable delved into individual capacity to achieve a quality education. The reason for selecting the "access to basic

education" indicator within the Social Progress Index, rather than other indicators, which later became the primary variable in this study, is because each of its indicator in SPI is in line with the research findings of Stiglitz et al., (2009). These findings emphasize that the path to a higher quality of life through education can be delineated through four key indicators. First, there is the reform of the minimum school-leaving age, which addresses the population with no schooling indicator. Second, as explained by Arendt (2005), there is the aspect of enrollment in primary and secondary schools, encompassing primary school enrollment and secondary school attainment indicator. Third, there is information about disparities in the distribution of educational opportunities. For instance, the fact that girls are offered fewer educational opportunities than boys or are entirely excluded from education can have detrimental effects on society as a whole, leading to gender parity concerns, thus encompassing gender parity indicator.

Fourth, there is access to quality education, which is discernible through factors such as the number of suitable schools available, classroom conditions, the qualifications of teachers, teacher-student ratios, as well as the availability of water and sanitation. In fact, the availability of clean water and proper sanitation facilities is a particularly critical variable (as discussed by Fomba et al., 2023). When schools have access to these amenities, children can thrive in a healthy learning environment, and girls are more likely to attend school even during menstruation, as highlighted by UNICEF (Nadar, 2022) This consideration is of utmost importance, especially when we recognize that approximately 18.58% of schools in Indonesia lacked access to clean water and sanitation, according to BPS in 2022.

The other variables relevant to multiple deprivation are the social and natural environment, which can be measured by the happiness index. This variable encompasses both the social and natural dimensions of people lives, including the quality of the environment in which they reside. It is directly related to individuals' capability to enjoy a safe, pleasant, and supportive living environment (Stiglitz et al., 2009: 188). Additionally, participation in the political process can be measured by the democracy index. The extent to which individuals can actively participate in the political process and have a voice in decision-making is gauged by this variable. It reflects their capability to engage in shaping the societal structures and policies that impact their lives (Stiglitz et al., 2009: 177). The other variable, i.e., the level of health inequality, can be measured by unmet health-care needs. This variable serves as an assessment of disparities in access to healthcare services, shedding light on the capability of individuals to maintain good health and well-being without facing inequality or discrimination (Stiglitz et al., 2009: 164). Lastly, personal security, measured by the crime rate, is recognized as a fundamental aspect of well-being. This variable measures the safety of individuals within their immediate environment and reflects their capability to lead lives free from fear, threat, or insecurity (Stiglitz et al., 2009:194).

Operational Definition

In the context of relating the multiple deprivation approach to the measurement of the Social Progress Index (Figure 1), it becomes evident that both concepts share a similar

framework. The Social Progress Index assesses a society capacity to fulfill the fundamental human needs of its inhabitants, establish the necessary foundations for individuals and communities to improve and maintain their quality of life, as well as create conditions that enable all individuals to achieve their maximum potential.
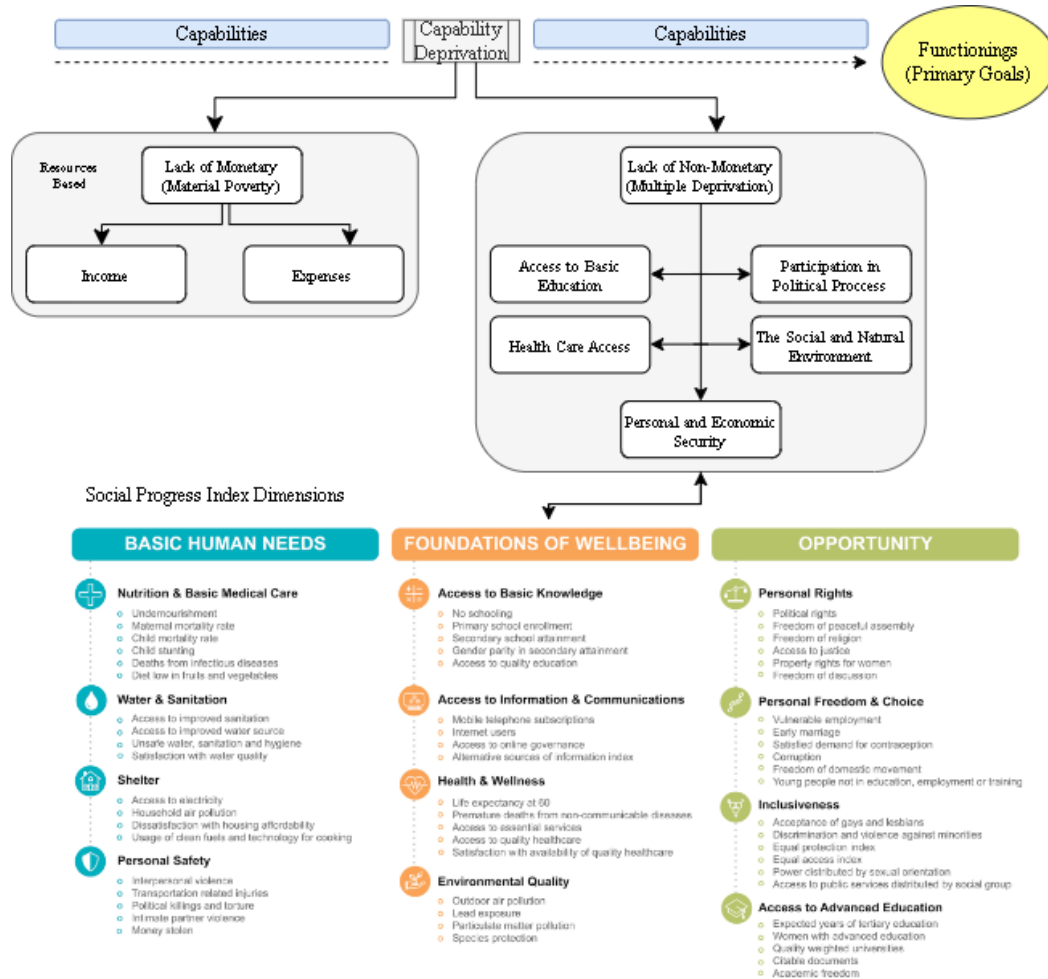
Figure 1 Multiple Deprivation and Social Progress Index Interconnection
Source: Authors' Illustration and Social Progress Imperative (2023)

This Index includes a dedicated component which focuses on access to basic knowledge, which serves as the focal point of our analysis. While recognizing that multiple deprivation offers a generalized representation of factors with potential consensus, we primarily rely on the indicators within the Social Progress Index component as the foundation for our measurement of access to basic education. However, we also take into account the specific conditions in Indonesia by adjusting the indicators of equal access to quality education.

The definition of the indicators used can be seen in the Table 1.

Table 1 Definition of Social Progress Index Indicators

Components	Indicator Name	Definition
Foundations of Wellbeing		
Access to Basic Education	Primary School Enrolment	Total number of students of official primary school age who are enrolled in any level of education, expressed as a percentage of the total population of official primary school age. Statistic is termed 'total net primary enrollment rate.'
	Secondary School Attainment	Population with at least some secondary education
	Population with No Schooling	Proportion of population (age-standardized) with no schooling.
	Gender Parity in Secondary Attainment	The absolute deviation from parity (=1) in secondary education attainment of women and men.
	Equal Access to Quality Education (Teacher-Student Ratio, Teacher Qualification, School Proportion, Classroom Condition, and Availability of Water and Sanitation)	Country experts' aggregated evaluation of the question, "To what extent is high quality basic education guaranteed to all, sufficient to enable them to exercise their basic rights as adult citizens?"

Source: Stern et al., 2022

The selected indicators above (Table 1) are crucial for assessing access to basic education within the context of the "foundations of wellbeing." Each indicator is driven by a different data approach and operation.

Primary School Enrolment. This indicator measures the percentage of students of primary school age who are enrolled in a specific level of education. In this indicator, the data used were the Net Enrolment Rate, which were obtained from the statistical report 'Education Profile' by the Central Bureau of Statistics (BPS) in 2022. The Net Enrolment Rate, as referred to by BPS, is a comparison between students of a specific school age at the primary education level and the population of corresponding age, expressed as a percentage. The education level in question in this research was elementary school or equivalent, at the age appropriate for that level, which is 7-12 years.

The reason for using the Net Enrolment Rate instead of the Gross Enrolment Rate is that NER measures the number of school-age children who can attend school in a timely manner, which can then be used as a gauge of the capacity of the education systems to absorb the school-age population. It is a key metric in understanding the reach and inclusiveness of primary education. High enrolment rates indicate that a significant portion of the target population has access to primary education, which is a fundamental building block for lifelong learning (Ha & Yan, 2018).

Secondary School Attainment. In this indicator, the research used the definition of secondary school provided by UNICEF (2022), which categorizes the secondary school level as comprising students in both Junior High School and Senior High School, with a classification of children aged 12 to 17 years. To assess the extent of educational progress attainable by students in Indonesia, spanning from elementary school to senior high school, the research referred to the number of students who had successfully graduated from senior high school, in accordance with the BPS Education Report 2022, where the age range for completing school in Indonesia approximately ranged as 19-21 years. Therefore, this age range served as the basis for measuring the 'Secondary School Attainment' indicator in this research.

Population with No Schooling. This indicator evaluates the percentage of the population that has not received any formal education or schooling, with data adjusted and standardized for various age groups. In this research, the data used focused on specific standardized age ranges, namely 7-15 years, 13-15 years, and 16-18 years, which represent those who have not had access to any formal educational or schooling experiences. Age-standardization was employed to facilitate more accurate comparisons across different age groups or populations, particularly within the age range where fundamentally basic education should have been completed.

Gender Parity in Secondary Attainment. Gender parity in secondary education attainment, as defined in this research, measures gender equity in junior high school and senior high school education. It calculates the absolute deviation from parity, which indicates gender disparities in accessing secondary education. In this indicator, the research established an absolute deviation, i.e., a gender parity ratio greater than 1 indicated a higher proportion of females, and vice versa. Values significantly deviating from 1, in either direction, signified provinces in Indonesia where gender inequality in education existed and needed serious attention.

Equal Access to Quality Education is a comprehensive indicator that encompasses various factors to assess the quality and inclusiveness of basic education. It includes the following sub-components:

Teacher-Student Ratio. This indicator assesses the ratio of teachers to the number of students in a class. According to the Indonesia Education Profile (Badan Pusat Statistik, 2022), BPS recommends a class capacity of 15 students per teacher. A low teacher-student ratio signifies a more personalized and effective learning environment. Smaller class sizes can improve teacher-student interactions and individualized support, leading to a higher quality of education (Koc & Celik, 2015).

Teacher Qualification. The qualification of teachers is a crucial factor in determining the quality of education. Research found that well-qualified teachers are more likely to provide effective instruction and promote better learning outcomes among students (Qin & Bowen, 2019). Therefore, this indicator assesses teacher qualifications by examining the percentage of teachers at all levels of basic education who meet the qualification criteria set by BPS.

School Proportion. This indicator assesses the distribution of schools from elementary to senior high school (basic education levels) across all the 34 provinces in Indonesia. It is a crucial factor to consider as it aligns with research findings emphasizing the significance of having adequate infrastructure and a sufficient number of schools to guarantee students' access to educational institutions. Insufficient availability of schools can lead to overcrowding and a lack of access to quality education (Ready et al., 2004)

Classroom Condition. This indicator assesses the condition of classrooms, defined here as the percentage of classrooms that have experienced damage, ranging from basic education school levels. According to BPS (2022), classroom conditions are classified into three categories: good, slightly damaged, moderately damaged, and severely damaged. In this indicator, the research employed the classification of damage, encompassing both slight to severe damage. This indicator holds significance because classroom conditions can directly impact the learning environment. Well-maintained and properly equipped classrooms create a conducive space for learning. In contrast, poorly maintained classrooms may hinder the educational experience. This indicator evaluates the physical aspect of learning environment (Zhou & Wang, 2023).

Availability of Water and Sanitation. This indicator refers to the percentage of schools in each region or province in Indonesia that lacks access to clean water and proper sanitation facilities. Access to clean water and adequate sanitation is a crucial aspect of quality education, as mentioned previously. These amenities are essential not only for students' health and well-being but also for creating a comfortable and hygienic learning environment (Nadar, 2022).

Data Analysis

Constructing the Social Progress Index

There were four fundamental steps involved in calculating the Social Progress Index (Stern et al., 2022). Firstly, the indicators were inverted and standardized to ensure comparability across different scales. Subsequently, Principal Component Analysis (PCA) was employed to aggregate the indicators into a composite score. The raw composite score was then transformed into a 0 to 1 scale, yielding the Social Progress Index. Then, we divided and ranked the index results of each province based on two criteria: perform (index value above the average) and underperform (index value below the average). Each of these steps will be further elucidated in the following sections. Finally, we performed statistical tests to ensure the reliability and coherence of the Social Progress Index.

1. Standardization

Initially, the collected data had varying scales, making it difficult to compare the indicators directly. Therefore, we standardized the various indicators of access to basic education to ensure comparability. However, before standardizing certain indicators, we inverted them to ensure that the interpretation of the Social Progress Index (SPI) remained unbiased. In other words, a positive direction in each indicator should correspond to a

positive impact on the social progress index, and vice versa. The indicators that were inverted include population with no schooling, gender disparity in secondary attainment, student-teacher ratio, classroom condition (percentage of damaged classrooms), and availability of water and sanitation (percentage of facilities' absence).

2. Component Scores

To determine the component scores for access to basic knowledge, the indicators within each component were combined using Principal Component Analysis (PCA). PCA is a statistical technique that enables the aggregation of indicators by maximizing the variance present in data while minimizing redundancy between the indicators. Through PCA, each of the indicators is assigned a weight, ensuring that they contribute meaningfully to the component score while considering their similarities. This approach of assigning weights based on PCA is preferred over equal weighting, as it provides a more nuanced representation of the indicators and their respective contributions to the overall score.

The following formula represents the aggregation of indicators into a principal component, where 'c' represents the Social Progress Index component for access to basic knowledge, and 'i' represents the indicators:

$$Component\ value = \sum (W_i * indicator_i)$$

In order to obtain the index value, each principal component was transformed into a component score ranging from 0 to 100. This conversion was achieved using a straightforward min-max formula, where 'X' represents the component value and 'j' denotes the province.

$$Component\ Score = \frac{(Xj - Worst\ Case)}{(Best\ Case - Worst\ Case)} * 100$$

3. Rankings

Once the index values had been obtained, each index for every observed province was ranked from highest to lowest. To provide a clearer perspective on the criteria within these rankings, we divided the index results of each province into two categories based on two criteria: "perform" (index value above the average) and "underperform" (index value below the average). This division resulted in a more comprehensive understanding of the rankings and facilitated a better assessment of the respective provinces' performance.

4. Validity and Reliability

After the process of rankings and calculating the indicators, we performed statistical tests to ensure the reliability and coherence of the Social Progress Index. Our objective was to avoid the disproportionate influence of any single indicator on a province's component or

overall score. To achieve this, we utilized statistical measures such as Cronbach's alpha and the Kaiser-Meyer-Olkin measure of sampling adequacy (Stern et al., 2022).

Multiple Linear Regression

As described in the section on measurement variables, Sen (1995) formulated multiple variables to measure the capability deprivation approach. This approach focuses on assessing non-material poverty, including access to basic education, participation in the political process, healthcare access, personal security, as well as social and natural environment. These five variables were analyzed using multiple linear regression models to understand how they impacted the measured poverty level. It is essential to emphasize that this research primarily focused on access to basic education as the variable of interest. However, other variables such as the happiness index, democracy index, unmet healthcare needs, and crime rate were included as supporting variables to ensure unbiased estimation results.

To model the influence of these variables on poverty, we took into account that using Multiple Linear Regression (MLR) is appropriate for several reasons. First, it relates to the linear relationship between access to education and poverty. For example, a study by Cahyo et al., (2022) found a negative linear relationship in the Pearson correlation between access to education and poverty levels. This means that an increase in access to education is directly associated with a decrease in poverty levels in Indonesia. Furthermore, since education is closely tied to human capital, it aligns with research conducted by Collin & Weil (2020), which discovered a positive correlation and a significant impact of human capital on GDP per capita in most countries worldwide. This points to a linear relationship pattern.

One might wonder whether the connection between poverty and education will remain linear in the long term. According to research by Spada et al. (2023) using panel data spanning five years, it is clear that education continues to exhibit a positive and significant impact in a linear pattern on reducing poverty during that five-year period. This suggests that the assumptions used in this research, linking access to basic education and poverty levels, are more appropriately explained using multiple linear regression models rather than non-linear models.

However, what about the regression analysis for the other variables acting as supporting factors? Is it adequate to use multiple linear regression? Gujarati, in Basic Econometrics (2004), provides an explanation regarding when multiple linear regression analysis is considered sufficient for research, depending on several factors. First and foremost, it is crucial to ensure that the multiple linear regression model aligns with the economic theories underlying the research. Since the model used in this research was based on the Capability Approach and consistent with established theories, we believe that the multiple analysis method is suitable. Additionally, Gujarati explains that model assumptions, such as the test of linearity, should be considered. Given that the data and classical assumptions in the research had been met (as seen in Table 4), multiple linear regression analysis is more reliable.

Furthermore, it is related to the significance of each independent variable. If an independent variable lacks significance, then another analysis may be necessary. However, upon examining the "prob." Values in Table 4, it is evident that all the independent variables had a significant impact at a 90% confidence level. Selecting a confidence level of 90% was subjective, as previous research on this specific topic is limited, and influenced by personal judgment.

Lastly, research objectives, as outlined by Gujarati (2004), play a crucial role in determining whether multiple linear regression analysis is sufficient. If the research involves more complex objectives, more sophisticated analysis methods may be required. However, considering that the primary purpose of using the multiple linear regression model in this research was to examine the impact of variables of interest and supporting factors on the dependent variable in a one-directional manner, as opposed to dealing with simultaneous equations or 2SLS, the Ordinary Least Squares (OLS) model is deemed sufficient.

Based on the explanation above, the regression equation model could be proposed as follows:

$$POV = \alpha + \beta_1 SPI + \beta_2 HI + \beta_3 UH + \beta_4 DI + \beta_5 CR + e$$

Where the poverty rate (POV) is determined by a set of variables, including the Social Progress Index (SPI), Unmet Health Care (UH), Crime Rate (CR), Happiness Index (HI), Democracy Index (DI), and a constant term (α). Coefficients (β) associated with each of these variables represent the extent to which they influence the poverty rate, while "e" represents the error term in the model.

Results and Discussion

Structural Integrity of Social Progress Index

To assess the degree to which the indicators within a component were related to each other, we calculated Cronbach's alpha after transforming the indicators. Cronbach's alpha is a measure of internal consistency, which indicates how well the indicators measure the same underlying construct. A commonly accepted rule of thumb is that the alpha value should be above 0.7 for any valid grouping of variables (Stern et al., 2022). As shown in Table 2, all the nine indicators met this criterion, indicating that all of them measure the same underlying construct.

Cronbach's alpha (Table 2) is a good way to assess the conceptual fit of a grouping of indicators, but it does not directly measure the goodness of fit of a factor analysis (Park et al., 2012). To do this, we used the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. A KMO score of 0.5 or higher is generally considered to be good (Stern et al., 2022). In our data, the mean KMO score for the Access to Basic Education component was

above 0.5, which suggests that the grouping of indicators chosen for this component provides a good measure of the underlying construct.

Table 2 Cronbach's Alpha for Each Indicator

Components	Indicators	Value
Access to Basic Education	Primary School Enrolment	0.7302
	Secondary School Attainment	0.7104
	Population with No Schooling	0.7504
	Gender Parity in Secondary Attainment	0.7727
	Teacher-Student Ratio	0.7686
	Teacher Qualification	0.7036
	School Proportion	0.7849
	Classroom Condition	0.7427
	Availability of Water and Sanitation	0.7011
KMO and Bartlett's Test		0.5670

Indonesia's Social Progress Index

Table 3 Results of Social Progress Index in Access to Basic Education

No.	Province	Converted Value	Origin Value	Status	No.	Province	Converted Value	Origin Value	Status
1	DI Yogyakarta	0.98	1.72	Best Case Performing	19	Lampung	0.70	0.02	Boundaries
2	DKI Jakarta	0.87	0.99		20	Bangka Belitung Islands	0.69	-0.03	Underperform
3	Bali	0.86	0.90		21	South Sumatera	0.69	-0.07	
4	East Kalimantan	0.85	0.87		22	West Java	0.68	-0.13	
5	Aceh	0.85	0.87		23	North Sulawesi	0.67	-0.15	
6	Riau Islands	0.82	0.71		24	North Kalimantan	0.66	-0.20	
7	North Sumatera	0.81	0.66		25	Maluku	0.66	-0.24	
8	South Kalimantan	0.81	0.63		26	Banten	0.65	-0.26	
9	West Sumatera	0.80	0.57		27	North Maluku	0.61	-0.50	
10	Bengkulu	0.79	0.51		28	Gorontalo	0.61	-0.51	
11	South Sulawesi	0.77	0.39		29	West Kalimantan	0.59	-0.60	
12	Jambi	0.76	0.38		30	West Papua	0.59	-0.61	
13	West Nusa Tenggara	0.74	0.22		31	West Sulawesi	0.54	-0.93	
14	South East Sulawesi	0.74	0.22		32	Central Sulawesi	0.53	-0.96	
15	Riau	0.73	0.18		33	East Nusa Tenggara	0.53	-0.99	
16	East Java	0.73	0.15		34	Papua	0.02	-4.00	Worst Case
17	Central Kalimantan	0.72	0.11						
18	Central Java	0.72	0.10						

Based on the Social Progress results mentioned above (Table 3), DI Yogyakarta emerged as the best- performing province in terms of access to basic education among the 34 provinces in Indonesia, followed by 18 other provinces that also demonstrated commendable performance in this aspect. Conversely, Papua ranked at the bottom, representing the worst-case scenario for access to basic education. Additionally, there were 15 provinces above Papua that were considered underperforming, with Kepulauan Bangka Belitung marking the upper limit of this underperforming condition. Notably, several provinces in the eastern region of Indonesia fell under the underperforming category, while the majority of provinces in the western region had good performance.

However, in certain cases, the geographical location alone does not suffice to explain why certain provinces, such as West Java, fell under the underperforming category. Despite having the highest number of primary schools in Indonesia, totaling around 8,997 schools, it is evident that this large number does not necessarily translate into better quality education. In fact, West Java has the highest student-to-teacher ratio, with an average ratio of 19.84 students per teacher in a classroom. This exceeds the recommended capacity of 15 students per teacher suggested by BPS. Naturally, such overcrowded conditions lead to suboptimal learning effectiveness. Furthermore, West Java also has one of the highest percentages of out-of-school children after Papua and Gorontalo.
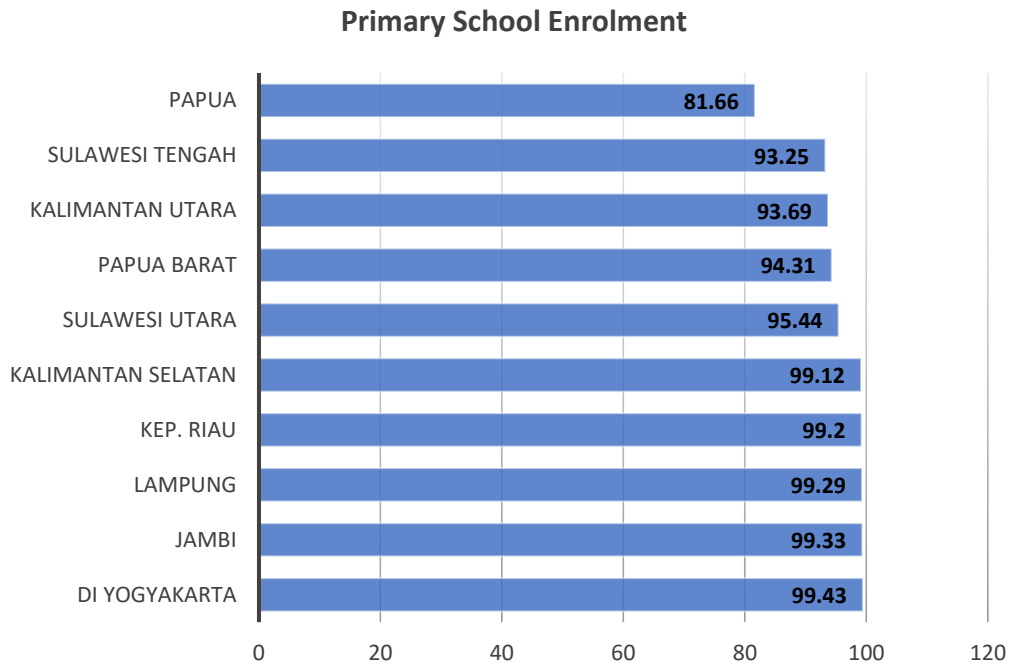
The data presented above were only a subset of the nine prominent indicators for each province. We specifically highlighted the case of West Java due to its high Human Development Index (HDI) score, placing it among the top 10 HDI scores in 2022. With a high HDI score, one would expect the education dimension in the province to outperform most others comparatively. However, the results of the Social Progress Index (underperforming) contradicted the HDI score and even presented an opposing outcome. Similar discrepancies in measurement results could also be observed in other provinces with high HDI scores, such as Banten and North Sulawesi.

Why does this occur? Currently, there is a lack of a comprehensive measurement that effectively captures the extent of access to basic education in Indonesia. While the Human Development Index (HDI) is often mentioned, it primarily focuses on indicators such as enrolment rates, non-attendance, and progression rates. However, this measurement alone does not sufficiently explain the quality of access to basic education in different regions. Hence, a more comprehensive measurement framework is needed to provide a holistic understanding, especially when addressing the issue of poverty.

The variation in access to basic education can be attributed to several factors. These include primary school enrolment, secondary school attainment, the population with no schooling, gender parity in secondary attainment, teacher-student ratios, teacher qualifications, school proportions, classroom conditions, and the availability of water and sanitation facilities. Each of these elements contributes to the overall condition of educational access within a province.

To gain a deeper understanding of the factors influencing performance, we divided the provinces into two categories: performing and underperforming. By examining the top

five and bottom five provinces, we identified the reasons behind their respective classifications.

Primary School Enrolment

Province	Value
PAPUA	81.66
SULAWESI TENGAH	93.25
KALIMANTAN UTARA	93.69
PAPUA BARAT	94.31
SULAWESI UTARA	95.44
KALIMANTAN SELATAN	99.12
KEP. RIAU	99.2
LAMPUNG	99.29
JAMBI	99.33
DI YOGYAKARTA	99.43

Figure 2 Primary School Enrolment Indicator

Based on the Primary School Enrolment (PSE) indicator (Figure 2), the provinces with the highest primary school participation rates in Indonesia were DI Yogyakarta (99.43%), Jambi (99.33%), and Lampung (99.29%). This reflects the high level of commitment and awareness among the communities in these provinces regarding the importance of education for the younger generation. Kepulauan Riau (99.2%) and Kalimantan Selatan (99.12%) also exhibited high participation percentages, indicating a strong dedication to ensuring access to quality education.

Meanwhile, the provinces with the lowest primary school participation rates in Indonesia were Papua (81.66%), Kalimantan Utara (93.69%), and Sulawesi Tengah (93.25%). These percentages reflect the challenges in providing adequate educational access in these areas. Papua Barat (94.31%) and Sulawesi Utara (95.44%) also demonstrated relatively low participation rates, emphasizing the need for further attention to enhance educational participation in these regions.

Secondary School Attainment
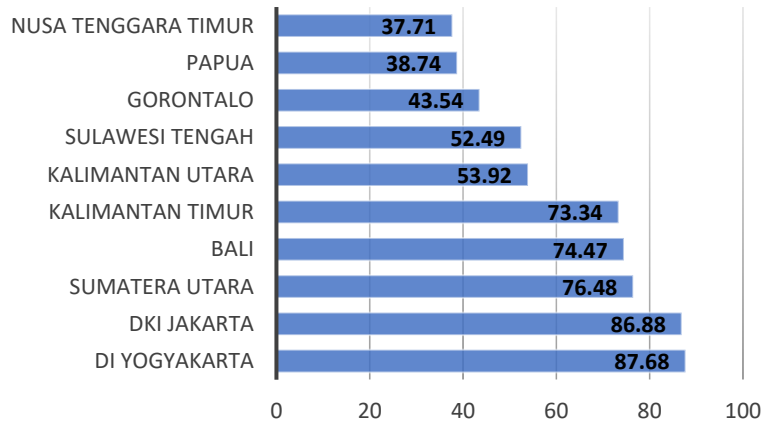
Figure 3 Secondary School Attainment Indicator

In this indicator (Figure 3), the provinces with the highest attainment rates in upper secondary education in Indonesia were DI Yogyakarta (87.68%), DKI Jakarta (86.88%), Sumatera Utara (76.48%), Bali (74.47%), and Kalimantan Timur (73.34%). These figures indicate that these provinces had a higher percentage of students successfully completing their high school or equivalent education.

On the other hand, the provinces with the lowest attainment rates in upper secondary education in Indonesia were Nusa Tenggara Timur (37.71%), Papua (38.74%), Gorontalo (43.54%), Sulawesi Tengah (52.49%), and Kalimantan Utara (53.92%). These percentages indicate the challenges faced in ensuring that students in these provinces successfully complete their high school or equivalent education.

Population with No Schooling (%)
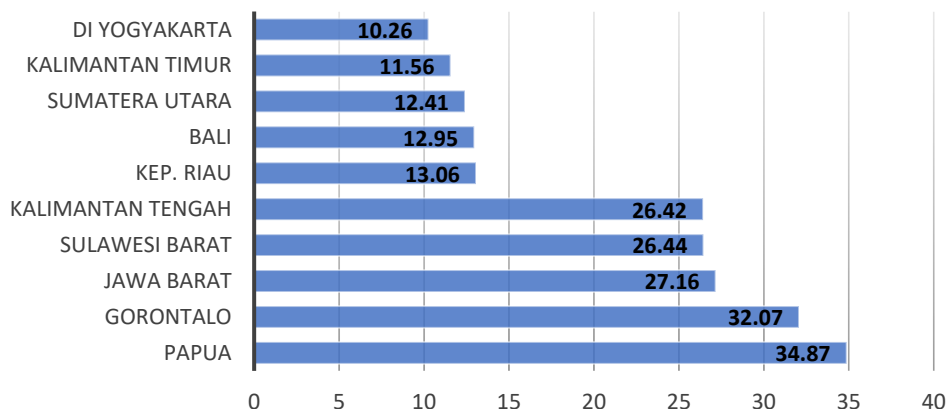
Figure 4 Population with No Schooling Indicator

The indicator above (Figure 4) provides an overview of the percentage of the population who have never received any education by the age of 18 in various provinces in Indonesia. The provinces with the highest rates of population who have never received any education in Indonesia were Papua (34.87%), Gorontalo (32.07%), West Java (27.16%), West Sulawesi (26.44%), and Central Kalimantan (26.42%). These percentages indicate serious challenges in ensuring equal and inclusive access to education in these provinces.

On the other hand, the provinces with the lowest rates of population who have never received any education in Indonesia were DI Yogyakarta (10.26%), East Kalimantan (11.56%), North Sumatra (12.41%), Bali (12.95%), and Riau Islands (13.06%). These figures demonstrate better commitment and efforts in providing widespread access to education in these provinces.

Gender Parity in Secondary Attainment Ratio
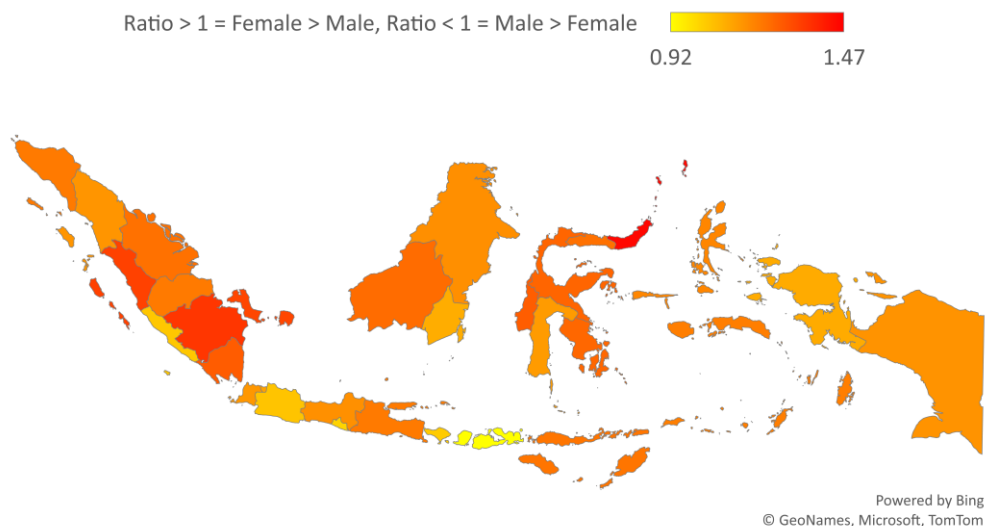
Figure 5 Gender Parity in Secondary Attainment Indicator

The provinces with the highest gender disparity (Figure 5) in terms of the completion of upper secondary education in Indonesia were North Sulawesi (1.46), West Kalimantan (1.47), South Sumatra (1.36), West Sumatra (1.33), and Bangka Belitung Islands (1.32). These percentages (Figure 5) indicate that in these provinces, females had a higher rate of completing upper secondary education compared to males.

On the other hand, the provinces with the lowest gender disparity in terms of the completion of upper secondary education in Indonesia were Bali (1.03), Bengkulu (1.04), West Java (1.05), and East Kalimantan (1.10). Interestingly, in almost all these provinces, the rate of female completion of upper secondary education was higher than that of males, except in West Nusa Tenggara (0.92), where males had a higher rate of completing upper secondary education compared to females. These differences indicate that there was still gender disparity in access to and completion of education in each province.
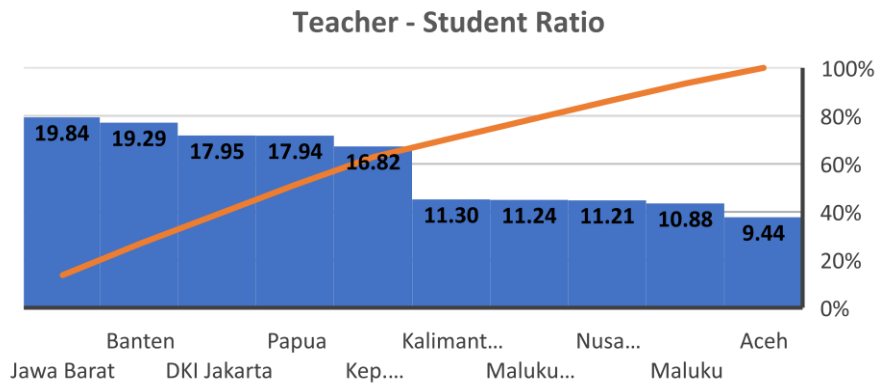
Teacher - Student Ratio

Figure 6 Teacher-Student Ratio Indicator

The provinces with the highest student-teacher ratios (Figure 6) in Indonesia were West Java (19.84), Banten (19.29), DKI Jakarta (17.95), Papua (17.94), and Bangka Belitung Islands (16.82). These figures indicate that in these provinces, the number of students per teacher was relatively higher, which may indicate a heavier workload for teachers in terms of providing individual attention and supervision to each student.

On the other hand, the provinces with the lowest student-teacher ratios in Indonesia were West Sulawesi (11.50), Central Kalimantan (11.30), North Maluku (11.24), West Nusa Tenggara (11.21), and Maluku (10.88). These numbers indicate that in these provinces, the number of students per teacher was relatively lower, allowing teachers to provide more individual attention and supervision to each student.

This indicator (Figure 6) provides an overview of the student-teacher ratios in each province in Indonesia across primary to upper secondary education levels, where BPS (2022) recommends a capacity of 15 students per teacher. Student-teacher ratios that exceed the recommended capacity can pose challenges in delivering quality education, while low student-teacher ratios can provide opportunities for more personalized interactions between teachers and students.
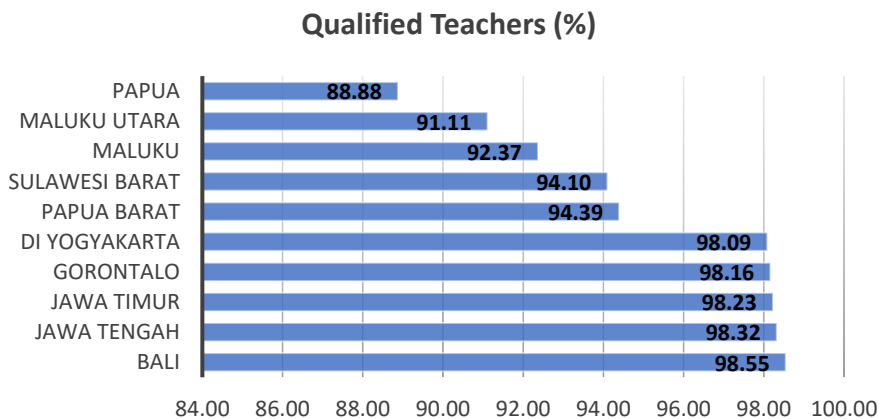
Qualified Teachers (%)

Figure 7 Qualified Teachers Indicator

The provinces with the highest percentages of qualified teachers (Figure 7) in Indonesia were Bali (98.55%), Central Java (98.32%), East Java (98.23%), Gorontalo (98.16%), and DI Yogyakarta (98.09%). These figures indicate that in these provinces, the majority of teachers in primary to upper secondary education levels have met the established qualifications, enabling them to provide quality education to students.

On the other hand, the provinces with the lowest percentages of qualified teachers in Indonesia were Maluku (92.37%), North Maluku (91.11%), Papua (88.88%), West Sulawesi (94.10%), and West Papua (94.39%). These percentages indicate that in these provinces, some teachers in primary to upper secondary education levels have not fully met the established qualifications, which can affect the quality of education provided to students.

Qualified teachers are an important factor in creating an effective and quality learning environment. It is important to make extensive efforts in teacher development and training as well as ensure that teachers across all provinces meet the required qualification standards to deliver quality education to students (Lee & Lee, 2020).
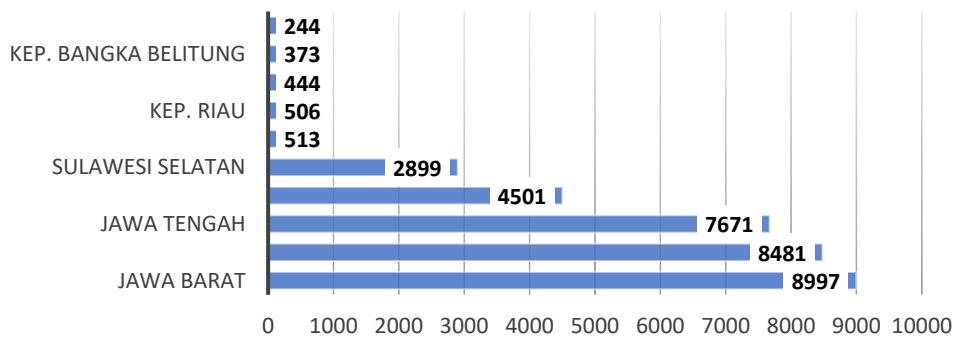
Total School

**Figure 8** Total Number of School Indicator

The provinces with the highest total number of primary and upper secondary schools (Figure 8) in Indonesia were West Java (8,997), East Java (8,481), Central Java (7,671), North Sumatra (4,501), and South Sulawesi (2,899). These numbers indicate that these provinces had a significant number of schools in both education levels, indicating the efforts of the government and the community in providing comprehensive access to education for children in those regions.

On the other hand, the provinces with the lowest total number of primary and upper secondary schools in Indonesia were North Kalimantan (244), Bangka Belitung Islands (373), Gorontalo (444), Riau Islands (506), and West Papua (513). These figures suggest that these provinces had relatively fewer schools in both education levels, indicating challenges in providing comprehensive access to education in those areas.

A high number of schools demonstrates commitment to providing widespread access to education in both levels, while a low number of schools can indicate challenges in providing comprehensive access to education in those regions. It is important to continue

to focus on and make extensive efforts in the provision and improvement of education quality across all provinces in Indonesia for both education levels (Virdam, 2023).

**Classroom Condition (% Damaged)**
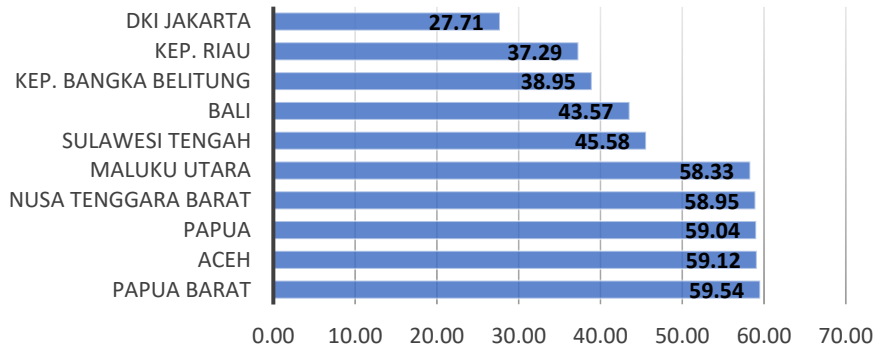
Figure 9 Classroom Condition Indicator

The provinces with the highest percentages of damaged classroom conditions (Figure 9) in Indonesia were West Papua (59.54%), Aceh (59.12%), Papua (59.04%), West Nusa Tenggara (58.95%), and North Maluku (58.33%). These figures indicate that these provinces faced serious challenges in terms of the physical condition of classrooms, which can affect the comfort and safety of students in learning.

On the other hand, the provinces with the lowest percentages of damaged classroom conditions in Indonesia were Bali (43.57%), Bangka Belitung Islands (38.95%), Riau Islands (37.29%), DKI Jakarta (27.71%), and Central Sulawesi (45.58%). These numbers (Figure 9) indicate that these provinces had better physical conditions of classrooms, which can create a more conducive learning environment. Good physical conditions of classrooms are an important factor in creating an effective and safe learning environment. It is crucial to increase attention to the maintenance and improvement of school infrastructure (Andrianto et al., 2020).

Schools without Access to Water and Sanitation (%)
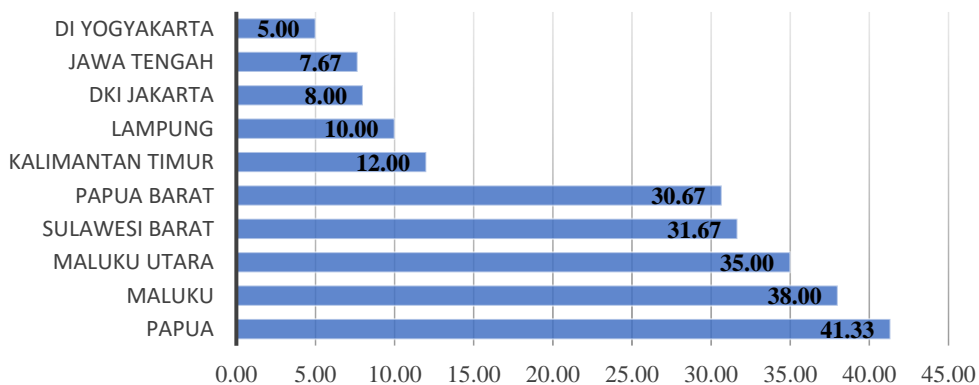
Figure 10 School without Access to Water and Sanitation Indicator

The provinces with the highest percentages of schools lacking access to water and sanitation facilities (Figure 10) in Indonesia were Papua (41.33%), Maluku (38.00%), North Maluku (35.00%), West Sulawesi (31.67%), and West Papua (30.67%). These figures indicate that these provinces faced serious challenges in terms of schools' access to adequate water and sanitation facilities, which can have a negative impact on the health and comfort of students.

On the other hand, the provinces with the lowest percentages of schools lacking access to water and sanitation facilities in Indonesia were Lampung (10.00%), DKI Jakarta (8.00%), Central Java (7.67%), DI Yogyakarta (5.00%), and West Java (12.67%). These numbers indicate that in these provinces, schools had better access to water and sanitation facilities (Badan Pusat Statistik, 2022).

Access to adequate water and sanitation facilities in schools is an important factor in creating a safe and healthy learning environment. It is crucial to make extensive efforts in ensuring that every school has access to proper water and sanitation facilities to support the health and well-being of students (Coswosk et al., 2019).

Multiple Linear Regression Results

Before estimating the model, it is essential to perform classical assumption tests. According to Gujarati (2004), at least three classical assumption tests are needed for cross-sectional data, namely tests for normality, heteroskedasticity, and multicollinearity. When these assumptions are satisfied, the Ordinary Least Squares (OLS) procedure provides efficient and unbiased estimates with the smallest variance.

Starting with the normality test, the Shapiro-Wilk test was chosen as it is more suitable for sample sizes of less than 50, and the dataset in this research comprised 34 of province observations (Mishra et al., 2019). In the context of the normality test, when p-value > 0.05, the null hypothesis is accepted, signifying that the data adhere to a normal distribution. As observed in Table 4, the p-value was 0.309, indicating normal distribution. This also suggests that the OLS estimator used was consistent.

Moving on to the test for heteroskedasticity, the rule of thumb dictates that the null hypothesis is accepted if p-value > 0.05, which implies that the residuals have constant variance and there is no heteroskedasticity (Murphy, 2015). As depicted in Table 4, the p-value for the Breusch-Pagan Criterion was 0.903, leading to the conclusion that homoskedasticity prevails. This certifies the reliability of the regression results.

Lastly, concerning the multicollinearity test, the general rule is that if the mean Variance Inflation Factor (VIF) is significantly less than 10, it suggests the absence of multicollinearity issues with specific variables (Suchikova et al., 2023). As evident in Table 4, the p-value for the mean VIF was 1.240 (less than 10), indicating the absence of multicollinearity. This implies that the independent variables in the multiple linear regression model of this research did not exhibit perfect linear relationships with each

other, allowing for a separate analysis of their individual effects on the dependent variable (O'brien, 2007).

Table 4 Estimation Results (Endogenous Variable of Poverty Rate)

Variable	Coefficient	Std. Error	t- Statistic	Prob.
Social Progress Index	-1.933838	0.733852	-2.64	0.014
Happiness Index	-0.666851	0.364275	-1.83	0.078
Unmet Health Care Needs	0.720073	0.359417	2.00	0.055
Democracy Index	-0.360172	0.156827	-2.30	0.029
Crime Rate	0.035004	0.010641	3.29	0.003
Constant	77.33473	31.84164	2.43	0.022
R-Squared	0.5412	Shapiro-Wilk Resid		0.309
Adjusted R-Squared	0.4592	Mean VIF		1.240
Root MSE	3.8869	Breusch Pagan Criter.		0.903
F-Statistic	6.61			0.0004

As explained in the research method for simultaneous and partial OLS analysis, the referenced level of confidence is 90%, which corresponds to an alpha of 0.1. In simultaneous hypothesis testing, the null hypothesis is rejected if the p-value is less than 0.1. Based on the results of the F-test in Table 4, the probability value was 0.0004 (less than 0.1). This indicates that collectively, the five variables, namely the Social Progress Index, Happiness Index, Unmet Healthcare Needs, Democracy Index, and Crime Rate, had a significant and simultaneous impact on the poverty rate in Indonesia.

This result is relevant to the model formulated by Sen (1995) regarding the Capability Approach, emphasizing that poverty alleviation cannot solely be viewed through a material lens. It is essential to consider other unmeasurable variables that are closely related to an individual's capabilities to function optimally in society. When individuals cannot exercise their fundamental rights as they should, there is a tendency for people to be trapped in persistent poverty. Furthermore, since the current measurements of poverty are primarily confined to material aspects such as income and consumption level, the authors estimated that there should be a considerable number of people in Indonesia trapped in poverty beyond what these measures capture, this is related with findings of Artha & Dartanto (2018), which may not be apparent to policymakers.

For the partial regression estimation results regarding the Happiness Index, the rule for null hypothesis analysis is that it is rejected if the p-value is less than 0.1. This implies that there is significant influence of the Happiness Index on the poverty rate in Indonesia, and vice versa. Examining Table 4, the p-value for the Happiness Index was 0.078 (less than 0.1), indicating a significant influence of this variable on the poverty rate in Indonesia. Furthermore, observing the coefficient value of the Happiness Index, which was -0.67, shows a negative correlation with the poverty rate. This means that a 1% increase in factors contributing to societal happiness can decrease the poverty rate by approximately 0.67%. This result aligns with the findings of a study conducted by Sihombing (2022).

From the Happiness Index results, the implication leads to the question: what aspects should be the focus of the happiness index to effectively reduce poverty in Indonesia? According to the Happiness Index indicators by BPS (2021), there are 19 indicators grouped into three dimensions: the dimension of life satisfaction, the dimension of emotions, and the dimension of meaning in life. Based on the analysis by BPS, the dimension of affection is the lowest among the three dimensions in Indonesia. Moreover, the achievement of the indicator for feelings of anxiety is the lowest among the 19 components of the Happiness Index. Therefore, this serves as a reflection that various stakeholders, especially the government, should consider if they aim to optimize poverty reduction efforts.

For the partial regression estimation results regarding the Unmet Health Care Needs variable, the same rule applies as previously mentioned, where the null hypothesis is rejected if the p-value is less than 0.1, indicating a significant impact of Unmet Health Care Needs on the poverty rate in Indonesia, and vice versa. Observing Table 4, the p-value for Unmet Health Care Needs was 0.055 (less than 0.1), indicating a significant influence of this variable on the poverty rate in Indonesia. Furthermore, looking at the coefficient value of Unmet Health Care Needs, which was 0.72, reveals a positive correlation with the poverty rate. This means that a 1% increase in healthcare access inequality in society can increase the poverty rate by approximately 0.72%. These results align with findings from research conducted in Indonesia by Haemmerli et al. (2021).

Haemmerli et al. (2021) found that in Indonesia, healthcare facilities at a higher level, such as clinics and GP practices, were more commonly situated in affluent areas, in contrast to lower-level facilities like midwife or nurse practices. This indicates that the disparity in healthcare facility distribution can lead to inequality in people's access to healthcare services, which they should rightfully receive. This implication is further strengthened by the Unmet Health Care Needs data obtained in this research, which reported an average of around 6.62% in 2022 of people who still had health issues but still could not or had limited access to healthcare services in Indonesia. Therefore, the issue of healthcare access becomes one of the factors exacerbating poverty in this country.

For the partial regression estimation results concerning the Democracy Index, the same rule applies as previously mentioned, where the null hypothesis analysis is rejected if the p-value is less than 0.1. This implies that there is a significant influence of the Democracy Index on the poverty rate in Indonesia, and vice versa. When looking at Table 4, the p-value for the Democracy Index was 0.029 (less than 0.1), indicating a significant influence of this variable on the poverty rate in Indonesia. Furthermore, observing the coefficient value of the Democracy Index, which was -0.36, shows a negative correlation with the poverty rate. This means that a 1% increase in community participation in the political process can reduce the poverty rate by about 0.36%. These results are in line with a report based on an empirical study in Indonesia conducted by Kawamura (2019).

Despite the importance of enhancing access to political participation, there is still a lack in this regard. For example, as highlighted in a report by Kawamura (2019), the limited access to the political process in Indonesia is evident in the government's policy

formulation. The government has been unable to allocate adequate budgets for effective poverty eradication programs due to the absence of mass-based political parties in the Indonesian party system and inadequate representation of the lower class. The deficiency is not only in terms of the lack of political party representation and representation of different classes but also in terms of more specific dimensions. For example, within the three dimensions of the Democracy Index – freedom, equality, and institutional capacity (BPS, 2022) – the institutional capacity dimension shows the lowest democracy index scores: 80.39, 79.52, and 73.66, respectively. This implies that it is crucial for the government to begin its poverty alleviation efforts by reforming its institutional capacity. By making these improvements, the democracy index will expectedly increase, indicating broader community political participation. In turn, this will pave the way for them to assert their rights and aspirations of their basic needs to escape from extreme poverty conditions and poverty cycle.

For the partial regression estimation results regarding the Crime Rate, the same rule applies as previously mentioned, where the null hypothesis analysis is rejected if the p-value is less than 0.1. This implies that there is a significant influence of the Crime Rate on the poverty rate in Indonesia, and vice versa. Examining Table 4, the p-value for the Crime Rate was 0.03 (less than 0.1), indicating a significant influence of this variable on the poverty rate in Indonesia. Furthermore, observing the coefficient value of the Crime Rate, which was 0.03, shows a positive correlation with the poverty rate. This means that a 1% increase in the crime rate can increase the poverty rate by approximately 0.03%. This result aligns with a study conducted in Indonesia by Sugiharti et al. (2023), which also found a positive correlation between these two variables.

An interesting study conducted by Mehlum et al. (2005) explains that crime rate is closely related to job creation. When individuals are not given widespread opportunities for employment, they tend to engage in criminal activities such as theft. Conversely, in countries where job opportunities are distributed more evenly, crime rates tend to be lower. Mehlum's research explicitly conveys the message to governments that ensuring personal security for the public is crucial. By providing equal job opportunities, among other measures, governments are able to not only reduce crime rates but also encourage people to improve their standard of living, thus helping them escape from the poverty trap. This can be focused in case, where Indonesian provinces with relatively high crime rates, such as North Sulawesi, North Sumatra, Gorontalo, West Papua, and Jakarta (BPS, 2022).

The final variable, which is equally important and the main focus of this study, is the variable of access to basic education (Social Progress Index). The same criteria apply, where the null hypothesis analysis is rejected if the p-value is less than 0.1, indicating a significant influence of Access to Basic Education on the poverty rate in Indonesia, and vice versa. Upon examining Table 4, the p-value for SPI was 0.014 (less than 0.1), indicating a significant impact of this variable on the poverty rate in Indonesia. Moreover, the SPI coefficient value of -1.93 shows a negative correlation with the poverty rate. This means that a 1% increase in SPI can reduce the poverty rate by approximately 1.93%. Among all

the variables considered, the access to basic education index has the most significant influence on the poverty level.

In particular, due to the limited studies found regarding the relationship between access to basic education in Indonesia, as measured by the Social Progress Index indicator, and poverty levels, we present this research as an initial analysis. However, this does not imply that no similar studies have been conducted previously; there are various studies, as mentioned within this research, related to access to basic education and poverty levels. The difference lies in the fact that, up to this point, access to basic education has only been partially explained through fewer indicators. For instance, if we compare the study on the influence of the level of education on the poverty rate by Pahlawan & Ratna (2018), the results show a significantly negative impact with a smaller coefficient than other variables in their study. Another research conducted by Hasan (2021) also indicates a significantly negative influence of HDI with a smaller coefficient than our findings. At this juncture, as can be seen, the coefficient for the SPI variable demonstrates that the use of a more comprehensive education indicator can better explain the influence on poverty.

This implies that enhancing access to basic education has the potential to significantly reduce poverty rates. Education is a basic human right and a key driver of economic growth and development. By providing quality education and ensuring equal opportunities for all individuals, especially in terms of basic education, policymakers can empower people to break free from poverty cycle and improve their overall well-being.

Conclusion

In conclusion, this research highlights the importance of access to basic education in addressing poverty and the limitations of traditional income-based measures of poverty. Access to basic education is crucial for individuals to acquire knowledge, skills, and decision-making skills necessary for improving their well-being. The Social Progress Index (SPI) serves as a useful tool for assessing social progress, including access to basic education. It reveals disparities among Indonesian provinces, with some performing well and others facing challenges in providing equal educational opportunities.

The analysis confirms the significant impact of access to basic education on poverty levels. Improving access to education can contribute to poverty reduction and should be a priority for policymakers. To escape from the poverty cycle and create a more equitable society, it is essential to allocate resources, improve teacher qualifications, enhance school infrastructure, and ensure equal access to education for all individuals in Indonesia. By focusing on access to basic education, Indonesia can take a significant step towards reducing poverty and achieving sustainable development goals.

The implication of this research focuses on the government that should extent alternative way to address this issue by quantifying a general consensus, particularly in terms of access to basic education, healthcare, political participation, security, and happiness. It is essential to emphasize that this consensus will be more accurately depicted when

adapted to the specific characteristics of each country or region. Optimizing surveys to understand the factors that lead individuals to be marginalized from "optimally functioning in society" is crucial. Notably, this is exemplified by several European countries that have already comprehensively adopted poverty measurements with a focus on the Capability Approach. The outcomes have shown that these countries have successfully reduced poverty rates significantly (Hick, 2012, 2014).

However, the study also has some limitations. Firstly, the data collected were limited to a single time point, providing a cross sectional view. Therefore, the generalizability of the findings to other time periods may be limited. Future research should aim to replicate these findings across different years to assess the robustness and consistency of the relationships observed. It is essential to extend this research to other provinces and contexts to ensure the broader applicability of the results. By conducting studies in diverse settings, we can capture the nuances and variations that exist across regions and gain a more comprehensive understanding of the capability deprivation factor that contributes to poverty reduction.

Author Contributions

Investigation, H.J; Analysis, V.S.K.; Visualization, V.S.K.

Acknowledgement

Conflict of Interest

The authors declare no conflict of interest. This research is truly based on curiosity to find another measurement perspective in terms of access to basic education and poverty. The funders had no role in the design of the study; the collection, analysis, or interpretation of the data; the writing of the manuscript; or the decision to publish the results.

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