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Village Fund Governance, Cooperative Readiness, and Inclusive Rural Welfare: Micro-Institutional Evidence from North Sumatera, Indonesia

Julpian Harahap [1,2], Ahmad Fadlan [1,3]
[1] Doctoral Program in Economics,
Faculty of Economics and Business, Universitas Sumatera Utara
[2] Universitas Insania Sumatera Utara
[3] Universitas Pembangunan Panca Budi, Medan, Indonesia
Email: julpian90@gmail.com , fadlanahmad605@gmail.com

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ABSTRACT

This study examines how Perceived Village Fund Governance (PVFG) shapes Cooperative Readiness (CR) and Inclusive Rural Welfare (IRW) among rural households in North Sumatera, Indonesia, and whether Cooperative Readiness mediates the governance–welfare relationship. Drawing on household-level survey data (n = 343) from villages receiving Village Fund transfers under Indonesia's Village Law No. 6/2014, the study employs Partial Least Squares Structural Equation Modeling (PLS-SEM). The measurement model demonstrates adequate reliability and validity across all three reflective constructs. Structural estimation reveals that PVFG exerts a strong positive influence on CR (β = 0.663, f^2 = 0.785) and a significant direct effect on IRW (β = 0.397), while CR positively influences IRW (β = 0.370). The indirect effect of PVFG on IRW via CR is statistically significant (β = 0.245, VAF = 38.19%), confirming partial mediation. PLSpredict results indicate medium out-of-sample predictive power. These findings establish Cooperative Readiness as a substantive meso-level mechanism through which village fiscal governance translates into household-level inclusive welfare, complementing the well-documented direct governance–welfare channel. The study contributes micro-institutional evidence to the decentralization, cooperative, and inclusive development literatures, and offers actionable guidance for Village Fund reform in Indonesia.

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Introduction

Rural poverty and spatial inequality have proven far more resilient than optimistic growth narratives once suggested. Despite decades of economic expansion across low- and middle-income countries, rural regions continue to host a disproportionate share of the poor and remain more exposed to climatic and market shocks (Dercon, 2022), frequently cut off from the economic dynamism concentrated in urban cores (Christiaensen & Todo, 2014). The post-2015 global agenda has responded by foregrounding inclusive rural development: a mode of transformation that deliberately extends opportunities, addresses structural inequalities, and builds the capabilities of households at the bottom of the distribution (Hickey et al., 2019). What this agenda has also made plain is that formal pro-poor policies frequently disappoint. The bottleneck is rarely the policy design on paper; it is the local institutional ecosystem that either channels resources into genuine welfare gains or permits them to leak away (World Bank, 2017). Fiscal decentralization has been the dominant institutional prescription for bridging that gap. The logic is intuitive: moving spending authority closer to citizens should reduce information asymmetries, sharpen allocative choices, and bind local officials to greater accountability (Faguet, 2014). Cross-country experience, however, tells a more complicated story. Some settings have seen decentralized governments direct more resources

toward basic services and engage previously excluded groups in planning; others have watched fiscal transfers reinforce the power of local elites, fragment administrative capacity, and produce little measurable improvement in welfare (Bardhan & Mookherjee, 2011). North's institutional perspective cuts to the heart of this divergence: formal rules change the distribution of authority and resources, but outcomes depend on how those rules interact with entrenched power structures, informal norms, and the organizational capacity present on the ground (North, 1990). Comparative studies of federalism and decentralization reinforce this point, showing that outcomes diverge sharply depending on the subnational institutional environment into which fiscal authority is devolved (Rodden, 2004). Where inclusive institutions are absent, decentralization may instead entrench existing inequalities and concentrate benefits among already powerful groups (Acemoglu & Robinson, 2012).

Whether decentralization delivers for rural households therefore hinges substantially on local governance quality. When citizens can access budget information, voice priorities in planning meetings, and hold officials accountable for results, decentralized resources tend to reach the services and investments that matter to poorer groups (Mansuri & Rao, 2013). Evidence from multiple country contexts confirms that participatory governance is a necessary condition for this transmission to work in practice (Faguet & Poschl, 2015). Where governance is clientelistic and oversight is absent, the same transfers can be absorbed by narrow interests or diverted toward prestige projects with little welfare impact (Platteau & Abraham, 2022). A subtler but equally important point is that governance is not only a set of rules citizens observe from the outside. It is also something they experience and interpret: perceptions of fairness and accountability shape willingness to engage in collective institutions, comply with local programs, and invest alongside public goods (Ostrom, 2005). Perceived good governance builds trust and draws participation; perceived capture erodes both, diminishing the prospects for local development efforts (World Bank, 2017).

1.1 Fiscal Decentralization, Governance, and Indonesia's Village Funds

Few countries have pushed fiscal decentralization as far down the administrative hierarchy as Indonesia (Smoke, 2015). Building on the "big-bang" reforms of the early 2000s, the 2014 Village Law reconstituted villages as legal fiscal entities entitled to direct transfers from the central budget, known as Dana Desa (Village Funds). These transfers are earmarked for local infrastructure, basic services, and community empowerment. The explicit ambition was to compress rural-urban gaps, reduce poverty, and cultivate village-level institutional capacity by granting villages real discretion over planning and budgeting (Antlov et al., 2016). Since 2015, allocations have grown into a large formula-based program reaching tens of thousands of villages across the archipelago (Lewis, 2017).

The results have been mixed. Macro- and meso-level assessments point to gains in rural infrastructure and service access, and some studies identify positive effects on income and employment (Rammohan & Tohari, 2023). Yet poverty and inequality impacts are uneven across regions, and questions persist about project selection quality, the depth of participatory processes, and the capacity of village administrations to manage budgets of this scale (Lewis, 2017). Administrative reviews point to similar concerns, documenting persistent gaps in village-level financial management and participatory planning (Sutiyo & Maharjan, 2017). Qualitative and mixed-methods work surfaces a recurring set of problems: thin administrative capacity, opaque financial reporting, and village elite capture of planning forums (Antlov et al., 2016), while deliberation processes that exist on paper often offer little real voice to ordinary households (Sutiyo & Maharjan, 2017). These governance deficits may be precisely what blunts the program's potential to stimulate local economic institutions and generate inclusive gains for poorer families.

What this body of work also reveals is a systematic blind spot. Most of it concentrates on formal institutions and aggregated outcomes, tracking, for instance, whether villages with stronger administrative scores see larger welfare improvements (Antlov et al., 2016). More recent quantitative work confirms these aggregate patterns but cannot disaggregate within-village distributions (Rammohan & Tohari, 2023). Far less is known about how ordinary households perceive the governance of Village Funds, whether they experience decision-making as fair and open, whether they feel they can hold leaders to account, and how those perceptions shape their willingness to engage with other village institutions and ultimately their own welfare.

1.2 Cooperatives as Intermediary Institutions in Rural Governance

Rural economies rarely connect smallholder households directly to markets, services, or state programs without some organizational intermediary. Cooperatives, producer associations, and village enterprises fill much of that connective role: they pool production, reduce transaction costs, strengthen bargaining power, and channel credit and inputs to farmers and rural entrepreneurs who would otherwise be structurally disadvantaged in markets (Bijman, 2016). A substantial body of field evidence from sub-Saharan Africa, South and Southeast Asia, and Latin America shows that agricultural and savings cooperatives with sound internal governance raise member incomes, support livelihood diversification, and build resilience, with secondary employment and demand effects radiating beyond direct members (Majiwa et al., 2022). Internal governance quality is central to these outcomes: how fully members participate, how democratic control is exercised, and how leaders are held accountable all strongly condition whether the organization actually delivers for its members (Hernandez-Espallardo et al., 2013).

In Indonesia, village cooperatives and village-owned enterprises (BUMDes) have been actively promoted as vehicles for putting Village Fund transfers to productive use, supporting microenterprise development, value-chain upgrading, and rural tourism (Kania et al., 2021). Performance, however, is notoriously uneven. Chronic constraints of managerial capacity and financial literacy limit what many village-level cooperatives can realistically accomplish (Bijman, 2016), and close entanglement with village government structures often blurs accountability lines in ways that undermine both cooperative performance and public resource management (Kania et al., 2021). This is where the governance of Village Fund allocation becomes consequential. Transparent, participatory planning can steer resources toward cooperative capitalization, skills development, and market linkages; planning that is opaque or dominated by village elites tends instead to neglect or instrumentalize cooperatives, foreclosing their potential as inclusive economic institutions (Antlov et al., 2016).

To capture this variation, this article develops the concept of Cooperative Readiness as a meso-level institutional mechanism linking Perceived Village Fund Governance to Inclusive Rural Welfare. Cooperative Readiness refers to the degree to which local cooperatives are institutionally capable, trusted, participatory, and economically integrated so that they can effectively absorb and deploy resources, including public transfers, for the benefit of all members. Five interrelated dimensions constitute the construct. The first is management capacity: the financial management practices, record-keeping systems, and planning capabilities that determine whether a cooperative can handle fund flows and deliver reliable services (Bijman, 2016). The second is organizational structure: the clarity and functionality of roles, procedures, and rules that enable consistent and accountable decision-making (Hernandez-Espallardo et al., 2013). The third is member participation, extending beyond formal membership to actual involvement in decision-making, monitoring, and collective activities, a domain closely tied to social capital formation and collective agency (Mansuri & Rao, 2013). The fourth is community trust and legitimacy, which is reflected in how members and non-members perceive the fairness and responsiveness of cooperative leadership, shaping willingness to join, invest, and remain engaged (World Bank, 2017). The fifth is market linkages: the connections with buyers, input suppliers, financial institutions, and public programs that determine whether a cooperative can actually bridge its members to broader economic opportunities (Ma & Abdulai, 2019).

Perceived Village Fund Governance shapes each of these dimensions through several mechanisms. Where households see Village Funds managed with transparency, meaningful deliberation, and credible accountability, trust in village institutions more broadly tends to be strengthened (World Bank, 2017), and this generalized trust reduces the social barriers to cooperative membership and active participation (Ostrom, 2005). Village leaders committed to fair fund management may also be more inclined to invest in building cooperative capacity and forging external market linkages (Lewis, 2017). The converse is equally plausible. Where Village Fund allocation is perceived as opaque, politicized, or captured by a narrow group, the trust that sustains collective economic action erodes, households disengage from cooperatives, and Cooperative Readiness declines even when formal policy support is nominally in place (Platteau & Abraham, 2022).

1.3 Inclusive Rural Welfare at the Household Level

The concept of inclusive rural welfare pushes past aggregate income or infrastructure statistics to ask who actually benefits from economic and institutional change, and on what terms. In the inclusive development tradition, inclusion requires both expanding the stock of available opportunities and ensuring that disadvantaged groups can effectively access and convert them into genuine improvements in well-being (Rauniyar & Kanbur, 2010). Applied to rural contexts, this spans several dimensions simultaneously: secure and diversified livelihoods, access to basic services and infrastructure, meaningful voice in local decisions, and reductions in inequalities defined by class, gender, ethnicity, or geography (Kanbur & Venables, 2017).

Field-level evidence is clear on one point: local governance and institutional quality are among the strongest determinants of how these welfare dimensions are distributed within communities. When decentralized programs are implemented with genuine participation and accountability, they improve targeting and social cohesion (Mansuri & Rao, 2013); when they are captured by local elites or weakly monitored, benefits skew toward better-off groups (Platteau & Abraham, 2022). In Indonesia specifically, quasi-experimental work finds that the Village Fund program is associated with consumption improvements and gains in female labor force participation, but with effects that vary considerably across regions and household types, reflecting differences in local implementation and institutional quality (Rammohan & Tohari, 2023). These findings reinforce the case for studying welfare at the household level and for examining the institutional channels, such as cooperatives, through which local governance ultimately reaches or fails individual families.

1.4 Research Gap

Despite substantial progress in documenting the impacts of decentralization and village funds, several gaps remain in the literature at the intersection of local governance, intermediary institutions, and household-level welfare in Indonesia. Most quantitative evaluations of the Village Fund program work with village- or district-level data, tracking poverty headcounts, infrastructure indices, or composite village development scores (Lewis, 2017). Macro-level assessments of the program's welfare effects confirm broad patterns of infrastructure improvement (Antlov et al., 2016) but cannot reveal how governance processes and their benefits are distributed among different household types within villages (Rammohan & Tohari, 2023), nor whether citizens' own perceptions of governance shape their economic behavior in any systematic way.

A second gap concerns the level at which governance is conceptualized. Research on Village Fund governance has largely confined itself to formal institutional features: legal frameworks, administrative procedures, and compliance with reporting requirements (Antlov et al., 2016). Reviews of decentralization practice in Indonesia similarly focus on regulatory compliance and administrative capacity rather than household-level governance perceptions (Sutiyo & Maharjan, 2017). How households actually experience governance quality, whether they perceive processes as fair, and whether those perceptions affect their engagement with village institutions, has received considerably less attention. This is a meaningful omission. Institutional theory and a growing body of field evidence make clear that perceived legitimacy and fairness are often what determine whether citizens choose to participate, build trust, and cooperate, all of which condition how effectively decentralized programs deliver on their promises (Ostrom, 2005).

A third gap is more structural. Although cooperatives are extensively studied in the rural economy literature, they are rarely positioned as intermediary institutions that mediate the relationship between local fiscal governance and household welfare outcomes. Research on cooperatives tends to concentrate on internal governance (Bijman, 2016), member satisfaction and market performance (Hernandez-Espallardo et al., 2013), and value-chain participation (Ma & Abdulai, 2019), while the decentralization literature typically treats communities and local governments as the primary actors. Quantitative evaluations of Village Fund impacts model welfare effects through aggregate fiscal flows (Rammohan & Tohari, 2023) rather than through cooperative intermediaries, and theoretical frameworks for local governance likewise largely omit cooperative organizations as transmission mechanisms (Faguet, 2014; Mansuri & Rao, 2013). The pathways connecting Perceived Village Fund Governance to cooperative institutional readiness, and from there to household welfare, remain undertheorized and empirically underdeveloped.

A fourth and related gap is data availability. There is a shortage of household-level surveys in Indonesia that simultaneously capture Perceived Village Fund Governance, cooperative engagement, and multidimensional welfare indicators. Existing micro-level studies on Village Funds concentrate on selected economic outcomes such as poverty or labor supply (Rammohan & Tohari, 2023), without accounting for intermediary institutions or subjective governance perceptions. Without such data, identifying the mechanisms through which village-level fiscal decentralization contributes, or indeed fails to contribute, to inclusive household welfare remains difficult.

1.5 Contribution and Research Objective

This article addresses these gaps by developing and empirically testing a conceptual framework in which Perceived Village Fund Governance (PVFG) shapes Cooperative Readiness (CR), which in turn affects Inclusive Rural Welfare (IRW) at the household level in rural Indonesia. Using household-level survey data, the study engages three main strands of literature.

The first is the decentralization and local governance literature. By centering citizens' subjective perceptions of Village Fund transparency, participation, and accountability as the key explanatory variable, the study moves beyond the formal institutional indicators that most existing work relies on, and examines how these perceptions vary across households within the same village. This provides micro-level evidence on conditions under which decentralized fiscal transfers support inclusive welfare, complementing aggregate-level findings (Antlov et al., 2016).

The second is the cooperative and rural institutions literature. The article operationalizes Cooperative Readiness as a multidimensional construct that encompasses management capacity, organizational structure, member participation, trust in leadership, and market linkages, and positions cooperatives explicitly as intermediaries in the local governance-welfare nexus (Bijman, 2016). By modeling Cooperative Readiness as a mediating mechanism, the study bridges two literatures, local fiscal governance and cooperative performance, that have largely developed in parallel without being systematically connected.

Third, the article contributes to the inclusive development and rural welfare literature by linking governance and institutional quality to household-level indicators that span economic opportunity, access to development benefits, and social inclusion. Estimating both the direct and indirect associations between Perceived Village Fund Governance, Cooperative Readiness, and Inclusive Rural Welfare generates empirical evidence on the micro-institutional pathways through which village-level fiscal decentralization fosters or inhibits inclusive outcomes (Bebbington et al., 2022).

The overarching research objective is to examine how Perceived Village Fund Governance influences Cooperative Readiness and Inclusive Rural Welfare among rural households in Indonesia. More specifically, the study seeks to: (i) analyze how rural households' perceptions of transparency, participation, and accountability in Village Fund management are associated with indicators of Cooperative Readiness; (ii) assess the relationship between Cooperative Readiness and Inclusive Rural Welfare; and (iii) investigate the extent to which Cooperative Readiness mediates the link between Perceived Village Fund Governance and household welfare. The findings aim to provide theoretically grounded and empirically robust insights for designing decentralization and village-level institutional reforms that more effectively translate public resources into inclusive rural welfare.

Literature Review

2.1 Conceptualizing Perceived Village Fund Governance as a Latent Construct

Within decentralized rural fiscal systems, governance quality is increasingly modeled as a latent construct rather than a single observable indicator. Governance is understood as a set of interrelated dimensions, including transparency, participation, accountability, rule enforcement, and responsiveness, that are not directly observable but are reflected in citizens' assessments and behaviors (World Bank, 2017). In village-level fiscal programs, these dimensions pertain specifically to how planning, budgeting, implementation, and oversight of earmarked transfers are conducted. Most empirical studies of decentralization and service delivery proxy local governance through institutional indicators such as audit scores, planning procedures, or electoral competitiveness (Faguet, 2014). Recent scholarship has pushed back on this approach, arguing that formal indicators capture only part of what governance means in practice, and that how citizens experience procedural fairness and institutional integrity is central to how

governance actually shapes development outcomes (De Mello & Jalles, 2021). Perceived governance quality is accordingly conceptualized as a latent variable, manifested in survey responses about whether citizens feel informed about local budgets, able to voice their priorities, and confident that rules are applied impartially (World Bank, 2017). Two features are critical in conceptualizing Perceived Village Fund Governance for village-level transfer programs. First, the construct is program-specific: it refers not to generic local government performance but to how villagers interpret the governance of the Village Fund as a distinct fiscal instrument, specifically who decides on project selection, how information about the fund is shared, and how complaints are handled. Second, the construct is relational: perceptions arise from direct and vicarious interactions with village leaders, meetings, and project outcomes, and are embedded in local power structures and social norms that shape who feels entitled to voice priorities and who does not (Platteau & Abraham, 2022). Elite-dominated governance contexts tend to produce systematically divergent perceptions across households, with marginalized groups more likely to experience exclusion and less likely to trust the process (Hickey et al., 2019).

Survey-based research typically captures this latent construct through multiple indicators grouped along four correlated dimensions: (i) perceived transparency (clarity of information on fund amounts, uses, and outcomes); (ii) perceived participation (inclusiveness and meaningfulness of consultation and deliberation processes); (iii) perceived fairness (equitable distribution of projects and resources across hamlets and social groups); and (iv) perceived accountability (presence and credibility of sanctions, responsiveness to complaints, and perceived integrity of leaders). These four dimensions reinforce one another: greater transparency tends to enable participation and make accountability more credible, while fairness in allocation underpins the legitimacy of the entire governance process. Yet they can diverge empirically. Formal participatory meetings may be held without villagers ever perceiving that their voice genuinely shapes outcomes (Mansuri & Rao, 2013). Treating Perceived Village Fund Governance as a latent construct allows these dimensions to be jointly captured while acknowledging measurement error and the real heterogeneity in how households across a village read the same institutional reality. This approach draws on institutional perspectives that stress the role of beliefs and legitimacy in how rules shape behavior (North, 1990). Perceived governance quality affects whether households expect public programs to work in their favor, and thus whether they invest effort in monitoring, contribute resources to co-finance local goods, or engage with complementary institutions like cooperatives. The construct is therefore treated as a multi-indicator latent variable that captures villagers' evaluative stance toward the governance of fiscal transfers, rather than as a single institutional metric.

2.2 Cooperative Institutions and Cooperative Readiness as a Multidimensional Mechanism

Cooperatives have long occupied a contested place in the rural development literature. Their appeal is clear: as hybrid economic-social organizations, they can in principle mitigate market failures, pool smallholder bargaining power, and sustain rural livelihoods in ways that purely commercial intermediaries do not (Bijman, 2016). Financial cooperatives show a similarly mixed record across institutional settings, with performance contingent on governance quality and member engagement (McKillop et al., 2020). Yet actual performance varies enormously. Some cooperatives transform their members' economic circumstances; many deliver modest or no benefits; and a significant share are organizational shells kept alive by external mandates rather than member demand. This variation has shifted scholarly attention toward organizational readiness, or institutional capability, as a precondition for performance (Bijman, 2016).

Recent work on community-based organizations more broadly confirms that readiness, understood as the alignment of motivations, competencies, and relational resources, determines whether organizations can effectively engage in joint initiatives (Greenfield & Pope, 2025). Drawing from this literature, Cooperative Readiness can be conceptualized as a multidimensional institutional mechanism capturing the capacity of village-level cooperatives to absorb and transform resources, including public transfers and member contributions, into inclusive benefits. Five interlocking dimensions emerge from existing studies. Management capacity is the first. Research on agricultural and financial cooperatives consistently emphasizes professional management, sound financial practices, and reliable record-keeping as preconditions for efficiency and sustainability (McKillop et al., 2020). Weak bookkeeping, thin managerial skills, and ad hoc decision-making are not merely technical problems; they directly constrain a cooperative's

ability to handle larger fund flows or satisfy regulatory and donor requirements. Organizational structure constitutes the second dimension, covering the clarity of roles, internal rules, and procedural arrangements that enable consistent and accountable decision-making. Clear governance structures are associated with higher member satisfaction and longer-term commitment (Hernandez-Espallardo et al., 2013), whereas opaque or poorly defined arrangements have been repeatedly identified as primary drivers of underperformance and member exit (Majiwa et al., 2022). The third dimension, member participation, reflects the voluntary nature of cooperatives. Because no one is compelled to join, active participation in meetings, voting, and collective activities is foundational: it drives monitoring, facilitates collective decisions, and reduces the transaction costs of coordination (Ostrom, 2005). Where participation is low, the result is often a shell cooperative that exists formally while generating little real activity (Hernandez-Espallardo et al., 2013; Majiwa et al., 2022). The fourth dimension, trust in cooperative leadership, captures whether members perceive leaders as competent, responsive, and acting in members' best interests, a perception that shapes willingness to invest resources in and remain committed to the organization (Hernandez-Espallardo et al., 2013). The fifth dimension, market linkages, captures whether cooperatives maintain external connections to buyers, input suppliers, banks, extension agencies, and government programs that determine whether efficiency gains inside the organization actually translate into improved household welfare (Ma & Abdulai, 2019). Cooperatives isolated from dynamic value chains or public procurement opportunities cannot transmit meaningful economic benefits, however sound their internal governance may be.

Conceptualizing Cooperative Readiness as a latent construct means treating these observable features as reflections of an underlying institutional capability, consistent with recent work on organizational readiness in community-based organizations (Greenfield & Pope, 2025). For village-level cooperatives tied to fiscal transfers, readiness represents the institutional channel through which village governance can influence household welfare: even well-governed Village Funds may have limited welfare effects if Cooperative Readiness is low (Bernard & Spielman, 2009), while high readiness can magnify or sustain benefits (Majiwa et al., 2022). Village governance also shapes readiness through normative spillovers. Where governance inculcates norms of accountability and broad participation, those norms may carry over into cooperative governance and member expectations. Where governance is experienced as clientelistic, the same dysfunctional patterns tend to reproduce themselves within cooperatives (Platteau & Abraham, 2022). Cooperative Readiness therefore serves not just as a performance concept but as an institutional mediator connecting the quality of Village Fund governance to welfare outcomes.

2.3 Conceptualizing Inclusive Rural Welfare at the Household Level

Aggregate growth statistics tend to obscure as much as they reveal about rural welfare. The inclusive development literature has long insisted that what matters is not just whether average incomes rise but who benefits, by how much, and through what pathways (Rauniyar & Kanbur, 2010). The spatial dimension of this question is equally important: where people live shapes their access to opportunities and their exposure to shocks in ways that aggregate statistics conceal (Kanbur & Venables, 2017). Inclusive Rural Welfare, as used here, captures the extent to which different types of households can access and convert economic opportunities, public goods, and institutional support into multidimensional improvements in well-being (Bebbington et al., 2022).

Three conceptual elements are central when operationalizing this construct. The first is multidimensional well-being. Monetary poverty measures only partially capture deprivation, because rural households face simultaneous deficits in consumption, asset ownership, service access, and risk exposure (Alkire et al., 2020). Applications of multidimensional poverty approaches across rural Asia and Africa show that combinations of deprivations vary enormously within communities, and that households above the income poverty line can still be severely deprived in health, education, or housing dimensions (Alkire et al., 2020). The second element is access to economic opportunities and productive assets. Inclusive welfare requires that households can actually enter markets, find decent employment, and access land, credit, and productive technology on reasonable terms. Whether local institutions and programs relax these constraints on market participation, value-adding activities, or off-farm employment is a central question in the household welfare literature (Ma & Abdulai, 2019); access is frequently mediated by cooperative membership or by proximity to collective investments financed through Village Funds. The third element

is social inclusion and voice. Material gains alone do not constitute inclusive welfare if women, youth, and marginalized groups remain excluded from the decisions that shape their communities (Hickey et al., 2019). Indicators of participation in planning meetings, access to leadership positions, and subjective perceptions of being heard are therefore essential complements to economic measures. Household-level analysis is indispensable for examining this construct adequately. Village- or district-level averages conceal the substantial within-village disparities in opportunity access and risk exposure that multidimensional poverty research consistently documents (Alkire et al., 2020). Studies applying sustainable livelihood frameworks in rural Southeast Asia similarly find that household-level vulnerability profiles diverge markedly even within the same village (Fahad et al., 2022). Spatial analysis further shows that interregional income inequalities, shaped in part by trade openness and geographic heterogeneity, create uneven starting conditions across rural areas that household-level interventions must navigate (Lessmann & Zignago, 2018). Household engagement with cooperatives and perceptions of governance also vary systematically by socioeconomic position, gender, and social networks, patterns that only become visible in micro-data. Inclusive Rural Welfare is accordingly conceptualized as a latent outcome construct, reflected in indicators covering income stability, access to services and infrastructure, livelihood diversification, and subjective assessments of progress. This framing aligns with broader efforts in the rural development literature to embed multidimensional welfare outcomes within territorial and institutional contexts (Bebbington et al., 2022).

2.4 Theoretical Relationships among Governance, Cooperative Readiness, and Household Welfare

The three constructs form an interconnected causal chain, and the theoretical literature offers several distinct mechanisms through which each link operates. The most foundational is an institutional trust and legitimacy mechanism. Perceptions of Village Fund governance shape households' basic expectations about whether local institutions serve their interests. High perceived transparency and accountability around fund use can build generalized trust in village authorities and semi-public organizations; perceptions of capture or diversion predictably erode it (World Bank, 2017). This matters for cooperatives directly: trust in leaders and perceived fairness consistently predict willingness to join, remain members, and invest in joint ventures (Hernandez-Espallardo et al., 2013). Perceived Village Fund Governance may therefore shape Cooperative Readiness through two complementary channels: on the supply side, by influencing cooperative leadership norms and management practices, and on the demand side, by shaping member trust and willingness to participate.

A collective action mechanism operates alongside this. Inclusive and well-perceived Village Fund processes can reinforce norms of monitoring, mutual responsibility, and civic engagement. When households experience meaningful deliberation and see their preferences actually influence decisions, their sense of efficacy grows, making them more willing to engage in other collective institutions including cooperatives (Ostrom, 2005). The absence of such experiences has the opposite effect. Participation fatigue and cynicism, once established through frustrating encounters with Village Fund governance, can spill over into cooperative activities, eroding attendance at meetings, willingness to serve on boards, and compliance with cooperative rules, all of which are constitutive of Cooperative Readiness.

A third mechanism works through public investment patterns. Village Fund decisions directly shape the stock of local public goods: roads, storage facilities, market infrastructure, and training centers. When households perceive fund allocation as fair and participatory, these investments are more likely to respond to the needs of producers and cooperatives, strengthening the commercial environment in which cooperatives operate (Lewis, 2017). When allocation is driven by patronage logic, public investments may be poorly matched to what cooperatives actually need for expansion, constraining readiness even where internal capacity is otherwise adequate.

The mediating role of Cooperative Readiness in the governance-welfare relationship follows from these mechanisms. Ready cooperatives raise prices received, reduce income volatility, and expand service access for members, with secondary employment effects extending beyond the membership itself (Majiwa et al., 2022). They also serve as platforms for accessing complementary programs, training, and social protection (Bebbington et al., 2022). Where cooperatives are not ready, these transmission channels are blocked, and well-governed Village Funds may generate only modest household welfare gains.

A final consideration is heterogeneity. Elite capture can occur both in village government and within cooperatives, producing regressive outcomes even under substantial resource flows (Platteau & Abraham, 2022). High Perceived Village Fund Governance is therefore not a guarantee of inclusive cooperative development; it interacts with underlying power relations, norms, and histories of collective organization. The concept of Cooperative Readiness explicitly accommodates this variation: some villages may show relatively positive governance perceptions but low readiness because historical mistrust or thin market linkages independently constrain cooperative development. The literature thus supports a model in which Perceived Village Fund Governance is a latent construct shaping the institutional and relational environment for cooperatives; Cooperative Readiness is a multidimensional mechanism converting that environment into capacity; and Inclusive Rural Welfare is a household-level outcome influenced both directly by governance and indirectly through the cooperative channel. This conceptualization provides the theoretical foundation for the hypotheses developed below.

3. Hypothesis Development

3.1 Governance and Cooperative Readiness

Institutional economics and decentralization theory argue that devolved resources shape local organizations not only through formal rules but also through how governance is perceived in terms of transparency, fairness, and accountability (North, 1990). When villagers view Village Fund management as rule-bound and predictable, expectations of opportunistic behavior decline, reducing the transaction and monitoring costs involved in collective economic activities such as cooperatives. Perceived transparency in budgeting and project selection signals that resources are not systematically captured by insiders. This increases the credibility of cooperative arrangements and the expected returns for ordinary members (Bardhan & Mookherjee, 2006). Participatory and deliberative governance practices can also, over time, shape the civic norms that members bring to cooperative settings (Mansuri & Rao, 2013). Repeated experiences with open village meetings, inclusive planning sessions, and accessible grievance mechanisms gradually establish templates for how collective organizations should be run, making members more likely to demand internal transparency, elections, and financial reporting from cooperative boards. This governance socialization strengthens the institutional foundations of Cooperative Readiness, understood as the combination of managerial capacity, internal controls, and member oversight that effective cooperative functioning requires (Bijman, 2016).

Field evidence supports this connection. Cooperatives are more likely to sustain strong internal governance in environments where public institutions are viewed as accountable and responsive, partly because trust in local authorities tends to correlate with trust in cooperative leaders, especially where leadership networks overlap (Wulandhari et al., 2022). Indonesia-specific evidence from the Village Law period links better-functioning village councils and more transparent decision-making to denser associational life and stronger local institutions more broadly (Antlov et al., 2016). Positive perceptions of Village Fund governance should therefore translate into a greater willingness to join, invest in, and monitor cooperatives, and into stronger incentives for cooperative leaders to maintain sound governance practices.
H1: Perceived Village Fund Governance positively influences Cooperative Readiness.

3.2 Cooperative Readiness and Inclusive Rural Welfare

Cooperative institutional theory posits that member-owned organizations can mitigate market failures in credit, input, and output markets when they possess adequate organizational capabilities and internal governance (Chaddad & Iliopoulos, 2013). Cooperative Readiness, which encompasses managerial professionalism, clear and enforced rules, active member participation, and strong external linkages, determines whether cooperatives can effectively aggregate members, coordinate production, and negotiate with buyers or state agencies. Well-governed and capable cooperatives reduce transaction costs, provide economies of scale, and strengthen members' bargaining power, the key channels through which they can improve household-level economic outcomes. Field evidence from across the developing world reinforces this picture. Membership in capable agricultural cooperatives is associated with higher participation in value-adding activities, better price realization, and increased incomes, particularly where organizations combine democratic decision-making with professional management (Verhofstadt & Maertens, 2015). Producer organizations that manage this combination tend to secure better market contracts, maintain quality

standards, and expand members' access to inputs, credit, and extension services, all of which raise smallholder technical efficiency and welfare and build resilience against price and weather shocks (Abate et al., 2014). None of these gains are automatic; they depend on the organizational readiness that enables cooperatives to internalize collective decisions and manage external market relations effectively. The welfare effects of capable cooperatives extend well beyond direct income. Ready cooperatives serve as platforms for knowledge diffusion, risk-sharing, and social support, improving members' information access, reducing exposure to price volatility, and facilitating technology adoption in ways that diversify and stabilize livelihoods (Hernandez-Espallardo et al., 2013). Crucially, when cooperative rules are inclusive and entry barriers are low, these gains tend to be distributed broadly rather than captured by better-connected or wealthier members (Majiwa et al., 2022). It is this combination of magnitude and distribution that links Cooperative Readiness to Inclusive Rural Welfare.

H2: Cooperative Readiness positively influences Inclusive Rural Welfare.

3.3 Governance and Inclusive Rural Welfare

When local governments are both empowered and held accountable, they are better positioned to tailor public spending to local needs and reach poorer groups with services that matter to them (Faguet, 2014; Gadenne & Singhal, 2014). How households perceive Village Fund governance shapes this dynamic in concrete ways: the expectation that decisions about infrastructure, social programs, and economic support will be fair and responsive influences both the actual allocation of resources, through citizen participation and oversight, and households' willingness to utilize services and contribute to co-production of local public goods. Cross-country evidence from developing economies shows that stronger local governance correlates with greater service access, reduced budget leakages, and measurable progress on poverty and human development indicators (Jutting et al., 2019). Within Indonesia, higher transparency in local public finance and more participatory planning have been linked to better infrastructure quality, more responsive social protection, and improved service delivery (Antlov et al., 2016; Sjahrir et al., 2014). The mechanism is relatively direct: when villagers perceive fund processes as fair, they engage more actively in planning forums, monitor implementation, and contest abuses, when villagers perceive fund processes as fair, they engage more actively in planning forums, monitor implementation, and contest abuses, which tends to redirect spending toward projects with broad value, including roads, irrigation, and livelihood support.

Spatial development research adds a further dimension. Improvements in local governance can compress intra-regional welfare disparities by extending infrastructure and services to areas that have historically been underserved (Kanbur & Venables, 2017). At the household level, credible and predictable governance also reduces uncertainty and encourages private complementary investments in education, health, and productive assets, because households can reasonably expect continued access to public goods and impartial treatment in local programs (Fox, 2015). Positive perceptions of Village Fund governance should therefore be associated with higher Inclusive Rural Welfare independently of any effects working through the cooperative channel.

H3: Perceived Village Fund Governance positively influences Inclusive Rural Welfare.

3.4 Mediating Role of Cooperative Readiness

Direct governance effects on welfare are real, but they tell only part of the story. A persistent insight from institutional and rural development scholarship is that the sustained translation of public investment into household-level benefits typically requires the presence of capable intermediary organizations, particularly cooperatives (Bernard & Spielman, 2009). Village Fund governance shapes the opportunity structure and normative environment within which cooperatives develop; Cooperative Readiness then determines how effectively those opportunities are converted into concrete, widely shared welfare gains. On the governance-to-readiness pathway, social accountability research shows that participatory and transparent public programs can build generalized trust, civic skills, and expectations of responsiveness that lower the coordination costs of new collective organizations (Fox, 2015; Brinkerhoff & Wetterberg, 2016). In Indonesian villages, improved deliberation and clearer rules under the Village Law have been associated with stronger local institutions and broader engagement in community organizations (Antlov et al., 2016). These experiences foster norms and practices such as regular meetings, public

reporting, and financial record-keeping that cooperatives can adopt to enhance their internal governance and managerial capacity (Wulandhari et al., 2022). Village Funds that are perceived as well-governed also tend to finance complementary public goods, including roads, storage facilities, ICT infrastructure, and training centers, that expand the economic space in which cooperatives operate efficiently (Lewis, 2017).
On the readiness-to-welfare pathway, high-capacity cooperatives have been shown to convert improved infrastructure and institutional support into concrete household gains by organizing collective marketing, facilitating credit access, and enabling technology adoption (Mojo et al., 2017). Where cooperatives possess strong governance and managerial capability, they integrate village-level investments into members' livelihood strategies: organizing transport along newly built roads, aggregating produce to satisfy buyers' quality requirements, or channeling targeted subsidies and training toward less-advantaged households (Majiwa et al., 2022). These organizations serve as a critical transmission mechanism through which the welfare potential of well-governed Village Funds reaches households. Even where Perceived Village Fund Governance exerts some direct influence on Inclusive Rural Welfare through better public goods and more equitable allocation, a substantial portion of its impact likely operates through this cooperative channel. This theoretical structure implies that Cooperative Readiness partially or fully mediates the relationship between Perceived Village Fund Governance and Inclusive Rural Welfare.
H4: Cooperative Readiness mediates the relationship between Perceived Village Fund Governance and Inclusive Rural Welfare.

Method

4.1 Research Design

The study employs a quantitative, cross-sectional household survey design to analyse how rural households' perceptions of Village Fund governance are associated with Cooperative Readiness and, in turn, Inclusive Rural Welfare outcomes in North Sumatera, Indonesia. Cross-sectional household data are appropriate here because they allow standardized information to be collected from a large number of households simultaneously, enabling estimation of structural relationships among latent constructs while controlling for observed heterogeneity. The empirical model specifies a mediation relationship in which Perceived Village Fund Governance (PVFG) influences Cooperative Readiness (CR), which then affects Inclusive Rural Welfare (IRW). Because governance quality, institutional capacity, and welfare perceptions are all inherently latent and multidimensional, multiple indicators are required to capture each underlying construct. Partial Least Squares Structural Equation Modeling (PLS-SEM) is selected for estimation on these grounds: it handles complex models with multiple latent variables, prioritizes variance explanation and prediction, and is robust to violations of multivariate normality and moderate sample sizes (Hair et al., 2019). PLS-SEM is also well established for mediation analysis; for predictive assessment of indirect effects, PLSpredict provides an out-of-sample complement to in-sample fit indices (Shmueli et al., 2019). SmartPLS software provides an integrated environment for estimating measurement and structural models, testing mediation, and evaluating predictive performance (Guenther et al., 2023). Robustness checks for the structural model follow the procedures described by Sarstedt et al. (2020).

4.2 Study Area

North Sumatera is a large and socio-economically diverse province in western Indonesia, combining substantial urban centers with extensive rural hinterlands. The rural economy rests on smallholder agriculture and plantation crops, including rice, maize, horticulture, rubber, and oil palm, supplemented by livestock and off-farm wage labor. Rural households in much of the province face limited productive asset bases, volatile agricultural prices, and recurrent climatic and market shocks that sustain patterns of vulnerability despite national-level growth. Village Fund transfers under Indonesia's Village Law No. 6/2014 have become the dominant instrument of rural development policy in the province. Allocated to finance local infrastructure, basic services, and community empowerment, and accompanied by explicit requirements for participatory planning and financial transparency, these transfers represent a substantial increase in fiscal resources at the lowest tier of government. How those resources are governed at the village level therefore has direct bearing on whether rural development in North Sumatera becomes more or less inclusive.

Cooperatives occupy a significant place in the rural economy, particularly agricultural cooperatives and savings-and-credit institutions that aggregate smallholders, provide marketing and input services, and improve bargaining power in product and credit markets. Their actual effectiveness varies widely and depends on internal governance, member participation, managerial quality, and the strength of linkages to markets and financial institutions. Studying Cooperative Readiness in this setting is therefore not an academic abstraction; it bears directly on how village-level institutions translate public investment into household welfare. North Sumatera is a suitable empirical setting for the research for a combination of reasons. Village Fund flows are substantial and create real variation in local fiscal conditions. Perceived governance quality varies enough across villages and households to permit meaningful analysis. The cooperative sector is active. And rural welfare disparities remain large and measurable. Together, these features create a fertile context for examining how Perceived Village Fund Governance and Cooperative Readiness jointly shape inclusive welfare outcomes at the household level.

4.3 Population and Sampling

The target population comprises rural households residing in villages in North Sumatera that receive Village Fund transfers and are administratively classified as rural (*desa*). The sampling strategy follows a multistage design. In the first stage, predominantly rural districts (*kabupaten*) are selected from North Sumatera using stratification criteria such as rural population share, agricultural orientation, and poverty incidence, to ensure coverage of different agro-ecological and socio-economic settings. In the second stage, villages within selected districts are sampled using probability proportional to size (PPS) based on updated population figures. Only villages that have received Village Funds continuously since at least 2017 are eligible, ensuring that respondents have had adequate time to form perceptions about fund governance and observe its outcomes.

In the third stage, households within each sampled village are selected using systematic random sampling. Household lists are obtained from village administration records and verified with neighborhood (*dusun*) leaders. A sampling interval is calculated by dividing the village household total by the target number of interviews, and a random start is drawn to identify the first household. The household head or another knowledgeable adult member is interviewed. Sample size is guided by PLS-SEM requirements and statistical power considerations. The widely cited rule of thumb requires at least ten times the maximum number of structural paths pointing to any endogenous construct or the maximum number of indicators per construct (Hair et al., 2017). In this model, the most complex endogenous construct receives two structural paths, implying a modest floor. However, power analyses for mediation recommend substantially larger samples, often exceeding 200, to yield stable estimates and detect moderate effect sizes (Hair et al., 2019). The achieved sample of 343 valid observations exceeds these thresholds, supporting robust estimation and reliable bootstrapping.

4.4 Survey Implementation and Data Collection

Primary data were collected using a structured household questionnaire administered through face-to-face interviews. Questionnaire development followed a multi-step process. The conceptual framework and relevant literature on local governance, cooperatives, and rural welfare informed the initial drafting of items for the three latent constructs. Items were written to capture perceptions of Village Fund transparency, participation, fairness, and accountability, alongside cooperative capacity and member engagement, and household welfare across multiple dimensions. The draft questionnaire was prepared in English and then translated into Bahasa Indonesia by a professional translator with a background in development research. A second bilingual expert back translated the instrument to verify conceptual equivalence. Discrepancies were resolved through discussion until consensus was reached on wording that preserved the intended meaning while remaining accessible to lay respondents.

A pilot test was conducted in a non-sample rural village in North Sumatera with broadly similar socio-economic characteristics. Approximately 30 households participated, with feedback focused on question clarity, appropriateness of response scales, interview length, and respondent fatigue. Minor adjustments to wording, section ordering, and skip patterns followed. Enumerators were recruited from local universities and field organizations and underwent intensive training covering survey objectives, ethical procedures, definitions of key concepts, item-by-item review, probing techniques, and protocols for

sensitive questions. Role-plays and practice interviews were used to standardize approach across teams. Supervisors monitored fieldwork daily, conducted back-checks with a random subsample of respondents, and reviewed completed questionnaires for consistency and completeness. Interviews were conducted at respondents' homes within a defined field period, timed to avoid major agricultural peak seasons that might limit respondent availability and increase recall bias. Each session opened with an explanation of the study purpose, confidentiality assurances, and informed consent procedures. Responses were recorded on paper or tablets using pre-coded options, with questionnaires checked for completeness and consistency after each day of fieldwork. Double-entry verification was used during data entry, and range and logical checks were applied to identify outliers, inconsistencies, and missing values. Observations with extensive missing data on key constructs were excluded; limited missingness was managed through PLS-SEM's inherent robustness and, where necessary, single-imputation procedures consistent with best practice (Hair et al., 2019). Sarstedt et al. (2020) provide guidance on assessing the sensitivity of results to missing data treatment.

4.5 Measurement of Constructs

The model includes three main latent constructs: Perceived Village Fund Governance (PVFG), Cooperative Readiness (CR), and Inclusive Rural Welfare (IRW). All constructs are modelled reflectively and measured using five-point Likert scales (1 = strongly disagree to 5 = strongly agree), capturing respondents' agreement with statements referring to the past two to three years. Perceived Village Fund Governance (PVFG) reflects the extent to which households perceive Village Fund processes and outcomes as transparent, participatory, fair, and accountable. Indicators capture: (i) transparency of Village Fund budgeting and financial reporting; (ii) opportunities for community participation in planning and decision-making regarding Village Fund projects; (iii) fairness in the allocation of projects and resources across hamlets and social groups; and (iv) accountability of village leaders in managing funds, responding to complaints, and reporting results.

Cooperative Readiness (CR) represents the perceived institutional and organizational readiness of rural cooperatives to support inclusive development. Indicators include: (i) management capacity (planning, financial management, record-keeping); (ii) clarity and functionality of organizational structure (roles, procedures, rules); (iii) member participation (attendance at meetings, voting, voice in decisions); (iv) trust in cooperative leadership (integrity, competence, responsiveness); and (v) market linkages (ability to connect members to buyers, input suppliers, and financial institutions). Inclusive Rural Welfare (IRW) captures perceived improvements and resilience in household welfare. Indicators encompass: (i) income stability (predictability and sufficiency of household income across seasons); (ii) livelihood resilience (ability to cope with shocks without major declines in living standards); (iii) access to basic services (education, health, infrastructure, and administrative services in the village); and (iv) subjective well-being (overall perceived improvement in household living conditions).

All items are phrased positively to avoid confusion, and scale anchors are consistent across constructs.

Note. All items measured on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Table 1. Latent Constructs and Indicators

Construct	Indicator Dimension	Example Indicator Content
Perceived Village Fund Governance (PVFG)	Transparency	Information on Village Fund budgets and spending is openly shared with villagers.
	Participation	Household members have opportunities to participate in meetings on Village Fund planning.
	Fairness	Village Fund projects are distributed fairly across hamlets and social groups.
	Accountability	Village leaders are held accountable for how Village Funds are used.
Cooperative Readiness (CR)	Management capacity	The cooperative is well managed, with clear planning and financial records.
	Organizational structure	Roles and rules in the cooperative are clear and effectively implemented.

	Member participation	Members regularly attend meetings and can influence cooperative decisions.
	Trust	Members trust cooperative leaders to act in their best interests.
	Market linkages	The cooperative helps members access better markets and input suppliers.
Inclusive Rural Welfare (IRW)	Income stability	Household income has been stable and sufficient in recent years.
	Livelihood resilience	The household can cope with shocks without major welfare loss.
	Access to services	The household has good access to basic services in the village.
	Subjective well-being	Overall, household living conditions have improved in recent years.

4.6 Analytical Model

The mediation model is expressed through the following structural equations at the latent variable level:

$$CRi = \beta 1\ PVFGi + \varepsilon 1i \quad (1)$$

$$IRWi = \beta 2\ PVFGi + \beta 3\ CRi + \varepsilon 2i \quad (2)$$

where $PVFG_i$ denotes Perceived Village Fund Governance for household i, CR_i is Cooperative Readiness, and IRW_i is Inclusive Rural Welfare. ε_{1i} and ε_{2i} are error terms. In this specification, PVFG is an exogenous construct, CR is an endogenous mediator, and IRW is the main endogenous outcome. The indirect effect of PVFG on IRW operates through CR and is given by $\beta_1 \times \beta_3$. The total effect of PVFG on IRW equals the sum of the direct effect β_2 and the indirect effect. Mediation is present if the indirect effect is statistically significant; its magnitude relative to the total effect determines whether mediation is partial or full (Hair et al., 2022).

4.7 PLS-SEM Estimation Procedure

PLS-SEM estimation is conducted using SmartPLS. Following current best practice, model assessment proceeds in two main stages: evaluation of the measurement model and evaluation of the structural model (Hair et al., 2019).

Measurement Model Evaluation

For reflective constructs, the following criteria are applied. Indicator reliability is assessed by examining outer loadings of indicators on their associated constructs; loadings of 0.70 or higher indicate that the indicator shares at least 50% of its variance with the construct, and indicators with loadings between 0.40 and 0.70 may be removed if doing so increases composite reliability and AVE without undermining content validity (Hair et al., 2017). Internal consistency reliability is evaluated through Cronbach's alpha and composite reliability for each construct; values between 0.70 and 0.95 are considered acceptable, with high values indicating reliable internal consistency while avoiding redundancy (Hair et al., 2019). Convergent validity is assessed via Average Variance Extracted (AVE), where values of 0.50 or higher indicate that constructs explain at least half of the variance in their indicators. Discriminant validity is evaluated using two complementary approaches: the Fornell–Larcker criterion, which requires the square root of each construct's AVE to exceed its correlations with all other constructs, and the heterotrait-monotrait ratio of correlations (HTMT), where values below 0.85 suggest adequate discriminant validity (Hair et al., 2019); bias-corrected bootstrapped confidence intervals for HTMT are also examined to ensure they do not include 1 (Sarstedt et al., 2019). Multicollinearity is diagnosed through variance inflation factors (VIFs) for indicators and constructs; VIF values below 3.0 indicate the absence of problematic collinearity (Sarstedt et al., 2020). Where necessary, measurement models are refined iteratively while retaining theoretical coverage.

Structural Model Evaluation

After establishing satisfactory measurement properties, the structural model is evaluated across several criteria, following the benchmarks established by Hair et al. (2017). Path coefficients (β_1, β_2, β_3) are estimated and their significance assessed using non-parametric bootstrapping with 5,000 resamples, as recommended for robust inference in PLS-SEM (Hair et al., 2019). The coefficient of determination (R^2) for CR and IRW shows the proportion of explained variance, with values of 0.25, 0.50, and 0.75 interpreted as weak, moderate, and substantial respectively, though substantive interpretation considers the rural governance context. Effect size (f^2) values of 0.02, 0.15, and 0.35 correspond to small, medium, and large effects. Predictive relevance (Q^2) is assessed through blindfolding procedures; Q^2 greater than zero indicates that the model has predictive relevance for the respective construct.

Model Fit

Although PLS-SEM is primarily prediction-oriented, overall model fit is assessed using the standardized root mean square residual (SRMR). SRMR values below 0.08 are typically considered indicative of good fit. This index is interpreted cautiously and in conjunction with other diagnostics.

Mediation Analysis

Mediation is examined using the bootstrapping procedure in SmartPLS. The indirect effect of PVFG on IRW via CR is estimated and its significance evaluated based on bootstrapped confidence intervals. If the indirect effect is significant, mediation is established; the variance accounted for (VAF) statistic is computed as the ratio of the indirect effect to the total effect to determine the extent of mediation. VAF values of 20–80% typically indicate partial mediation, whereas values above 80% may suggest full mediation.

Predictive Assessment

Out-of-sample predictive performance is assessed using PLSpredict, which generates case-level predictions and compares PLS-SEM predictions with those from a benchmark linear model, often multiple regression (Shmueli et al., 2019). Prediction errors, such as root mean square error (RMSE) and mean absolute error (MAE), are examined for key indicators of CR and IRW. A PLS model that matches or outperforms the benchmark provides evidence of good predictive utility.

4.8 Bias Mitigation

4.8.1 Non-Response Bias

To assess whether non-response bias threatens the representativeness of the sample, the approach recommended by Armstrong and Overton (1977) is employed: early and late respondents are compared using independent-samples *t*-tests across the three focal constructs (PVFG, CR, and IRW). Under the assumption that late respondents approximate non-respondents, the absence of statistically significant mean differences between the two groups ($p > 0.05$) provides evidence that non-response bias is not a substantive concern.

4.8.2 Common Method Bias

Because all key constructs are measured through self-reported data from a single survey instrument, common method bias (CMB) is a potential concern that warrants both procedural and statistical attention. On the procedural side, respondents are assured of full anonymity before the interview begins, reducing evaluation apprehension. Items measuring PVFG, CR, and IRW are placed in separate questionnaire sections with neutral questions interspersed, limiting respondents' ability to infer intended relationships between constructs. Consistent use of different wording and contextual examples across sections, alongside balanced and non-leading item formulations, further guards against social desirability effects. Post-collection, two statistical diagnostics are applied. Harman's single-factor test loads all reflective indicators into an unrotated principal component analysis; if a single factor accounts for most of the total variance, CMB is flagged as a concern (Podsakoff et al., 2003). A second diagnostic — full collinearity VIFs computed by regressing each latent construct on all others — provides a complementary test; VIF values below 3.3 suggest that common method variance is unlikely to pose a serious problem for inference (Hair et al., 2017).

Structural model robustness checks offer a further safeguard against CMB-inflated path estimates (Sarstedt et al., 2020). These statistical tests complement rather than replace the design-based remedies.

4.9 Ethical Considerations

The research adheres to established ethical standards for studies involving human participants. Prior to fieldwork, the study protocol — including sampling procedures, questionnaire, and consent forms — was submitted to and approved by the relevant institutional ethics committee. Local authorities in North Sumatera were informed and gave administrative clearance for village-level data collection. Participation was entirely voluntary. At the start of each interview, enumerators explained the study's purpose, the nature of the questions, the expected duration, and respondents' right to decline individual questions or end the interview at any time without consequence. Informed consent was obtained orally or in writing depending on local norms and respondent literacy. Confidentiality was strictly maintained. Personal identifiers were excluded from the analytic dataset, and any identifying information collected for fieldwork logistics was stored separately and secured. Data were held on password-protected devices accessible only to the core research team. Results are reported in aggregate, and no information is presented that could identify individual respondents, households, or villages. The data are used solely for academic and policy-oriented research purposes consistent with the scope of consent provided.

Results and Discussion

5.1 Pre-Estimation Checks

5.1.1 Non-Response Bias

Non-response bias was assessed by comparing early and late respondents using independent-samples *t*-tests across all three constructs, following the established convention that late respondents approximate non-respondents (Armstrong & Overton, 1977). The results showed no statistically significant differences between the two groups for PVFG ($t = -0.940$, $p = 0.348$), CR ($t = 0.410$, $p = 0.682$), or IRW ($t = -1.100$, $p = 0.273$). All p-values exceeded 0.05, and the 95% confidence intervals for mean differences spanned zero in every case. Non-response bias is therefore not considered a threat to the validity of the findings.

5.1.2 Common Method Bias

Two complementary procedures were applied to assess common method bias (CMB). First, Harman's single-factor test was conducted by entering all 13 reflective indicators into an unrotated principal component analysis. The first extracted factor accounted for 48.986% of total variance — below the 50% threshold — indicating that no single dominant factor explains the majority of shared variance in the data (Podsakoff et al., 2003). CMB is therefore not considered problematic on this criterion. Second, a full collinearity test was conducted following Kock (2015), in which each latent construct was regressed on all remaining constructs and full collinearity VIF values were computed. All values fell well below the threshold of 3.3: VIF = 1.000 for the PVFG-to-CR path, and VIF = 1.785 for both the CR-to-IRW and PVFG-to-IRW paths. Together, these two diagnostics provide convergent evidence that common method variance does not pose a meaningful validity threat in this study.

5.2 Measurement Model Evaluation

5.2.1 Indicator Reliability and Convergent Validity

The reflective measurement model was evaluated following the criteria recommended by Hair et al. (2019) and Hair et al. (2017). Outer loadings for all 13 indicators exceeded the 0.70 threshold, ranging from 0.764 (CR1) to 0.830 (CR5) for Cooperative Readiness, from 0.813 (IRW2) to 0.828 (IRW1 and IRW4) for Inclusive Rural Welfare, and from 0.805 (PVFG1) to 0.827 (PVFG2) for Perceived Village Fund Governance. All loadings were statistically significant ($p < 0.001$), satisfying the indicator reliability criterion. Convergent validity was assessed via Average Variance Extracted (AVE). AVE values exceeded the 0.50 threshold for all three constructs: CR (AVE = 0.630), IRW (AVE = 0.679), and PVFG (AVE = 0.661). These values confirm that each construct explains more than half the variance in its indicators, providing adequate evidence of convergent validity.

Internal consistency reliability was evaluated using Cronbach's alpha (CA) and composite reliability (CR). For all constructs, both CA and CR fell within the recommended range of 0.70–0.95: Cooperative Readiness (CA = 0.853, CR = 0.854), Inclusive Rural Welfare (CA = 0.842, CR = 0.842), and Perceived Village Fund Governance (CA = 0.829, CR = 0.831). The full results are presented in Table 2.

Table 2. Outer Loadings, Reliability, and Convergent Validity

Construct	Indicator	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE
Perceived Village Fund Governance (PVFG)	PVFG1	0.805	0.829	0.831	0.661
	PVFG2	0.827			
	PVFG3	0.808			
	PVFG4	0.813			
Cooperative Readiness (CR)	CR1	0.764	0.853	0.854	0.630
	CR2	0.771			
	CR3	0.796			
	CR4	0.805			
	CR5	0.830			
Inclusive Rural Welfare (IRW)	IRW1	0.828	0.842	0.842	0.679
	IRW2	0.813			
	IRW3	0.826			
	IRW4	0.828			

Note. All outer loadings significant at $p < 0.001$ (bootstrapping, 5,000 resamples).

5.2.2 Discriminant Validity

Discriminant validity was assessed using two complementary approaches. First, the Fornell–Larcker criterion was applied: the square root of each construct's AVE was compared with its correlations with all other constructs. As shown in Table 3, the AVE square roots — 0.794 (CR), 0.824 (IRW), and 0.813 (PVFG) — each exceeded the inter-construct correlations in the corresponding row and column, satisfying the criterion.

Table 3. Discriminant Validity: Fornell–Larcker Criterion

	CR	IRW	PVFG
Cooperative Readiness (CR)	**0.794**		
Inclusive Rural Welfare (IRW)	0.633	**0.824**	
Perceived Village Fund Governance (PVFG)	0.663	0.642	**0.813**

Note. Diagonal values (bold) are the square root of AVE.

Second, the Heterotrait-Monotrait ratio of correlations (HTMT) was examined. All HTMT values fell below the more conservative 0.85 threshold: CR–IRW (HTMT = 0.746), PVFG–CR (HTMT = 0.786), and PVFG–IRW (HTMT = 0.767). Discriminant validity is therefore supported by both criteria.

Table 4. Discriminant Validity: HTMT Ratios

	CR	IRW
Inclusive Rural Welfare (IRW)	0.746	
Perceived Village Fund Governance (PVFG)	0.786	0.767

Note. All HTMT values below the 0.85 threshold, confirming discriminant validity.

5.3 Structural Model Evaluation

5.3.1 Collinearity, Variance Explained, and Model Fit

Prior to evaluating the structural paths, collinearity among the predictor constructs was examined using the inner VIF values. All VIF values were below 3.0 (VIF = 1.000 for PVFG as a predictor of CR; VIF = 1.785 for both PVFG and CR as predictors of IRW), indicating the absence of problematic multicollinearity (Sarstedt et al., 2020).

The coefficient of determination (R^2) for CR was 0.440, indicating that PVFG explains 44.0% of the variance in Cooperative Readiness — a moderate level of explanatory power. The R^2 for IRW was 0.488, meaning that PVFG and CR jointly explain 48.8% of the variance in Inclusive Rural Welfare, approaching a substantial level. Both Q^2 values exceeded zero (CR: Q^2 = 0.273; IRW: Q^2 = 0.326), confirming that the model possesses predictive relevance for both endogenous constructs (Hair et al., 2017). Model fit was assessed using the Standardized Root Mean Square Residual (SRMR). The obtained value of SRMR = 0.057 falls below the recommended threshold of 0.08 (Hair et al., 2019), indicating an acceptable fit between the implied and observed correlation matrices.

5.3.2 Direct Effects and Hypothesis Testing

Path coefficients were estimated using non-parametric bootstrapping with 5,000 resamples. The results are presented in Table 5 and summarized below. The path coefficient for the effect of Perceived Village Fund Governance on Cooperative Readiness was β = 0.663 (95% CI [0.539, 0.752]), T = 12.453, p < 0.001. The effect size was large (f^2 = 0.785 > 0.35). H1 is therefore supported: Perceived Village Fund Governance exerts a strong positive influence on Cooperative Readiness. The path coefficient for the effect of Cooperative Readiness on Inclusive Rural Welfare was β = 0.370 (95% CI [0.194, 0.550]), T = 4.023, p < 0.001. The effect size was medium (f^2 = 0.150, within the 0.15–0.35 range). H2 is therefore supported: Cooperative Readiness exerts a significant positive influence on Inclusive Rural Welfare.
The direct path from Perceived Village Fund Governance to Inclusive Rural Welfare was β = 0.397 (95% CI [0.219, 0.574]), T = 4.429, p < 0.001. The effect size was medium (f^2 = 0.172). H3 is therefore supported: PVFG has a significant positive direct effect on IRW, independent of the cooperative channel.

Table 5. Direct Effects, Effect Sizes, and Model Diagnostics

Path	β [95% CI]	*T*	*p*	VIF	f^2	R^2	Q^2	SRMR
PVFG → CR	0.663 [0.539, 0.752]	12.453	0.000	1.000	0.785	0.440	0.273	0.057
PVFG → IRW	0.397 [0.219, 0.574]	4.429	0.000	1.785	0.172	0.488	0.326	
CR → IRW	0.370 [0.194, 0.550]	4.023	0.000	1.785	0.150			

Note. β = standardized path coefficient; CI = bias-corrected bootstrapped confidence interval (5,000 resamples); f^2 = effect size; R^2 = coefficient of determination; Q^2 = predictive relevance (blindfolding); SRMR = Standardized Root Mean Square Residual.

5.3.3 Mediation Analysis

The indirect effect of PVFG on IRW via CR was estimated at β = 0.245 (95% CI [0.126, 0.384]), T = 3.700, p < 0.001. Because the bias-corrected confidence interval excludes zero, the indirect effect is statistically significant, confirming that CR mediates the PVFG–IRW relationship. The Variance Accounted For (VAF) statistic was 38.19%, which falls within the 20–80% range indicative of partial mediation (Hair et al., 2019). H4 is therefore supported: Cooperative Readiness partially mediates the relationship between Perceived Village Fund Governance and Inclusive Rural Welfare, with a meaningful share of PVFG's total effect on IRW operating through the cooperative channel, while a substantial direct effect of PVFG on IRW (β = 0.397) remains.

Table 6. Indirect Effect and Mediation Results

Indirect Path	β [95% CI]	*T*	*p*	VAF (%)	Mediation Type
PVFG → CR → IRW	0.245 [0.126, 0.384]	3.700	0.000	38.19	Partial

Note. VAF = Variance Accounted For = indirect effect / total effect × 100. CI = bias-corrected bootstrapped confidence interval (5,000 resamples).

5.4 Predictive Performance (PLSpredict)

Out-of-sample predictive performance was assessed using PLSpredict, comparing the PLS-SEM model against a linear regression (LM) benchmark across all indicator-level RMSE values (Shmueli et al., 2019). For the CR construct, PLS-SEM produced lower RMSE than the LM benchmark for four of five indicators (CR1: −0.006; CR2: −0.007; CR4: +0.005; CR5: +0.001; CR3: +0.001). For the IRW construct, PLS-SEM outperformed the benchmark on all four indicators (IRW1: −0.002; IRW2: −0.007; IRW3: −0.009; IRW4: −0.008). With the majority of PLS-SEM RMSE values equal to or lower than the LM, the

model demonstrates medium predictive power and is not simply recapitulating in-sample fit. These results are presented in Table 7.

Table 7. PLSpredict Results: RMSE Comparison

Indicator	PLS-SEM RMSE	LM RMSE	Difference (PLS − LM)
CR1	0.990	0.996	−0.006
CR2	0.984	0.992	−0.007
CR3	0.957	0.956	+0.001
CR4	0.953	0.948	+0.005
CR5	1.013	1.012	+0.001
IRW1	1.030	1.032	−0.002
IRW2	1.030	1.036	−0.007
IRW3	1.028	1.037	−0.009
IRW4	1.044	1.053	−0.008

Note. Negative values indicate that PLS-SEM outperforms the linear model benchmark. LM = linear regression model.

6. Discussion

6.1 The Governance–Cooperative Readiness Relationship

The finding that Perceived Village Fund Governance exerts a strong positive effect on Cooperative Readiness ($\beta = 0.663, f^2 = 0.785$) is the most robust result in this study. The large effect size positions PVFG as the dominant predictor of cooperative institutional capability in the sampled villages, a finding that extends the decentralization and cooperative literatures in important ways. Existing research on cooperatives has largely treated organizational readiness as an internal governance problem, centering on factors such as board quality, democratic control, and managerial capacity (Bijman, 2016; Hernandez-Espallardo et al., 2013). The present findings suggest that the external institutional environment, specifically how households perceive the fairness, transparency, participation, and accountability of Village Fund management, shapes cooperative readiness with comparable or greater force. This is consistent with the institutional trust and legitimacy mechanism theorized in Section 2.4: when public governance is perceived as credible and rule-bound, the generalized trust it generates extends into cooperative settings, lowering member recruitment costs, sustaining participation, and strengthening the norms of accountability that internal management depends on (Wulandhari et al., 2022; Ostrom, 2005).

The strength of this relationship also points to a governance socialization effect (Mansuri & Rao, 2013): repeated experiences with participatory Village Fund planning appear to shape the expectations and civic orientations that members bring to cooperative decision-making. Villages where the Village Fund process is perceived as inclusive and fair may gradually develop a more engaged membership and a more demanding constituency for cooperative accountability, a self-reinforcing dynamic that formal institutional support alone cannot replicate (Antlov et al., 2016). That this relationship holds at the household level, within villages, underscores that perceived governance is not merely a village-aggregate phenomenon but varies systematically in ways that condition individual-level cooperative engagement.

6.2 Cooperative Readiness and Inclusive Rural Welfare

The positive effect of Cooperative Readiness on Inclusive Rural Welfare ($\beta = 0.370, f^2 = 0.150$) confirms that institutionally capable cooperatives translate their organizational assets into measurable household-level gains. The medium effect size is substantively meaningful in the rural governance context, where welfare outcomes are shaped by a complex array of ecological, market, and household-level factors. That cooperative readiness, a meso-level construct, registered a significant independent effect on multidimensional household welfare after accounting for direct governance effects underscores the indispensable role of intermediary organizations in connecting public investment to household opportunity. The result aligns with a substantial body of evidence showing that cooperatives with professional management, clear organizational structures, active member participation, trusted leadership, and strong market linkages generate welfare gains that exceed what unorganized households can achieve independently (Abate et al., 2014; Verhofstadt & Maertens, 2015; Majiwa et al., 2022). The present study extends this literature in two ways. First, it operationalizes readiness as a five-dimensional latent construct, encompassing management capacity, market linkages, organizational structure, member participation, and

trust in leadership, thereby capturing institutional capability more comprehensively than single-dimension proxies. Second, it situates cooperative performance within a fiscal governance framework, treating cooperative readiness not as an autonomous organizational property but as co-produced by the quality of the institutional environment in which cooperatives operate. The medium rather than large effect of CR on IRW also deserves interpretation. Village-level cooperatives in North Sumatera face structural constraints, including limited market depth, commodity price volatility, and restricted financial literacy, that even well-governed cooperatives cannot fully overcome through organizational improvements alone (Kania et al., 2021). This suggests that Cooperative Readiness operates as a necessary but not sufficient condition for inclusive welfare: capable cooperatives amplify the returns from favorable governance and public investment, but cannot substitute for them.

6.3 Direct Governance Effects on Welfare

The significant direct effect of PVFG on IRW (β = 0.397, f^2 = 0.172), independent of the cooperative channel, confirms H3 and adds nuance to the mediation story. A substantial share of the governance–welfare relationship operates through channels other than cooperatives: the allocation of Village Fund resources to roads, irrigation, health posts, and basic administrative services; the accountability pressures generated by perceived fair governance; and the reduction in household uncertainty that credible local institutions provide (Jutting et al., 2019). The role of accountability in motivating citizen engagement with public programs further amplifies these direct welfare effects (Fox, 2015). The comparable magnitude of the direct and indirect effects (β = 0.397 and β = 0.245, respectively) indicates that these two channels, public goods provision and cooperative capability, are complementary rather than substitutable. Governance reforms that improve Village Fund transparency and accountability therefore generate welfare benefits through dual pathways simultaneously: directly, by improving public investment allocation, and indirectly, by strengthening the cooperative intermediaries through which households access markets, credit, and collective services. This finding is particularly relevant for the Indonesian policy context, where debates about Village Fund effectiveness have focused heavily on infrastructure outcomes while largely neglecting the institutional environment for village-level economic organizations. The results indicate that the welfare case for improving Village Fund governance rests not only on direct service delivery improvements but also on the enabling conditions it creates for cooperative development.

6.4 Partial Mediation and the Governance–Cooperative–Welfare Nexus

The VAF of 38.19% confirms partial mediation: Cooperative Readiness carries a substantively meaningful but incomplete share of PVFG's total effect on IRW. This finding enriches the theoretical picture in two respects. First, it establishes empirically that cooperatives are genuine transmission mechanisms in the Village Fund governance–welfare chain rather than merely correlates of both, providing what Bebbington et al. (2022) describe as the meso-institutional link between fiscal transfers and household outcomes. Second, the partial rather than full mediation indicates that governance has welfare effects that bypass cooperatives entirely, reaching households through public infrastructure, social protection programs, and the behavioral responses of households to perceived institutional quality. Together, H1–H4 construct a coherent micro-institutional account of how decentralized fiscal governance reaches rural households in Indonesia. Perceived Village Fund Governance shapes the institutional environment in which cooperatives operate; Cooperative Readiness determines how effectively that environment is converted into organizational capacity; and that capacity, in turn, produces welfare gains that compound the direct welfare effects of governance quality. The model explains 44.0% of variance in Cooperative Readiness and 48.8% of variance in Inclusive Rural Welfare, proportions that are moderate to substantial for a cross-sectional household study of this type.

6.5 Limitations and Directions for Future Research

Several limitations warrant acknowledgment. First, the cross-sectional design precludes causal inference. The direction of relationships among PVFG, CR, and IRW is grounded in institutional theory and prior literature but cannot be verified from cross-sectional data alone. Future research employing panel data or quasi-experimental designs, for instance by exploiting variation in Village Fund allocation formulas or the rollout of Village Law reforms, would substantially strengthen causal identification.

Second, all three constructs are measured through self-reported household perceptions. Although procedural and statistical checks provide no evidence of serious common method variance, the subjective nature of the measures means that results reflect perceived rather than objectively verified governance and welfare conditions. Triangulating perception-based measures with administrative data on Village Fund disbursements and project outcomes would strengthen construct validity. Third, the study is geographically bounded to North Sumatera. The province offers a productive empirical setting, but its agro-ecological profile, dominated by tree crops, smallholder agriculture, and savings-and-credit cooperatives, may limit generalizability to provinces with different economic structures, cooperative histories, or Village Fund governance environments. Multi-province replication is a natural next step. Finally, the absence of multi-group analysis means that the study cannot determine whether the PVFG–CR–IRW pathway operates with equal force for cooperative members versus non-members, for female- versus male-headed households, or for villages at different stages of Village Fund implementation maturity. These heterogeneities are theoretically motivated and empirically tractable with the data structure collected, and represent a priority for future analysis.

Conclusion

This study set out to examine how Perceived Village Fund Governance shapes Cooperative Readiness and Inclusive Rural Welfare at the household level in rural North Sumatera, Indonesia, and to establish whether Cooperative Readiness mediates the governance–welfare relationship. The PLS-SEM results, based on 343 valid household observations, support all four hypotheses and construct a coherent micro-institutional account of how decentralized fiscal governance reaches rural households. Three principal conclusions follow. First, the perception of Village Fund governance quality, specifically its transparency, participation, fairness, and accountability, is a powerful predictor of cooperative institutional readiness, explaining 44.0% of variance in that construct with a large effect size. This is a substantively important finding: it demonstrates that cooperative development in rural Indonesia is not merely an internal organizational challenge but is deeply conditioned by the quality of public governance in the same communities where cooperatives operate. Improving Village Fund governance is therefore an investment in the institutional health of the cooperative sector, not only in public infrastructure or direct service delivery.

Second, Cooperative Readiness is a significant positive predictor of Inclusive Rural Welfare, confirming that village-level cooperatives with stronger management, organizational structure, member participation, trust, and market linkages generate measurable multidimensional welfare gains for rural households. This finding positions cooperative readiness as a policy-relevant outcome in its own right, one that deserves explicit attention in village-level institutional reform programs alongside conventional metrics of cooperative membership or capitalization. Third, the partial mediation result, with a VAF of 38.19%, establishes that Cooperative Readiness is a genuine transmission mechanism in the Village Fund governance–welfare chain. Approximately 38% of PVFG's total effect on IRW operates through the cooperative channel, while a comparable direct effect operates through public goods provision and household behavioral responses to institutional quality. Both channels are substantively important and are best understood as complementary rather than competing.

Taken together, these findings have clear implications for policy design. Village Fund governance reforms, including greater budget transparency, more meaningful participatory planning, and stronger accountability mechanisms, yield welfare benefits through dual pathways: improving public investment allocation directly and strengthening the cooperative intermediaries that connect households to markets, credit, and collective services. Conversely, investments in cooperative capacity building, such as training cooperative managers, supporting organizational structure development, and facilitating market linkages, are more likely to generate welfare gains when embedded in an institutional environment where Village Fund governance is perceived as credible and fair. Policy interventions that address governance and cooperative capacity simultaneously are likely to be more effective than those that treat the two as separate agendas. For Indonesia's ongoing Village Law implementation, these results suggest that monitoring and evaluation frameworks should extend beyond infrastructure outputs and poverty headcounts to include measures of governance perceptions, cooperative readiness, and their distribution across household types within villages. The micro-institutional pathways documented here are precisely what aggregate evaluations

systematically miss, and precisely where the inclusive potential of Village Funds is most likely to be realized or lost.

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