JURNAL
EKONOMI
KUANTITATIF
TERAPAN

Health Policies: Bolstering Human Resources & Healthcare Systems to Reduce Crude Death Rates in 2^6 Countries
Mohamed Sesay, Rudi Purwono, Ni Made Sukartini

Downstream of Leading Primary Sector Industries in Papua Island
Albertus Girik Allo, Manda Sarungallo, Roni Bawole

Assessing Efficiency and Productivity of Micro and Small Industries: An Empirical Study in North Kalimantan
Ariani, Charitin Devi, Settingssulistya Rini Pratiwi, Yohanna Thresia Nainggolan, Wong Sing Yun

Are MSMEs the Key to Poverty Reduction? Dynamic Evidence from Indonesia Utilizing ARDL Analysis
Azhari, Musrizal Musrizal, Win Konadi

Financial Inclusion and Welfare: Comparison between Male-Headed and Female-Headed Households
Lita Jowanti, SettingsBudiono, Anhar Fauzan Priyono

The Role of Amenities and Accessibility on Domestic Tourism Demand in Indonesia
Maya Dethan, Khoirunurrofik

Analysis Of Participation Of Persons With Disabilities In The Labor Market
Ida Ayu Gde Dyastari Saskara, Diah Pradnyadewi

Smoking Cessation In Indonesia: Kick The Habit Today Or Is It Wiser To Hold On Forever?
Miftah Amalia Putri, I Dewa Gede Karma Wisana

Measuring Social Capital in Indonesia: An Item Response Theory (IRT) Approach
Nurul Islamy, Rus'an Nasrudin

MEASURING SOCIAL CAPITAL IN INDONESIA: AN ITEM RESPONSE THEORY (IRT) APPROACH

ABSTRACT

This study assesses social capital in Indonesia using the Item Response Theory (IRT) with the Graded Response Model (GRM), based on data from the 2021 Happiness Level Survey (SPTK) by Statistics Indonesia (BPS), involving 74,684 respondents. Social capital is measured across three dimensions: trust, social participation, and tolerance. Trust is further categorized into bonding (close relations), bridging (community leaders), and linking (institutions), with the highest levels in Sulawesi and the lowest in urban areas like Jakarta and Banten. Social participation is higher in rural areas, while tolerance is strongest in multicultural regions such as East Nusa Tenggara and North Kalimantan. The findings underscore the need for region-specific strategies to strengthen social capital, including institutional transparency and inclusive engagement. Reviving programs like Pendidikan Moral Pancasila (PMP) and the National Program for Community Empowerment (PNPM) can enhance trust, participation, and tolerance. The IRT-GRM model offers a robust approach for analyzing ordinal data and informing inclusive development policies.

Key words: Social Capital, Trust, Social Participation, Tolerance, IRT GRM, Cartogram
JEL Classification Codes: O15; Z13

INTRODUCTION

Social capital is a fundamental element of economic development that has received increasing attention in the global development literature. This concept refers to networks of social relationships, norms, trust, and community participation that facilitate cooperation and coordination in achieving common goals (Putnam, 2000). Unlike physical capital and human capital, which are more individualistic and directly measurable, social capital functions as a collective asset that enhances a society's capacity to address economic challenges, improve productivity, and foster innovation (Woolcock & Narayan, 2000). A strong presence of social capital not only drives economic growth but also contributes to reducing inequality and promoting social inclusion by increasing access to resources and creating more equitable economic opportunities (Grootaert & van Bastelaer, 2004).

Within this framework, social capital operates not only through trust and participation but also through

mechanisms that facilitate cooperation across diverse groups. One of the key mechanisms is tolerance, which enables bridging and linking relationships to expand beyond homogeneous networks. By fostering acceptance of differences and minimizing social frictions, tolerance reduces transaction costs in social and economic exchanges, thereby enhancing collaboration and improving policy effectiveness (Putnam, 2007; Inglehart & Welzel, 2005). In this sense, tolerance should be regarded as a constitutive element of social capital—embedded within its very structure as an enabler of trust and reciprocity—rather than as a mere outcome of social interaction.

In the context of development in Indonesia, economic growth is often considered the primary benchmark for measuring regional welfare and progress. However, economic indicators such as per capita income, economic growth, and unemployment rates fail to provide a holistic picture of quality of life (Stiglitz et al., 2009). The capability approach introduced by Sen (1999) emphasizes that well-being is dependent not only on economic aspects but also on individuals' freedom to develop their potential. From this perspective, social capital emerges as a key factor in development, as it focuses on social relationships and interactions among individuals, which generate collective value for society (Ostrom, 1990; Grootaert & van Bastelaer, 2002). The recognition of social capital's importance has grown since the World Summit for Social Development (United Nations, 1995), which placed human beings at the center of development, while organizations such as the OECD have also incorporated social capital as an indicator of well-being in various global economic development reports (OECD, 2011).

The strong relationship between social capital and human capital has become increasingly evident in various studies showing that robust social interactions can accelerate human capital accumulation through information exchange, social support, and enhanced community cohesion (Bourdieu, 1986; Coleman, 1988). Social trust and community participation not only strengthen economic networks but also help individuals navigate life challenges, ultimately improving overall societal well-being (Putnam, 1993; Woolcock & Narayan, 2000). In development practice, social capital-based strategies have been

emphasized as a more comprehensive approach that prioritizes the strengthening of shared values, social solidarity, and active community participation in the development process. This approach is seen as a complement to traditional economic indicator-based welfare analyses, which tend to overlook social and cultural dimensions that also play a crucial role in determining quality of life (Stiglitz et al., 2009; Dasgupta & Serageldin, 2000).

Social capital has long been an integral part of Indonesian society. Traditions such as cooperation (*gotong royong*), deliberation (*musyawarah*), and trust among community members are tangible examples of the nation's rich social capital (Tadjoeddin, 2014). Indonesia is recognized globally as a country with a high level of social solidarity, particularly in response to natural disasters and economic crises. For example, after the 2004 Aceh tsunami and the 2006 Yogyakarta earthquake, Indonesians demonstrated extraordinary resilience in rebuilding their lives through social networks and community collaboration (World Bank, 2007). However, despite its vast potential, social capital in Indonesia also faces significant

challenges, including increasing social fragmentation, unequal access to social resources, and declining trust in public institutions. These factors can hinder the optimization of social capital and lead to social exclusion if not properly managed (Portes, 1998). Therefore, understanding how social capital is formed and how it influences economic development has become an increasingly relevant issue in development studies in Indonesia.

Various studies have shown that social capital plays a crucial role in enhancing societal well-being and fostering sustainable economic stability. Fukuyama (1995) reported that societies with high levels of trust tend to experience more stable economic growth, whereas other studies have indicated that social capital contributes to poverty reduction, income growth, and market efficiency by lowering transaction costs and enhancing collaboration among economic actors (Knack & Keefer, 1997; Fafchamps & Minten, 2002). In Indonesia, social capital has been proven to contribute to local economic stability (Tadjoeddin, 2014), poverty reduction in rural areas (Nasution, 2017), increased farmer income (Lulun et al., 2019), and the growth of small and medium-sized

enterprises (Hapiz, 2015). Therefore, understanding how social capital is formed within communities is essential. However, a major challenge in social capital studies is its complex and multidimensional measurement (OECD, 2011).

Several methods have been developed to measure social capital, but many still face methodological limitations. Sabatini (2009) used confirmatory factor analysis (CFA) to measure social capital in Italy, but this method has limitations in handling ordinal data and assumes linearity, which often does not align with the characteristics of social data. Krishna and Shrader (2000) developed the Social Capital Assessment Tool (SOCAT), which combines quantitative and qualitative approaches, but its implementation requires substantial resources. In Indonesia, Rusmawati et al. (2015) employed principal component analysis (PCA) to construct a social capital index; however, this method has limitations in distinguishing between latent variables and measurement error, as well as in assuming data continuity and a normal distribution, which are less optimal for ordinal data.

Despite the growing body of literature that emphasizes the role of social capital in fostering economic growth and social well-being, there remains a significant gap in how social capital is rigorously measured within the Indonesian context. Previous approaches such as CFA, SOCAT, and PCA have provided valuable insights, yet they often fail to fully capture the multidimensional and ordinal nature of social capital indicators, leading to potential biases and limited comparability across regions. This methodological gap raises a crucial research question: how can social capital be measured more accurately and robustly to reflect regional variations in Indonesia, and what implications might this have for development policy? Addressing this question is essential not only for advancing the methodological frontier of social capital research but also for providing policymakers with reliable evidence to design interventions that strengthen social cohesion and promote inclusive development.

To address these limitations, this study proposes the use of the item response theory (IRT) approach with the graded response model (GRM) to construct a social capital index. The

objective is to develop a more robust and accurate measurement of social capital that captures its regional variations in Indonesia. The IRT GRM is considered suitable for this study because it can accommodate ordinal survey data and provide nuanced insights into the latent dimensions of social capital.

By employing the IRT GRM method, this study seeks to provide a more accurate measurement of social capital by appropriately handling ordinal data and the complex relationships among variables. This approach allows for a systematic construction of the social capital index at the regional level, which will later be analyzed in the discussion.

RESEARCH METHODS

This study utilizes data from the 2021 Happiness Level Measurement Survey (SPTK) published by Statistics Indonesia (BPS). With a sample of 74,684 individuals, SPTK measures not only happiness but also social capital based on an adaptation of Grootaert's (2002) concept within the Indonesian context. As a household-based survey, SPTK provides a rich microlevel representation of socioeconomic dynamics, including trust, social participation, and tolerance,

which are the focus of this study. The survey applies a household-based multistage sampling design, and the IRT analysis employs survey weights provided by BPS to ensure national representativeness. All respondents provided complete responses on the relevant social capital items, so the full sample was included in the analysis without any exclusion.

Social capital has been measured through various approaches, such as field experiments based on voluntary contributions (Attanasio et al., 2015) and surveys covering social networks, trust, and civic and political engagement (Muzayanah et al., 2020). Some studies emphasize generalized trust and norms of compliance (Knack & Keefer, 1997), whereas others highlight participation in formal organizations (Beugelsdijk & Smulders, 2003) or use indices based on social networks, collective action, and political empowerment (Grootaert et al., 2002). Bjørnskov (2006) elaborates on social capital in two primary aspects: trust in others and participation in formal social organizations. Narayan & Cassidy (2001) add dimensions of shared norms and collective action, whereas Putnam (2000) underscores the role of social

335

relationships in bridging different groups.

While trust and social participation have been extensively studied, tolerance toward diversity has rarely been an explicit component of social capital measurements. However, tolerance contributes to building an inclusive and harmonious society (Veltuhis et al., 2021; Hjerm et al., 2020). Therefore, this study measures social capital in three main dimensions: trust, social participation, and tolerance. Trust plays a role in strengthening social networks and reducing uncertainty in relationships (Putnam, 2000; Dasgupta, 2005), social participation reflects engagement in communities and organizations (Scrivens & Smith, 2013), and tolerance indicates acceptance of social differences. This approach provides a comprehensive understanding of the structure and dynamics of social capital and its impact on social and economic life.

The indicators in this study are derived from the social life section of the 2021 Happiness Measurement Survey (SPTK), designed to assess social capital in Indonesia, which uses a 0–10 scale to enable quantitative ordinal measurement. The trust dimension includes bonding trust, reflected in individuals' confidence that their neighbors will assist in emergencies and safeguard their homes in their absence; bridging trust, measured through trust in community leaders such as neighborhood heads or local figures; and linking trust, which represents trust in the government and law enforcement agencies to act fairlyly and transparently.

Social participation captures individuals' engagement in various community activities, with bonding social participation encompassing cooperation (*gotong-royong*), neighborhood meetings, and social events; bridging social participation, including involvement in event committees, community deliberations, and fundraising for social causes; and linking social participation reflecting participation in elections and support for national policies such as the COVID-19 vaccination program.

The tolerance dimension assesses attitudes toward social and cultural diversity, where bonding tolerance indicates a preference for befriending individuals of the same ethnicity; bridging tolerance represents attitudes toward minority groups, religious freedom, and acceptance of differing

opinions; and linking tolerance relates to perceptions of development policies that are perceived to favor majority groups. This approach provides a comprehensive understanding of social capital at various levels of social relationships, including close-knit community interactions, broader social networks, and engagement with formal institutions.

Table 1. Social Capital Variable Construction

The Social Capital Index consists of:	
Trust Index	*Social Capital variable 'Trust Index' at Individual Level* ***Bonding Trust*** 1. Trust that neighbors will help in case of an accident 2. Trust that neighbors will keep an eye on the house when it's empty ***Bridging Trust*** 3. Trust in the local neighborhood leader (RT/Community Leader) ***Linking Trust*** 4. Trust in central government 5. Trust in the results of elected officials through elections 6. Trust in law enforcement officers

The Social Capital Index consists of:	
	(Police)
Social Participation Index	*Social Capital variable 'Social Participation Index' at Individual Level* ***Bonding Socpar*** 1. Participation in neighborhood cleaning/mutual assistance activities 2. Participation in funeral events in the neighborhood 3. Participation in neighborhood meetings ***Bridging Socpar*** 4. Willingness to serve as a committee member in community events 5. Willingness to respect the results of community deliberations 6. Willingness to actively participate in fundraising activities for disaster victims ***Linking Socpar*** 1. Participation in elections (Pemilu/Pilkada) 2. Support for the national Covid-19 vaccination program
Tolerance Index	*Social Capital variable 'Tolerance Index' at Individual Level*

The Social Capital Index consists of:

Bonding Tolerance

1. Tendency to only be friends with people from the same ethnic background

Bridging Tolerance

2. Perception regarding limitations on religious teachings for minority groups
3. Perception regarding a tendency to not agree with people who oppose the respondent's opinion

Lingking Tolerance

4. Perception regarding development that is more favorable to the majority religion
5. Perception regarding development that is more favorable to the indigenous population

Social Capital Index	Overall Social Capital, encompassing three dimensions: 'Trust, Social Participation, and Tolerance' at the Individual Level

Source: Author compilation from various literature sources

This study employs item response theory–graded response model (IRT-GRM) to estimate the latent variables representing each dimension of social capital as well as overall social capital. This approach is superior to simple aggregation methods because it accounts for the difficulty levels (thresholds) of each indicator and individual heterogeneity in responses (Embretson & Reise, 2000; Baker & Kim, 2017). In this model, indicators are treated as items with multiple thresholds, while an individual's level of social capital is estimated on the basis of the response patterns provided (Samejima, 1969).

The IRT-GRM is chosen because its suitability for ordinal data is based on a 0–10 Likert scale, which lacks equal spacing between response categories. This method more accurately captures variations in difficulty levels than simple aggregation, which assumes equal weighting across response categories (van der Linden & Hambleton, 1997; De Ayala, 2009).

Compared with other IRT models, the IRT-GRM is more flexible in handling ordinal data with more than two response categories. Classical models such as 1PL (Rasch), 2PL, and 3PL are more appropriate for dichotomous data, whereas polytomous models such as the partial credit model (PCM) assume uniform discrimination parameters

(Masters, 1982), and the rating scale model (RSM) assumes uniform thresholds across all items (Andrich, 1978), making them less suitable for Likert-scale data with complex variations.

The IRT-GRM addresses these limitations by allowing each item to have distinct discrimination parameters and thresholds, making it more flexible in accommodating variations in individual response patterns on the Likert scale. This model assumes that the probability of an individual j with a latent social capital level θ_j selecting response category k or higher for a given item i is given by the cumulative logistic function:

$$P(Y_{ij} \geq k|\theta_j) = \frac{1}{1 + exp[-a_i(\theta_j - b_{ik})]} \quad (1)$$

where:

- $P(Y_{ij} \geq k|\theta_j)$ represents the probability that individual j selects response category k or higher for item i,

- a_i is the discrimination parameter, indicating the extent to which item i differentiates individuals based on their level of social capital,

- b_{ik} is the threshold or difficulty level of the k-th response category for item i, and

- θ_j represents the latent social capital level of individual j.

This formulation allows for a more precise estimation of social capital by accounting for differences in item discrimination and response category thresholds.

Before conducting the IRT analysis, several pre-processing steps were applied to ensure the validity and stability of the estimation results. First, a score reversal rule was implemented for the negatively worded indicator, so that higher scores consistently reflected greater levels of tolerance, trust, or participation. Second, frequency checks of response categories were conducted to identify potential sparsity issues. Finally, when sparse cells were detected, category merging was applied based on conceptual proximity and distributional considerations. These procedures ensured the robustness of the subsequent IRT-GRM estimation.

RESULTS AND DISCUSSION

This section presents IRT-GRM estimation results on three key dimensions of social capital in Indonesia: trust, social participation, and tolerance — factors essential for social cohesion and stability (Putnam, 2000; Fukuyama, 2001). The analysis uses the discrimination parameter to assess indicator sensitivity

and the difficulty parameter to measure the likelihood of positive attitudes or behaviors (Baker & Kim, 2017).

The analysis examines how trust, participation, and tolerance are formed and distributed in society, including their geographic variation across provinces. Since social capital is shaped by both individual and regional factors (Coleman, 1990; Woolcock & Narayan, 2000), these findings offer a stronger empirical basis for understanding its patterns and implications for Indonesia's social and economic development.

Trust

Trust is an essential foundation for social cohesion and the effectiveness of public policies. In Indonesia, levels of trust are influenced by historical legacies, cooperative traditions (gotong royong), and dynamic political changes. To empirically examine these dynamics, this study applies the graded response model (GRM) to three primary forms of trust: bonding trust (trust in one's immediate social environment), bridging trust (trust in community leaders), and linking trust (trust in governmental and legal institutions). Each dimension shows distinct distributional patterns across

Indonesian society. In this framework, the discrimination parameter reflects how well an aspect of trust differentiates individuals at different trust levels, while the threshold (difficulty parameter) indicates the probability of moving from lower to higher trust categories.

Bonding Trust: Trust in the Immediate Social Environment

Bonding trust refers to individuals' trust in their closest social environment, such as neighbors or local communities. In this analysis, two indicators were examined: trust1 (trust that neighbors help in the case of an accident) and trust2 (trust that neighbors keep an eye on the house when it is empty). These indicators have discrimination values of 1.109 and 1.157, respectively, suggesting that while both are relevant measures, their ability to distinguish trust levels among individuals is relatively moderate. In other words, individuals with both high and low levels of trust in their neighbors tend to respond similarly.

In terms of threshold difficulty, trust1 has an initial value of -7.290 and the highest value of 1.609, whereas trust2 ranges from -6.149--1.885. The highly negative initial thresholds indicate that most individuals in Indonesia tend to

exhibit high levels of trust in their neighbors. However, in the context of urbanization and social change, this trend may shift, particularly in urban areas where interactions between residents are declining. If social trust within local communities continues to erode, policies that promote social interaction and community participation will become increasingly essential for fostering cohesion across Indonesia.

Table 2. Estimated parameters of the graded response model (GRM) for trust items

a. Discrimination Parameter (a)

Item	a (Disc.)	Std. Error	z score	p value	95% CI
(1)	(2)	(3)	(4)	(5)	(6)
Trust1	1.089994	0.009623	113.27	0,00	(1.071134 – 1.108854)
Trust2	1.157129	0.009704	119.24	0,00	(1.138109 – 1.176149)
Trust3	1.770848	0.012042	147.06	0,00	(1.747246 – 1.794450)
Trust4	2.985357	0.019813	150.68	0,00	(2.946525 – 3.024189)
Trust5	2.842617	0.018503	153.63	0,00	(2.806353 – 2.878882)
Trust6	2.830088	0.018416	153.68	0,00	(2.793994 – 2.866182)

b. Threshold Parameters for Each Item (b)

Item	b (Threshold)	Std. Error	95% CI
(1)	(2)	(3)	(4)

Item	b (Threshold)	Std. Error	95% CI	
(1)	(2)	(3)	(4)	
Trust1				
≥ 1	-7.289720	0.150178	-7.584063 –	-6.995377
≥ 2	-6.226993	0.092138	-6.407580 –	-6.046406
≥ 3	-5.655248	0.072473	-5.797293 –	-5.513204
≥ 4	-5.140831	0.059119	-5.256702 –	-5.024960
≥ 5	-4.732527	0.050647	-4.831793 –	-4.633261
≥ 6	-3.674205	0.034429	-3.741685 –	-3.606725
≥ 7	-2.677971	0.023672	-2.724367 –	-2.631574
≥ 8	-1.209715	0.012299	-1.233821 –	-1.185609
≥ 9	0.488529	0.008965	0.470958 –	0.506100
$= 10$	1.609222	0.014851	1.580116 –	1.638329
Trust2				
≥ 1	-6.149490	0.094947	-6.335582 –	-5.963398
≥ 2	-5.414870	0.067657	-5.547476 –	-5.282264
≥ 3	-4.779899	0.051656	-4.881143 –	-4.678654
≥ 4	-4.257853	0.041845	-4.339867 –	-4.175839
≥ 5	-3.785405	0.034770	-3.853554 –	-3.717257
≥ 6	-2.848375	0.024068	-2.895548 –	-2.801203
≥ 7	-1.944347	0.016359	-1.976410 –	-1.912284
≥ 8	-0.712688	0.009178	-0.730677 –	-0.694699
≥ 9	0.819758	0.009838	0.800475 –	0.839041
$= 10$	1.884659	0.015871	1.853552 –	1.915765
Trust3				

Item	b (Threshold)	Std. Error	95% CI	
(1)	*(2)*	*(3)*	*(4)*	
≥ 1	-4.513405	0.062534	-4.635969	-4.390840
≥ 2	-3.836607	0.038232	-3.911541	-3.761673
≥ 3	-3.398030	0.028677	-3.454235	-3.341825
≥ 4	-2.972525	0.022131	-3.015900	-2.929149
≥ 5	-2.600011	0.017882	-2.635059	-2.564963
≥ 6	-1.916903	0.012396	-1.941198	-1.892607
≥ 7	-1.311246	0.009103	-1.329087	-1.293404
≥ 8	-0.336350	0.006288	-0.348675	-0.324025
≥ 9	0.904068	0.007880	0.888623	0.919513
= 10	1.713011	0.011336	1.690793	1.735230
Trust4				
≥ 1	-3.409885	0.036745	-3.481904	-3.337865
≥ 2	-2.962863	0.023540	-3.009000	-2.916726
≥ 3	-2.634570	0.017573	-2.669013	-2.600128
≥ 4	-2.312175	0.013624	-2.338878	-2.285472
≥ 5	-1.992204	0.010908	-2.013584	-1.970824
≥ 6	-1.328763	0.007445	-1.343356	-1.314171
≥ 7	-0.778888	0.005823	-0.790302	-0.767475
≥ 8	0.009945	0.005111	-0.000073	0.019962
≥ 9	0.926793	0.006514	0.914026	0.939560
= 10	1.521514	0.008615	1.504630	1.538398
Trust5				
≥ 1	-3.117192	0.026935	-3.169984	-3.064400

Item	*b* (Threshold)	Std. Error	95% CI	
(1)	*(2)*	*(3)*	*(4)*	
≥ 2	-2.733001	0.019135	-2.770504	– -2.695498
≥ 3	-2.393141	0.014612	-2.421779	– -2.364502
≥ 4	-2.031252	0.011321	-2.053441	– -2.009063
≥ 5	-1.716729	0.009281	-1.734919	– -1.698539
≥ 6	-1.110534	0.006745	-1.123754	– -1.097314
≥ 7	-0.589262	0.005523	-0.600087	– -0.578438
≥ 8	0.158200	0.005255	0.147900	– 0.168500
≥ 9	1.067681	0.007029	1.053905	– 1.081457
= 10	1.681157	0.009351	1.662830	– 1.699483
Trust6				
≥ 1	-3.510975	0.039888	-3.589155	– -3.432795
≥ 2	-2.963157	0.023383	-3.008987	– -2.917326
≥ 3	-2.598390	0.017120	-2.631946	– -2.564835
≥ 4	-2.225086	0.012931	-2.250430	– -2.199743
≥ 5	-1.921836	0.010556	-1.942525	– -1.901146
≥ 6	-1.295548	0.007414	-1.310080	– -1.281017
≥ 7	-0.770216	0.005873	-0.781727	– -0.758704
≥ 8	0.035459	0.005194	0.025280	– 0.045639
≥ 9	1.005606	0.006850	0.992180	– 1.019032
= 10	1.645286	0.009216	1.627223	– 1.663349

Source: SPTK 2021, processed via Stata18

Bridging Trust: Trust in Community Leaders

Bridging trust pertains to trust in figures who serve as intermediaries within the community, such as neighborhood leaders (Ketua RT/RW) or other local authorities. In this analysis,

trust3 (trust in the local neighborhood leader (RT/community leader) has a discrimination value of 1.771, which is greater than the indicators of bonding trust. This suggests that trust in community leaders varies more significantly among individuals, depending on personal experiences and direct interactions with these leaders.

With respect to threshold difficulty, Trust3 has an initial value of -4.513 and the highest value of 1.713. This finding indicates that trust in community leaders remains relatively high in Indonesia, albeit not as high as bonding trust. Neighborhood leaders often play crucial roles in conflict resolution, the distribution of social assistance, and the coordination of community activities. Therefore, enhancing the effectiveness of local leadership and ensuring transparency in community governance can further strengthen trust in this category. In the Indonesian context, empowering community leaders can be a key strategy for reinforcing social networks and improving overall societal well-being.

Linking Trust: Trust in Governmental and Legal Institutions

Linking trust reflects confidence in formal institutions that hold authority within the government and legal system. This category includes three main indicators: trust4 (trust in the central government), trust5 (trust in the results of elected officials through elections), and trust6 (trust in law enforcement officers/Police).

The discrimination values for these indicators are significantly greater than those of the previous categories: Trust4 is 2.985, Trust5 is 2.843, and Trust6 is 2.830. This suggests that differences in trust in governmental and legal institutions are more pronounced than are differences in trust in neighbors or community leaders. In other words, individuals with low and high levels of trust in these institutions exhibit starkly contrasting responses.

From a threshold difficulty perspective, trust4 has an initial value of -3.410, indicating that distrust in the central government is relatively high in Indonesia. This could stem from various factors, including public policy effectiveness, government transparency, and persistent issues such as corruption and bureaucracy. Trust5, which measures confidence in election outcomes, has an

initial threshold of -3.117, reflecting significant skepticism regarding the legitimacy of elections in Indonesia. This finding aligns with previous studies suggesting that trust in elections is closely linked to perceptions of electoral commission independence and transparency in the voting process (Norris, 2011).

Moreover, Trust6, which pertains to trust in law enforcement agencies, has an initial threshold of -3.511 and the highest value of 1.645. This finding indicates that building trust in law enforcement requires substantial effort, particularly in ensuring justice, transparency, and integrity in legal enforcement. Prior research highlights that personal experiences with law enforcement, perceptions of legal certainty, and the institution's track record in handling cases significantly influence public trust levels (Tyler & Jackson, 2014). Therefore, legal and governmental reforms remain crucial for strengthening linked trust in Indonesia.

Social Participation

Social participation is a vital component of social cohesion and social capital. In Indonesia, it appears in various forms, from *gotong royong* and community decision-making to electoral participation and support for national policies. These practices reflect the nation's communal values and cultural traditions, while also strengthening collective belonging. To examine these dynamics more systematically, this study analyzes participation patterns across demographic groups, highlighting variations in the extent and form of civic engagement. This approach provides empirical insights into the drivers and barriers of participation, which can inform policies aimed at promoting broader involvement, strengthening grassroots initiatives, and enhancing social resilience.

Bonding Social Participation: Engagement in Close Communities

Bonding social participation reflects the degree of individual involvement in social activities within their immediate community. Three key indicators are analyzed in this category:

- Socpar1: Participation in neighborhood cleaning/mutual assistance activities.
- Socpar2: Participation in funeral events in the neighborhood.

- Socpar3: Participation in neighborhood meetings.

The findings show that Socpar3 has the highest discrimination value of 3.040, indicating that participation in neighborhood meetings is the most distinguishing aspect of social engagement. The threshold difficulty for this indicator ranges from -2.929--1.348, suggesting that most individuals have at least attended a neighborhood meeting.

Building on this, the analysis also reveals variations in discrimination values across other forms of social participation. Socpar1 has a discrimination value of 2.945, whereas socpar2 has a slightly lower value of 2.325. These results suggest that participation in gotong royong is a stronger differentiator of individuals with varying levels of social engagement than attendance at funeral ceremonies. Additionally, differences in threshold difficulty further highlight the distinct nature of these activities. Socpar1 ranges from -3.061--1.108, whereas Socpar2 has a wider range from -3.849--0.868. The more negative threshold in Socpar2 implies that almost no individuals have ever attended a funeral, reflecting Indonesia's

cultural norms that emphasize solidarity in mourning (Geertz, 1960).

Bridging Social Participation: Engagement in Broader Social Networks

Bridging social participation involves individual involvement in activities that connect various social groups within society. Four key indicators are analyzed in this category:

- Socpar4: Willingness to serve as a committee member in community events.
- Socpar5: Willingness to respect the results of community deliberations.
- Socpar6: Willingness to actively participate in fundraising activities for disaster victims

The findings show that Socpar4 has a relatively lower discrimination value of 1.380, implying that the willingness to serve as a committee member is a weaker differentiator of social participation levels. The threshold difficulty for Socpar4 ranges from -3.020--2.436, indicating that only a few individuals are truly willing to take on active roles in community organizations (Putnam, 2000).

Table 3. Estimated parameters of the graded response model (GRM)
for Social Participation Items

a. Discrimination Parameter(a)

Item	a (Disc.)	Std. Error	z score	p value	95% CI
(1)	(2)	(3)	(4)	(5)	(6)
Socpar1	2.944856	0.019521	150.86	0,00	(2.906595 – 2.983116)
Socpar2	2.324983	0.015983	145.46	0,00	(2.293657 – 2.356310)
Socpar3	3.039514	0.020022	151.81	0,00	(3.000272 – 3.078756)
Socpar4	1.380307	0.010097	136.71	0,00	(1.360518 – 1.400096)
Socpar5	1.541120	0.010856	141.96	0,00	(1.519842 – 1.562397)
Socpar6	2.830088	0.018416	151.30	0,00	(1.715194 – 1.760216)
Socpar7	1.443338	0.011220	128.64	0,00	(1.421348 – 1.465329)
Socpar8	0.896776	0.008605	104.22	0,00	(0.879911 – 0.913641)

b. Threshold Parameters for Each Item(b)

Item	b (Threshold)	Std. Error	95% CI	
(1)	(2)	(3)	(4)	
Socpar1				
≥ 1	-3.060955	0.025365	-3.110670 –	-3.011241
≥ 2	-2.717536	0.018789	-2.754362 –	-2.680710
≥ 3	-2.436307	0.015025	-2.465756 –	-2.406858
≥ 4	-2.191763	0.012578	-2.216417 –	-2.167110
≥ 5	-1.976644	0.010884	-1.997976 –	-1.955311
≥ 6	-1.536565	0.008359	-1.552948 –	-1.520181
≥ 7	-1.098960	0.006664	-1.112021 –	-1.085900
≥ 8	-0.414522	0.005259	-0.424828 –	-0.404215
≥ 9	0.486052	0.005624	0.475029 –	0.497076

Item	b (Threshold)	Std. Error	95% CI	
(1)	(2)	(3)	(4)	
= 10	1.107945	0.007268	1.093700 – 1.122189	
Socpar2				
≥ 1	-3.849069	0.046274	-3.939763 –	-3.758374
≥ 2	-3.433281	0.032675	-3.497322 –	-3.369240
≥ 3	-3.168170	0.026591	-3.220288 –	-3.116053
≥ 4	-2.940163	0.022443	-2.984149 –	-2.896176
≥ 5	-2.708698	0.019054	-2.746043 –	-2.671352
≥ 6	-2.158048	0.013382	-2.184276 –	-2.131820
≥ 7	-1.627354	0.009843	-1.646646 –	-1.608061
≥ 8	-0.851370	0.006627	-0.864359 –	-0.838380
≥ 9	0.138518	0.005560	0.127620 –	0.149415
= 10	0.867762	0.007152	0.853744 –	0.881781
Socpar3				
≥ 1	-2.928616	0.022779	-2.973261 –	-2.883970
≥ 2	-2.596552	0.017071	-2.630011 –	-2.563093
≥ 3	-2.310699	0.013664	-2.337480 –	-2.283917
≥ 4	-2.046670	0.011340	-2.068897 –	-2.024444
≥ 5	-1.802568	0.009688	-1.821555 –	-1.783581
≥ 6	-1.305326	0.007311	-1.319656 –	-1.290997
≥ 7	-0.812493	0.005831	-0.823921 –	-0.801065
≥ 8	-0.136859	0.005050	-0.146757 –	-0.126961
≥ 9	0.727065	0.006066	0.715176 –	0.738954
= 10	1.347837	0.007967	1.332223 –	1.363452

Item	*b* (Threshold)	Std. Error	95% CI	
(1)	*(2)*	*(3)*	*(4)*	
Socpar4				
≥ 1	-3.019689	0.023197	-3.065154	-2.974224
≥ 2	-2.497194	0.018197	-2.532858	-2.461529
≥ 3	-2.085192	0.014961	-2.114514	-2.055870
≥ 4	-1.698701	0.012364	-1.722933	-1.674468
≥ 5	-1.345220	0.010345	-1.365495	-1.324945
≥ 6	-0.733208	0.007814	-0.748523	-0.717893
≥ 7	-0.158083	0.006954	-0.171712	-0.144454
≥ 8	0.614260	0.008384	0.597829	0.630692
≥ 9	1.684608	0.013209	1.658718	1.710497
= 10	2.436196	0.017601	2.401698	2.470693
Socpar5				
≥ 1	-4.850329	0.067100	-4.981843	-4.718815
≥ 2	-4.282319	0.046870	-4.374184	-4.190455
≥ 3	-3.849055	0.036411	-3.920419	-3.777691
≥ 4	-3.329777	0.027369	-3.383419	-3.276136
≥ 5	-2.886762	0.021666	-2.929226	-2.844299
≥ 6	-1.933511	0.013369	-1.959713	-1.907309
≥ 7	-1.186971	0.009180	-1.204962	-1.168979
≥ 8	-0.109130	0.006571	-0.122009	-0.096250
≥ 9	1.200372	0.009757	1.181249	1.219495
= 10	2.002633	0.013791	1.975603	2.029664
Socpar6				

Item	*b* (Threshold)	Std. Error	95% CI
(1)	*(2)*	*(3)*	*(4)*
≥ 1	-3.241566	0.025328	-3.291207 – -3.191925
≥ 2	-2.779018	0.019452	-2.817144 – -2.740892
≥ 3	-2.409089	0.015930	-2.440311 – -2.377868
≥ 4	-2.092228	0.013480	-2.118648 – -2.065808
≥ 5	-1.782670	0.011473	-1.805157 – -1.760184
≥ 6	-1.160410	0.008386	-1.176845 – -1.143974
≥ 7	-0.543792	0.006551	-0.556632 – -0.530953
≥ 8	0.263162	0.006467	0.250487 – 0.275837
≥ 9	1.277789	0.009487	1.259195 – 1.296384
= 10	1.946163	0.012633	1.921404 – 1.970922
Socpar7			
≥ 1	-4.894244	0.064532	-5.020725 – -4.767764
≥ 2	-4.542846	0.052862	-4.646454 – -4.439239
≥ 3	-4.324968	0.046965	-4.417019 – -4.232918
≥ 4	-4.096958	0.041630	-4.178552 – -4.015364
≥ 5	-3.858388	0.036815	-3.930543 – -3.786233
≥ 6	-2.933515	0.023508	-2.979590 – -2.887440
≥ 7	-2.148241	0.016205	-2.180003 – -2.116479
≥ 8	-1.068418	0.009451	-1.086942 – -1.049894
≥ 9	0.096737	0.006889	0.083235 – 0.110238
= 10	0.870834	0.009018	0.853160 – 0.888508
Socpar8			
≥ 1	-5.038945	0.054996	-5.146735 – -4.931156

Item	*b* (Threshold)	Std. Error	95% CI	
(1)	*(2)*	*(3)*	*(4)*	
≥ 2	-4.390968	0.045372	-4.479896 –	-4.302040
≥ 3	-3.857429	0.038514	-3.932915 –	-3.781943
≥ 4	-3.351141	0.032636	-3.415107 –	-3.287176
≥ 5	-2.944921	0.028286	-3.000360 –	-2.889483
≥ 6	-2.102562	0.020244	-2.142240 –	-2.062883
≥ 7	-1.492906	0.015299	-1.522892 –	-1.462920
≥ 8	-0.527730	0.009996	-0.547321 –	-0.508139
≥ 9	0.795887	0.012123	0.772128 –	0.819647
= 10	1.826774	0.018937	1.789658 –	1.863890

Source: SPTK 2021, processed via Stata18

Specifically, Socpar5, which reflects individuals' willingness to respect community deliberation outcomes, has a slightly higher discrimination value of 1.541. With a threshold difficulty between -4.850 and 2.003, this indicator suggests that while most individuals respect collective decisions, only a small fraction exhibit a strong commitment to consensus-based deliberation. In the Indonesian context, this finding aligns with the enduring strength of deliberative culture, particularly in rural communities (Effendi, 2013).

A similar pattern emerges with Socpar6, which represents participation in disaster relief fundraising. With a discrimination value of 2,830, this indicator suggests a stronger differentiating factor than does socpar4 and socpar5. The threshold difficulty, ranging from -3.242 to 1.946, indicates a high tendency among individuals to engage in charitable activities. This is consistent with Indonesia's cultural emphasis on cooperation (gotong royong) and philanthropy (Latief, 2012).

Linking Social Participation: Engagement in Institutions and Public Policies

Linking social participation assesses the extent to which individuals

participate in governance and public policy. Two key indicators in this category are as follows:

- Socpar7: Participation in elections (General/Pilkada)
- Socpar8: Support for the national Covid-19 vaccination program.

The analysis indicates that Socpar7 has a discrimination value of 1.443, with a threshold difficulty ranging from -4.894--0.871. The highly negative threshold suggests that almost all individuals have participated in elections, reflecting a relatively high level of political engagement in Indonesia (Aspinall & Mietzner, 2019).

Moreover, Socpar8 has the lowest discrimination value of 0.897, with a threshold difficulty between -5.039 and 1.827. The lower discrimination value implies that support for the COVID-19 vaccination program does not strongly influence individuals in terms of social participation levels. However, the highly negative threshold suggests that nearly all individuals are strongly inclined to accept vaccination, likely due to government mandates and public health considerations.

Tolerance

Tolerance serves as one of the fundamental pillars in fostering and maintaining social harmony within a diverse society. It acts as a bridge that connects individuals from different cultural, religious, and ethnic backgrounds, enabling peaceful coexistence despite differences in beliefs, values, and traditions. In a world increasingly characterized by globalization and multicultural interactions, tolerance is not merely an ideal but also a necessity for building cohesive and inclusive communities. By embracing tolerance, societies can mitigate conflicts, encourage mutual understanding, and cultivate an environment where diversity is seen as a strength rather than a source of division.

Bonding Tolerance: Preference for Friendships Based on Ethnic Similarity

Bonding tolerance refers to an individual's tendency to befriend only those from the same ethnic background. The tol2 item has a discrimination value of 2.137, which is relatively high, indicating that this aspect effectively differentiates individuals with varying levels of tolerance.

In terms of threshold difficulty, the initial value (-2.688) is relatively low but still negative, suggesting that most individuals tend to prefer friendships with those of the same ethnic background, although the preference is not extreme. Previous studies have shown that societies with higher levels of social segregation tend to be more selective in forming friendships based on ethnicity (McPherson et al., 2001).

Table 4. Estimated parameters of the graded response model (GRM) for tolerance items

a. Discrimination Parameter(a)

Item	a (Disc.)	Std. Error	z score	p value	95% CI
(1)	(2)	(3)	(4)	(5)	(6)
Tol1	2.137000	0.012777	167.25	0,00	(2.111957 – 2.162042)
Tol2	2.035393	0.012469	163.23	0,00	(2.010954 – 2.059833)
Tol3	5.715752	0.049907	114.53	0,00	(5.617937 – 5.813567)
Tol4	3.838112	0.022382	171.48	0,00	(3.794244 – 3.881981)
Tol5	1.441945	0.010225	141.02	0,00	(1.421905 – 1.461986)

b. Threshold Parameters for Each Item(b)

Item	b (Threshold)	Std. Error	95% CI	
(1)	(2)	(3)	(4)	
Tol1				
≥ 1	-2.688466	0.018671	-2.725060 –	-2.651872
≥ 2	-2.331647	0.014779	-2.360614 –	-2.302680
≥ 3	-1.708211	0.010198	-1.728198 –	-1.688224
≥ 4	-1.218524	0.007853	-1.233915 –	-1.203132
≥ 5	-0.858104	0.006661	-0.871159 –	-0.845049
≥ 6	-0.318750	0.005698	-0.329918 –	-0.307583

Item	b (Threshold)	Std. Error	95% CI	
(1)	*(2)*	*(3)*	*(4)*	
≥ 7	0.100299	0.005650	0.089224	– 0.111373
≥ 8	0.590431	0.006306	0.578071	– 0.602791
≥ 9	1.100695	0.007633	1.085735	– 1.115654
$= 10$	1.702016	0.010033	1.682353	– 1.721680
Tol2				
≥ 1	-2.859172	0.021124	-2.900574	– -2.817770
≥ 2	-2.461522	0.016357	-2.493580	– -2.429463
≥ 3	-1.855037	0.011457	-1.877491	– -1.832582
≥ 4	-1.434545	0.009139	-1.452456	– -1.416633
≥ 5	-1.112802	0.007792	-1.128074	– -1.097530
≥ 6	-0.607111	0.006319	-0.619496	– -0.594725
≥ 7	-0.176954	0.005751	-0.188225	– -0.165683
≥ 8	0.325432	0.005940	0.313790	– 0.337073
≥ 9	0.853665	0.007001	0.839944	– 0.867387
$= 10$	1.491860	0.009301	1.473631	– 1.510088
Tol3				
≥ 1	-1.870749	0.009728	-1.889814	– -1.851683
≥ 2	-1.605092	0.007819	-1.620417	– -1.589767
≥ 3	-1.154163	0.005943	-1.165811	– -1.142515
≥ 4	-0.805703	0.005108	-0.815714	– -0.795692
≥ 5	-0.550524	0.004748	-0.559829	– -0.541219
≥ 6	-0.158537	0.004536	-0.167428	– -0.149646
≥ 7	0.143396	0.004633	0.134316	– 0.152476

Item	b (Threshold)	Std. Error	95% CI	
(1)	(2)	(3)	(4)	
≥ 8	0.529011	0.005028	0.519156 – 0.538866	
≥ 9	0.961559	0.005790	0.950211 – 0.972906	
= 10	1.472002	0.007202	1.457887 – 1.486118	
Tol4				
≥ 1	-1.896640	0.010023	-1.916285 – -1.876994	
≥ 2	-1.587127	0.007970	-1.602747 – -1.571507	
≥ 3	-1.090242	0.006036	-1.102073 – -1.078411	
≥ 4	-0.726163	0.005222	-0.736399 – -0.715927	
≥ 5	-0.471347	0.004902	-0.480955 – -0.461740	
≥ 6	-0.073415	0.004776	-0.082776 – -0.064054	
≥ 7	0.222803	0.004939	0.213123 – 0.232484	
≥ 8	0.611125	0.005439	0.600464 – 0.621786	
≥ 9	1.055620	0.006365	1.043145 – 1.068095	
= 10	1.614779	0.008178	1.598751 – 1.630806	
Tol5				
≥ 1	-3.529720	0.029889	-3.588301 – -3.471139	
≥ 2	-3.001259	0.023144	-3.046620 – -2.955897	
≥ 3	-2.079154	0.014848	-2.108255 – -2.050053	
≥ 4	-1.336387	0.010242	-1.356461 – -1.316312	
≥ 5	-0.772411	0.007873	-0.787842 – -0.756980	
≥ 6	0.044164	0.006807	0.030824 – 0.057505	
≥ 7	0.534815	0.007704	0.519716 – 0.549914	
≥ 8	1.126012	0.009848	1.106710 – 1.145314	

Item	b (Threshold)	Std. Error	95% CI	
(1)	(2)	(3)	(4)	
≥ 9	1.802042	0.013209	1.776153 –	1.827931
= 10	2.578419	0.018181	2.542786 –	2.614052

Source: SPTK 2021, processed via Stata18

The threshold value gradually increases, reaching 1.702 in the highest category, indicating that only a small proportion of individuals exhibit a high level of tolerance toward ethnic diversity in friendships. This suggests that while many Indonesians may prefer social interactions with those of similar ethnic backgrounds, a segment of the population still has high tolerance for ethnic diversity in their social relationships.

Bridging Tolerance: Tolerance Toward Differences in Opinion and Religious Freedom

Bridging tolerance encompasses two key aspects: perceptions of restrictions on minority religious teachings (Tol3) and the tendency to disagree with individuals holding different opinions (Tol4).

For tol3, the discrimination value of 2.035 indicates that this item effectively differentiates individuals based on their level of tolerance toward religious freedom for minority groups. Moreover, the initial threshold value of -2.859 suggests that very few individuals fall into the category of extremely low tolerance. In other words, most of the population exhibits a moderate to high level of tolerance toward religious freedom. Studies by Gibson (2006) have shown that in democratic societies, tolerance for religious freedom increases with higher levels of education and exposure to diversity.

The tol4 indicator, which measures an individual's tendency to disagree with those holding different opinions, has the highest discrimination value at 5.716, indicating significant variability in responses. This means that individuals with different tolerance levels exhibit highly contrasting response patterns. The initial threshold value (-1.871) is relatively low but not extreme, suggesting that disagreement with

differing opinions is common, although some segments of society remain more open to diverse perspectives. Norris & Inglehart (2019) argue that societies with strong democratic values tend to be more tolerant of differing opinions than more authoritarian societies are.

Linking Tolerance: Perceptions of Policies Favoring the Majority Group

Linking tolerance reflects how individuals perceive development policies that favor the majority group, whether in terms of religion or ethnicity. In this analysis, tol5 and tol6 represent these dimensions.

The tol5 indicator, which measures perceptions of development policies favoring the religious majority, has a discrimination value of 3.838, indicating that this aspect strongly distinguishes individuals with different levels of tolerance. The initial threshold (-1.897) suggests that most individuals do not hold an extreme perception that development policies benefit the religious majority, although there is a moderate tendency toward this belief. The study by Bertrand and Mullainathan (2004) shows that perceptions of state favoritism toward the majority group often trigger

social tensions in multicultural societies, particularly in relation to racial discrimination in the labor market.

Moreover, the tol6 indicator, which measures perceptions of development policies favoring indigenous populations over minority groups, has a lower discrimination value of 1.441 than Tol5 does. This suggests that differences in perceptions of development policies based on ethnicity are not as pronounced as those based on religion. However, the initial threshold value (-3.530) is highly negative, meaning that very few individuals fall into the lowest tolerance category. In other words, most of the population does not hold extreme views that development in Indonesia overwhelmingly favors indigenous ethnic groups, although there is some variation in perception within a more moderate range.

Patterns of Trust across Regions

The level of individual trust within a society is not merely a social indicator but also reflects broader economic and political dynamics. On the basis of the item response theory–graded response model (IRT-GRM) approach, we classify individual trust levels into three

categories, namely, low, moderate, and high, on the basis of the 33rd and 66th percentiles of the latent variable. The primary indicator used in this analysis is net trust, which represents the difference between the percentages of individuals with high and low levels of trust. A positive net trust value indicates a predominance of strong trust within society, whereas a negative value reflects a low level of social trust. Although moderate trust levels do not directly affect net trust, they provide important context. A high share of moderate responses may signal ambivalence or shifting attitudes that aren't fully captured by net trust alone.

Figure 1 shows that provinces with the highest net trust values, such as North Sulawesi (48.65), Central Sulawesi (45.16), and Gorontalo (39.74), exhibit a significantly greater proportion of individuals with high trust than those in the low-trust category. For example, in North Sulawesi, only 13.51% of the population falls into the low-trust category, whereas 62.16% exhibit high levels of trust. This phenomenon can be linked to a strong culture of collectivism, where social norms emphasize

cooperation and community solidarity. Local traditions such as mapalus in North Sulawesi and pela gandong in Maluku (Net Trust: 34.39) exemplify how customary practices reinforce social trust across ethnic and religious groups (Pannell, 2017). High levels of societal trust can also have positive impacts on social cohesion, which in turn strengthens economic and political stability.

Conversely, provinces with negative net trust, such as Banten (-44.63), Papua (-28.93), and Jakarta (-21.65), present a substantially greater number of individuals with low trust than those with high trust. Banten represents the most extreme case, with 57.82% of its population categorized as having low trust, whereas only 13.19% exhibit high trust. This situation can be attributed to rapid urbanization, economic inequality, and urban individualism. Jakarta follows a similar pattern, where 44.02% of individuals fall into the low-trust category, likely due to socioeconomic segregation and significant disparities in access to public services (Suryadarma et al., 2020). Moreover, Papua and West Papua exhibit low levels of trust, which

may be associated with a history of conflict, economic marginalization, and

distrust in formal institutions (Widjojo, 2012).

Figure 1. The Cartogram of the Proportion of Net Individual Trust by Province, 2021

%Trust_Net
[-44.630 : -15.810] (7)
[-14.590 : -1.970] (7)
[-1.020 : 2.890] (6)
[4.200 : 16.490] (7)
[28.450 : 48.650] (7)
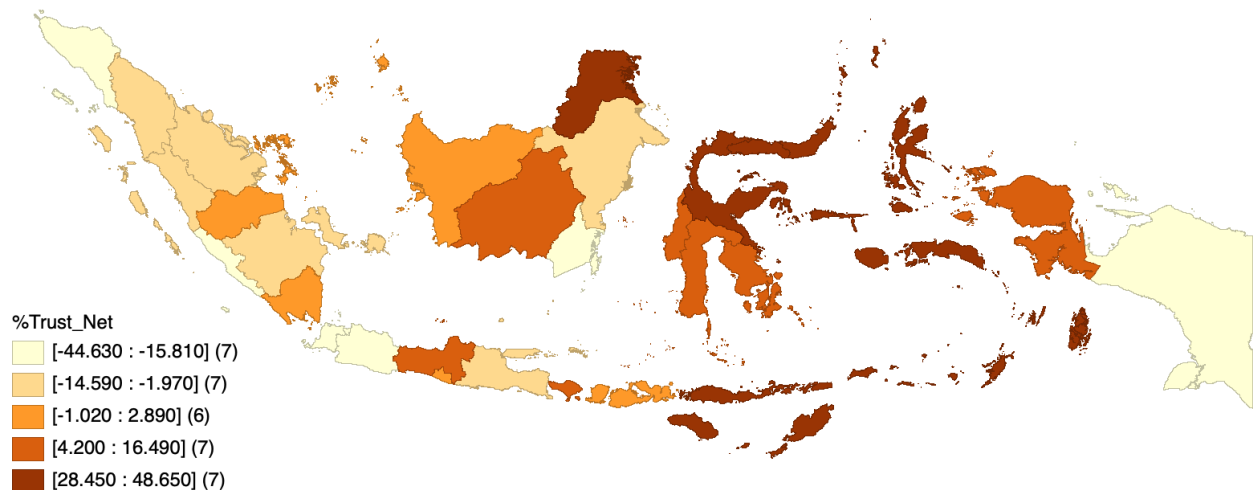
The distribution of trust has far-reaching implications for various aspects of social and economic life. Regions with predominantly high levels of trust tend to exhibit greater social participation, greater engagement in community-based economies, and stronger adherence to social norms (Fukuyama, 1995). For example, in areas with positive net trust values, such as Sulawesi and Maluku, participation in cooperatives and community-based microenterprises are greater, which can support local economic growth

In addition to regions with extreme net trust values, some provinces display a more balanced distribution of trust levels, where a substantial proportion of individuals fall into the moderate category. For example, West Kalimantan (Net Trust: 0.93) and the Special Region of Yogyakarta (Net Trust: 1.76) show

360

relatively high proportions of individuals with moderate trust, at 33.37% and 38.18%, respectively. Societies in these areas tend to be more flexible in navigating social and political changes and more adaptive to government policies. The balance among the low-, moderate-, and high-trust categories also indicate lower levels of social polarization, which can contribute to long-term social stability.

In contrast, regions with low levels of trust often face challenges in building credible institutions, enhancing democratic quality, and strengthening social capital. In Jakarta and Banten, low levels of trust may contribute to high transaction costs in business and weak public participation in collective initiatives. Severe social inequality in Jakarta may further exacerbate this issue, as the gap between high- and low-income groups continues to widen (Suryadarma et al., 2020). Moreover, low levels of trust in Papua reflect deeper structural problems, where historical conflicts and a lack of inclusive development have exacerbated distrust of the central government (Widjojo, 2012; Tadjoeddin, 2021).

Regional disparities in social participation

Social participation plays a crucial role in fostering social cohesion, strengthening communal ties, and enhancing collective well-being. In Indonesia, a country characterized by vast geographical, cultural, and economic diversity, the levels of social participation vary significantly across regions. Understanding these variations is essential for designing policies that promote civic engagement and community resilience.

This analysis examines the distribution of individual social participation across Indonesian provinces, categorizing participation into low, moderate, and high levels, while also evaluating the net social participation rate.

The distribution of individual social participation across various provinces in Indonesia can be categorized into three levels: low, moderate, and high, along with the net social participation value (% net social participation). Nationally, the percentage of individuals with high social participation stands at 31.26%, whereas the net social participation rate

is recorded at -11.05%, indicating that a larger proportion of individuals fall into the low or moderate participation categories rather than the high participation category.

In terms of moderate social participation (% Moderate), the national average is 33.45%, indicating that approximately one-third of the population engages in social activities at a relatively active level but not with high intensity. Some provinces with the highest proportion of moderate social participation include the Special Region of Yogyakarta (39.79%), East Kalimantan (38.89%), and Central Java (38.68%). This suggests that communities in these regions maintain strong social interactions, which are likely facilitated by community-based organizations or deliberative activities.

Moreover, the national average for high social participation (% high) is 31.26%, with some provinces significantly exceeding this average, such as Central Sulawesi (53.97%), North Sulawesi (53.22%), and East Nusa Tenggara (50.36%). This finding indicates that more than half of the population in these regions actively participates in strong

social engagements, possibly driven by deeply rooted community-based social structures, communal living among indigenous groups, and the role of religious organizations in fostering social interaction. In contrast, Jakarta has a particularly low rate of high social participation (16.63%), reinforcing the notion that metropolitan residents tend to be more individualistic, with lower levels of social engagement.

Examining the net social participation value (% net social participation), as shown in Figure 2, the provinces with the highest scores are North Sulawesi (34.43%), Central Sulawesi (34.54%), and Maluku (36.48%). This finding indicates that individuals in these regions engage in social activities at a highly intensive level. Several factors may contribute to this high level of participation, including strong social ties, the continued function of traditional structures, and low urbanization rates, which allow for closer social interactions (Putnam, 2000). For instance, in Maluku and North Maluku, the pela gandong system—which is based on intercommunity kinship relations—plays

a significant role in strengthening social participation (Suyanto & Wibowo, 2018).

Conversely, the provinces with the lowest net social participation are Banten (-36.39%), Jakarta (-32.96%), and Bengkulu (-25.86%). Rapid urbanization in Banten and Jakarta is a key factor contributing to the decline in social interaction, aligning with urbanization theories that suggest that large city growth tends to increase individualism and decrease community-based social engagement (Wirth, 1938; Sassen, 2001).

Another intriguing phenomenon is the relatively low net social participation observed in several regions known for their strong social traditions, such as North Sumatra (-13.68%), West Sumatra (-8.06%), and Riau (-6.77%). The Minangkabau community, for example, is traditionally recognized for its deliberative decision-making system and communal structures (Navis, 1984). This suggests that modernization, migration, and shifting social values influence individuals' engagement in social activities.

Figure 2. The Cartogram of the Proportion of Net Individual Social Participation by Province, 2021
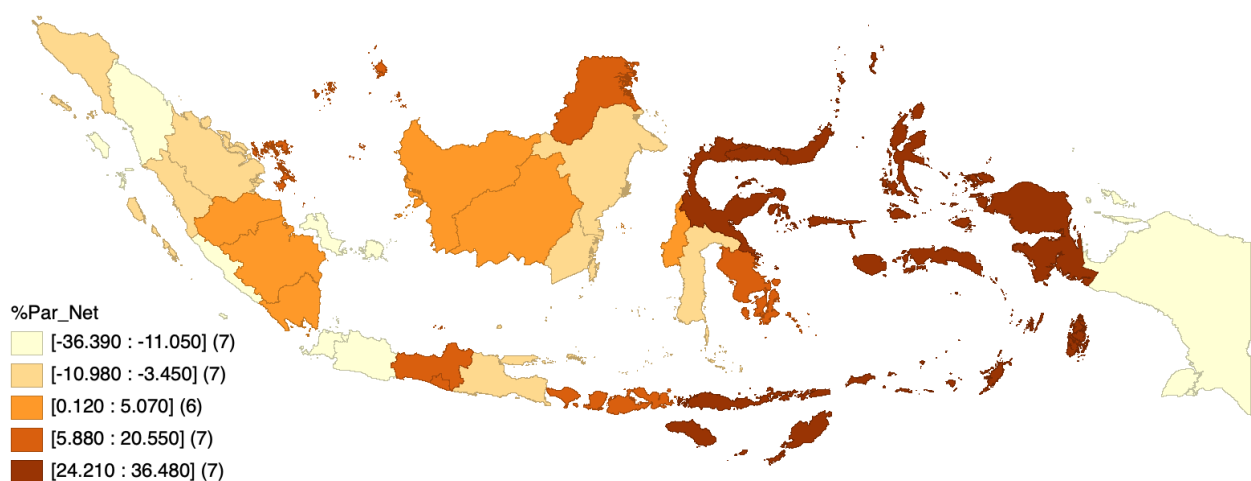
Source: SPTK 2021, processed

On the other hand, some provinces with limited economic access and infrastructure, such as East Nusa

Tenggara (27.86%) and West Papua (24.21%), exhibit notably high levels of social participation. This could be

attributed to the prevalence of community-based social structures and the significant role of religious institutions in organizing social interactions (Booth, 2016).

Overall, the data indicate that social participation in Indonesia is influenced by various factors, including urbanization levels, cultural traditions, and regional socioeconomic conditions. Therefore, policies aimed at enhancing social engagement should be tailored to regional characteristics. In urban areas, interventions could focus on strengthening neighborhood-based communities to counteract increasing individualism, whereas in rural areas, efforts should be directed toward empowering traditional social organizations to remain relevant amid modernization trends.

Tolerance as a Key to Social Harmony in Diversity

Tolerance serves as a crucial foundation for social harmony in Indonesia's diverse society. However, individual tolerance levels vary across provinces and are influenced by social history, cultural interactions, and local policies. Regions with high diversity tend

to exhibit greater tolerance, whereas more homogeneous areas or those with strict social regulations often display lower tolerance levels.

Figure 3 illustrate individual tolerance levels across various provinces in Indonesia, categorized into three levels: low, moderate, and high, measured by net tolerance percentages. Overall, the percentage of individuals with high tolerance in Indonesia stands at 32.55%, whereas the percentage of those with low tolerance reaches 33.39%, resulting in substantial interprovincial variation in net tolerance percentages.

Several provinces, such as East Nusa Tenggara (44.87), North Kalimantan (63.64), and North Sulawesi (28.93), presented significantly positive net tolerance levels. These findings may be attributed to factors such as cultural diversity being an integral part of daily life, a history of harmonious intergroup interactions, and local policies that promote inclusivity. For example, East Nusa Tenggara records a high tolerance rate of 56.83%, far exceeding the national average. This figure is supported by a relatively low percentage of individuals with low tolerance, at just 11.96%. The

peaceful coexistence of various religious communities in this province may be a key factor in fostering high tolerance levels. Moreover, North Kalimantan has the highest tolerance rate in Indonesia, at 72.45%, with a remarkably low level of intolerance of only 8.81%. As a border region with high interaction among various ethnic communities, North Kalimantan has strong social openness.

Figure 3. The Cartogram of the Proportion of Net Individual Tolerance by Province, 2021
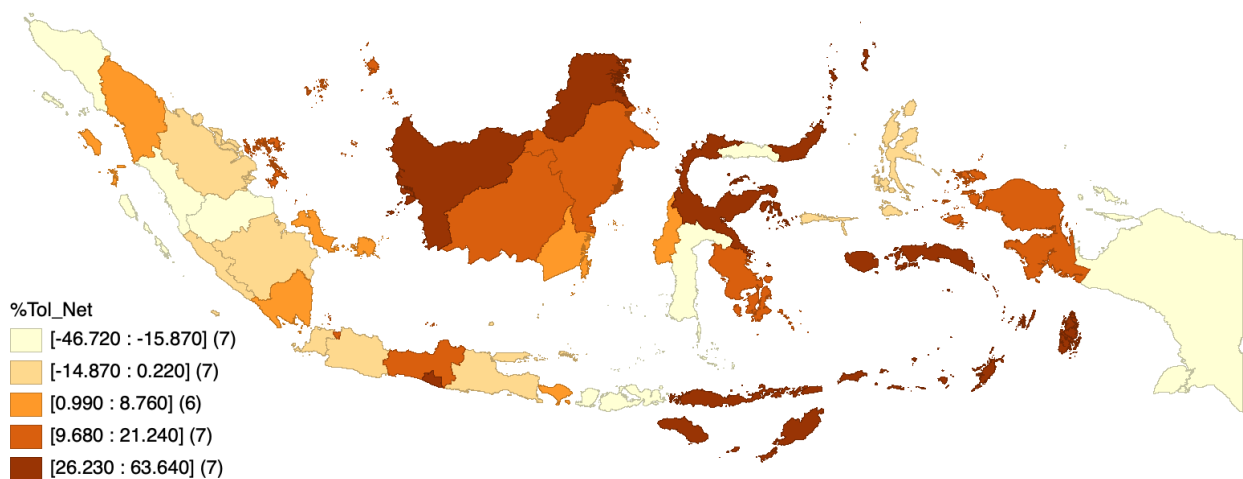
Source: SPTK 2021, processed

Conversely, some provinces reported highly negative net tolerance levels, including Aceh Province (-46.72), Papua (-28.39), and West Nusa Tenggara (-30.11). Aceh, the only province in Indonesia that formally implements

Islamic Sharia law, often exhibits more exclusive social dynamics toward minority groups, which may contribute to low individual tolerance levels. This is reflected in the high proportion of individuals with low tolerance (58.58%) compared with those with high tolerance (11.86%). On the other hand, Papua faces challenges in social integration, with a history of conflict and economic disparities that may drive social exclusivity. In Papua, the percentage of individuals with low tolerance is 50.74%, accounting for more than half of the population, whereas only 22.35% exhibit high tolerance. Similarly, West Nusa Tenggara followed this trend, with a low tolerance rate of 51.28%, contributing to its negative net tolerance level.

Jakarta (9.68) and Bali (8.76) presented positive net tolerance levels, which can be linked to their demographic characteristics as economic and tourism hubs. As the capital city, Jakarta hosts an extremely diverse population due to high migration flows from various regions, resulting in a substantial proportion of individuals with moderate tolerance (43.92%). This finding indicates that many individuals hold a balanced stance on tolerance, serving as valuable social capital for further integration. Moreover, Bali, as a global tourist destination, is accustomed to intense cross-cultural interactions, with a high tolerance rate of 37.84% and a relatively low intolerance rate of 29.08%.

Tolerance influences social and economic outcomes. Higher tolerance supports investment, diversity, and inclusive development, while lower tolerance can hinder integration and stability (Putnam, 2007; Guiso et al., 2009). Promoting intercultural dialog, inclusive education, and social equality is key to enhancing tolerance in Indonesia.

Social capital gaps in Indonesia

Figure 4 shows that there are significant disparities in the distribution of individual social capital across various provinces in Indonesia. Social capital reflects the level of trust, social participation, and tolerance within a society, which are essential for social and economic development.

Provinces with negative net social capital, such as Banten (-45.34), DKI Jakarta (-30.77), and Bengkulu (-28.93), tend to exhibit lower levels of trust and social participation. In terms of category

distribution, Banten has the highest proportion of individuals with low social capital (59.19%), indicating that most of its population faces challenges in building social trust and engagement. Similarly, in DKI Jakarta, nearly half of the population (48.47%) demonstrated high individualism and limited community involvement. This phenomenon can be attributed to various factors, including rapid urbanization, economic disparities, and structural changes that weaken community cohesion (Putnam, 2000). As Indonesia's economic and urbanization hub, Jakarta experiences significant social fragmentation, where individualism often takes precedence over collective solidarity. Moreover, Banten, which struggles with high poverty and inequality, faces similar difficulties in fostering strong social networks.

In contrast, regions with high social capital, such as Central Sulawesi (40.68), North Sulawesi (38.22), and East Nusa Tenggara (32.70), exhibit stronger levels of trust and social interaction within their communities. This is also reflected in the significant proportion of individuals with high social capital, with Central Sulawesi leading at 57.62%, followed by West Sulawesi (37.61%) and Gorontalo (53.87%). Cultural factors, particularly the enduring communal values in eastern Indonesia, play a key role in maintaining strong social capital (Fukuyama, 1995). In the context of development, provinces with higher levels of social capital tend to be more effective in implementing community-based programs, such as cooperatives and microenterprises, due to the presence of mutual trust and sustained social participation.

Figure 4. The Cartogram of the Proportion of Net Individual Social Capital by Province, 2021
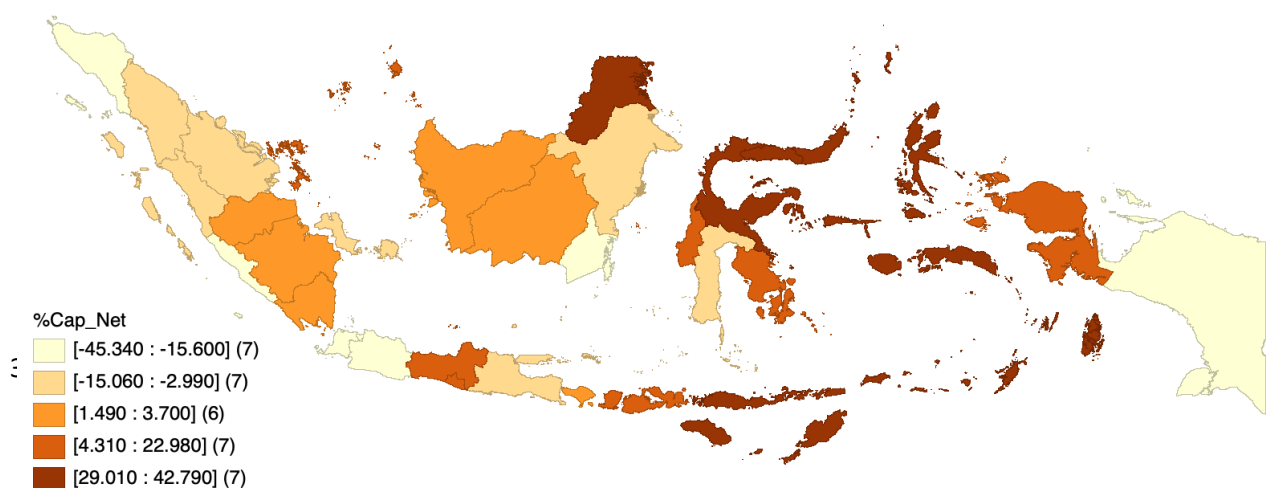
Source: SPTK 2021, processed

Some provinces fall within a more moderate range of social capital, such as Central Java (13.16) and the Special Region of Yogyakarta (11.19). Central Java has the highest proportion of individuals in this category (40.92%), suggesting that the region maintains a relatively balanced level of trust and social engagement. Yogyakarta, although slightly lower at 38.60%, also demonstrates a well-rounded distribution across different levels of social capital, reflecting the resilience of its social culture. Despite modernization, both provinces have managed to preserve strong traditions of social cooperation and collective participation. Previous studies suggest that robust social capital contributes to social stability and economic well-being by fostering collaboration in various sectors, including the creative economy and small and medium–sized enterprises (Coleman, 1988).

At the national level, Indonesia has a net negative social capital score (-4.39), indicating persistent challenges in strengthening social trust. Social fragmentation caused by urbanization, political polarization, and economic inequality remains a critical issue that must be addressed in development policies. The proportion of individuals with low social capital nationwide stands at 35.32%, surpassing those with high social capital at 30.93%, suggesting that trust and social participation remain limited for a significant portion of the population.

CONCLUSION

The results of applying the IRT GRM method offer significant insights into the role of social capital in Indonesia's economic development. By identifying the strengths and weaknesses of social capital across regions, the constructed index can serve as a foundation for policymakers in designing

more inclusive and sustainable development strategies. Moreover, the robustness of this method compared to previous approaches enhances its potential application across diverse sectors, including rural development, community empowerment, and digital economic growth. In this way, the study contributes more broadly to strengthening economic development through social capital.

The analysis results show that social trust, social participation, and tolerance in Indonesia exhibit hierarchical characteristics and are influenced by social, economic, and political factors. In general, social trust in Indonesia is hierarchical, with bonding trust (trust in the immediate community) exhibiting low variation, whereas bridging trust (trust in community leadership) and linking trust (trust in government institutions) show greater variation. Community involvement in social participation also displays varied patterns, with bonding social participation remaining relatively strong through local social activities, whereas bridging and linking social participation, which involves broader networks, are influenced by distinguishing factors such as attendance at community meetings and elections. Tolerance in Indonesian society follows a similar pattern, with bonding tolerance indicating a preference for the same ethnic group, whereas bridging tolerance is greater toward religious freedom. However, linking tolerance still faces challenges related to development policies that tend to favor the majority group.

These findings suggest that social policies should focus on strengthening social interaction at the community level to enhance bonding trust, as well as improving transparency and accountability in institutions to strengthen linking trust. For social participation, inclusive approaches should be employed to strengthen the role of communities and encourage their involvement in social and political organizations. With respect to tolerance, more inclusive social interactions are necessary to reduce ethnic bias and ensure spaces for dialogue that accept differing opinions. Transparent public policies and fair development can enhance linking tolerance.

In strengthening social capital, educational programs with civic and moral components, such as the former Pendidikan Moral Pancasila (PMP), Pendidikan Kewarganegaraan (PPKn), and character education under the 2013 Curriculum—have historically played an important role in embedding shared norms, civic values, and national identity. These programs contribute to the formation of bonding and bridging trust by instilling core values like mutual respect, cooperation, and civic responsibility from an early age. Similarly, extracurricular programs such as Pramuka (scouting), which promote leadership, collective action, and intergroup interaction, can be revitalized and integrated with current participatory development efforts to reinforce youth social engagement.

Moreover, community-based development programs inspired by the PNPM Generasi model, emphasizing bottom-up planning, musyawarah, and shared responsibility—serve as effective frameworks for cultivating linking trust and empowering local decision-making. These approaches strengthen networks of cooperation across socioeconomic divides, increasing both community resilience and institutional legitimacy. Reinvesting in such participatory mechanisms, especially within the education and health sectors, may provide long-term benefits for inclusive social capital formation.

More broadly, social dynamics in Indonesia are influenced by factors such as urbanization, customs, and the socioeconomic conditions of various regions. Provinces with collectivist cultures, such as North Sulawesi and Gorontalo, show high levels of trust and social participation, whereas urban provinces such as Jakarta and Banten face challenges in social cohesion and community participation due to rapid urbanization and social inequality. Social tolerance also varies, with provinces such as East Nusa Tenggara exhibiting high levels of tolerance, whereas provinces with a history of conflict, such as Aceh and Papua, show lower levels of tolerance.

Therefore, effective development policies should be tailored to the characteristics of each region, strengthening urban communities and empowering traditional social

organizations in rural areas to create a more inclusive, cohesive, and democratic society. Reviving values-based educational programming and localized participatory planning can also serve as crucial policy levers in regions experiencing either fragmentation or exclusion.

In conclusion, this study proposes the use of the item response theory (IRT) graded response model (GRM) to address the limitations of measuring social capital based on ordinal data and the complexity of relationships between variables. This approach has proven effective in providing more accurate estimates of item difficulty and discrimination, resulting in a more robust and accurate social capital index. Although challenges related to data limitations and variable relationships persist, the application of IRT GRM has successfully enhanced the quality of social capital measurement in Indonesia. The resulting index can serve as a valuable tool for policymakers in formulating more inclusive and sustainable development strategies.

Thus, while some issues in social capital measurement remain unresolved, this approach makes a significant contribution to understanding the more complex and regional dynamics of social capital. It offers not only methodological improvements but also critical insights for the design of integrated policies—linking education, civic participation, and community empowerment—to foster long-term resilience, inclusive governance, and a foundation for equitable rural and digital economy development.

REFERENCES

Andrich, G. (1978). A rating formulation for ordered response categories. *Psychometrika*, 43(4), 561–573. https://doi.org/10.1007/BF0229381 4

Aspinall, E., & Mietzner, M. (2019). Indonesia's Democratic Paradox: Competitive Elections amidst Rising Illiberalism. *Bulletin of Indonesian Economic Studies*, 55(3), 295–317. https://doi.org/10.1080/00074918.2 019.1690412

Baker, F. B., & Kim, S. H. (2017). *The basics of item response theory using R.* Springer.

Bertrand, M., & Mullainathan, S. (2004). Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. *American Economic Review*, 94(4), 991–1013.

https://doi.org/10.1257/000282804 2002561

Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Greenwood Press.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94*(Suppl.), S95–S120. https://doi.org/10.1086/228943

Coleman, J. S. (1990). *Foundations of social theory.* Harvard University Press.

Dasgupta, P., & Serageldin, I. (Eds.). (2000). *Social capital: A multifaceted perspective.* World Bank.

De Ayala, R. J. (2009). *The theory and practice of item response theory.* Guilford Press.

Embretson, S. E., & Reise, S. P. (2000). *Item response theory for psychologists.* Lawrence Erlbaum Associates.

Fafchamps, M., & Minten, B. (2002). Social capital and the firm: Evidence from agricultural traders in Madagascar. *Economic Development and Cultural Change, 50*(3), 429–447. https://doi.org/10.1086/342734

Fukuyama, F. (1995). *Trust: The social virtues and the creation of prosperity.* Free Press.

Fukuyama, F. (2001). Social capital, civil society, and development. *Third World Quarterly, 22*(1), 7–20. https://doi.org/10.1080/713701144

Geertz, C. (1960). *The religion of Java.* University of Chicago Press.

Gibson, J. L. (2006). Enigmas of intolerance: Fifty years after Stouffer's Communism, Conformity, and Civil Liberties. *Perspectives on Politics*, 4(1), 21-34. https://doi.org/10.1017/S15375927 0606004X

Grootaert, C., & van Bastelaer, T. (Eds.). (2004). *The role of social capital in development: An empirical assessment.* Cambridge University Press.

Grootaert, C., Narayan, D., Jones, V. N., & Woolcock, M. (2004). Measuring Social Capital: An Integrated Questionnaire. World Bank Working Paper No. 18.

Guiso, L., Sapienza, P., & Zingales, L. (2009). Cultural biases in economic exchange. *The Quarterly Journal of Economics*, 1095–1131.

Latief, H. (2013). Islamic philanthropy and the private sector in Indonesia. *Indonesian Journal of Islam and Muslim Societies*, 3(2). https://doi.org/10.18326/ijims.v3i2 .175-201

Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *Quarterly Journal of Economics, 112*(4), 1251–1288. https://doi.org/10.1162/003355300 555475

Krishna, A., & Shrader, E. (2000). Cross-cultural measures of social capital: A tool and results from India and Panama. *Social Capital Initiative Working Paper No. 21.* World Bank.

Lulun, F. N., Sahusilawane, A. M., & Siwalette, J. D. (2019). Pengaruh modal sosial terhadap tingkat pendapatan petani di Desa Waiheru Kecamatan Baguala Kota Ambon. *Agrilan: Jurnal Agribisnis Kepulauan*, 7(2). https://doi.org/10.30598/agrilan.v7i2.889

Nasution, A. (2017). Peranan modal sosial dalam pengurangan kemiskinan rumah tangga di perdesaan Indonesia. *Jurnal Ekonomi dan Kebijakan Publik*, 7(2). https://doi.org/10.22212/jekp.v7i2.672

Masters, G. N. (1982). A Rasch model for partial credit scoring. *Psychometrika*, 47(2), 149–174. https://doi.org/10.1007/BF02296272

McPherson, J. M., Lynn, S.-L., & Cook, J. M. (2001). Birds of a feather: *Homophily in social networks*. Annual Review of Sociology, 27, 415–444. https://doi.org/10.1146/annurev.soc.27.1.415

Norris, P., & Inglehart, R. (2019). *Cultural backlash: Trump, Brexit, and the rise of authoritarian populism*. Cambridge University Press

Norris, P. (2011). *Democratic deficit: Critical citizens revisited.* Cambridge University Press. https://doi.org/10.1017/CBO9780511973383

OECD. (2011). *How's life? Measuring well-being.* OECD Publishing. https://doi.org/10.1787/9789264121164-en

Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action.* Cambridge University Press.

Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology,* 24, 1–24. https://doi.org/10.1146/annurev.soc.24.1.1

Putnam, R. D. (1993). *Making democracy work: Civic traditions in modern Italy.* Princeton University Press.

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community.* Simon & Schuster.

Rusmawati, E., Hartono, D., & Aritenang, A. F. (2023). Food security in Indonesia: the role of social capital. Development Studies Research, 10(1). https://doi.org/10.1080/21665095.2023.2169732

Sabatini, F. (2009). Social capital as social networks: A new framework for measurement and an empirical analysis of its determinants and consequences. *Journal of Socioeconomics,* 38(3), 429–442. https://doi.org/10.1016/j.socec.2008.06.001

Samejima, F. (1969). Estimation of latent ability using a response pattern of graded scores. *Psychometrika Monograph Supplement, 34(4), 1–97.*

Sen, A. (1999). *Development as freedom.* Oxford University Press.

Stiglitz, J. E., Sen, A., & Fitoussi, J. P. (2009). Report by the Commission on the Measurement of Economic Performance and Social Progress.

Stiglitz, J. E., Sen, A., & Fitoussi, J.-P. (2009). *Report by the Commission on the Measurement of Economic Performance and Social Progress.* Commission on the Measurement of Economic Performance and Social Progress.

Tadjoeddin, Z. (2014). *Explaining collective violence in contemporary Indonesia: from conflict to cooperation.* Springer.

Taupan, M. H. (2014). Hubungan tingkat modal sosial terhadap tingkat pendapatan pelaku UKM. *Jurnal Mahasiswa Sosiologi Universitas Brawijaya,* 3(2).

Tyler, T. R., & Jackson, J. (2014). Popular legitimacy and the exercise of legal authority: Motivating compliance, cooperation, and engagement. *Psychology, Public Policy, and Law, 20*(1), 78–95. https://doi.org/10.1037/a0034514

van der Linden, W. J., & Hambleton, R. K. (Eds.). (1997). *Handbook of modern item response theory.* Springer.

Woolcock, M., & Narayan, D. (2000). Social capital: Implications for development theory, research, and policy. *The World Bank Research Observer, 15*(2), 225–249. https://doi.org/10.1093/wbro/15.2.225

World Bank. (2007). *Two years after the Java earthquake and tsunami: Implementing community-based reconstruction, increasing transparency.* The World Bank. Retrieved from https://documents.worldbank