Structural Empowerment and Consensus Construction: The Influence of Villagers' Supernetwork on Participation in Self-Governance

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Abstract

Village self-governance constitutes a foundational pillar of rural governance in China, with effective social mobilization serving as its central prerequisite. In the contemporary context characterized by simultaneous state resource infusion into rural areas and the gradual transformation of villages from "acquaintance societies" into "semi-acquaintance" societies, conventional single-layer social network approaches are increasingly insufficient for explaining variations in villagers' participation in collective self-governance under conditions of multi-actor interaction. Drawing on data from a 2023 rural survey conducted in Shaanxi Province, China, this study introduces the concept of the villagers' supernetwork from the perspective of social network analysis. We construct both an overall actual-support network and a multilayer supernetwork integrating villagers, village cadres, organizations, and clan affiliations. Combining multilayer network measures (GNorm) with regression analysis and triangulating the findings through 94 qualitative interview cases, this study examines how multidimensional relational structures jointly facilitate villagers' participation in self-governance. The findings reveal three major patterns. First, peer participation embedded in actual-support networks significantly promotes individual participation in village self-governance, indicating a diffusion effect in grassroots mobilization. Second, network size, clan affiliation, organizational participation, and cadre–mass relations all significantly enhance governance participation, jointly constituting a stratified and complementary system of capital mobilization. Third, specialized leaders embedded in the "villager–clan" and "villager–organization" subnetworks exert significant positive effects on participation, whereas the influence of "villager–cadre" leaders is comparatively unstable. More importantly, comprehensive supernetwork leaders substantially strengthen frame integration and collective action transformation by bridging multiple layers of trust and resource hubs across relational domains. Methodologically, this study introduces the supernetwork paradigm into the analysis of grassroots governance. Theoretically, it identifies a threefold mobilization chain consisting of member mobilization, capital mobilization, and frame mobilization. The findings provide empirical evidence for identifying key relational actors and optimizing mobilization strategies in rural governance under China's ongoing rural revitalization process.

Keywords: village self-governance; supernetwork; social network; rural governance; grassroots mobilization

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Introduction

Village self-governance constitutes a crucial component of China's rural governance system and has long shaped the institutional foundation of rural social order. Since its institutionalization, it has not only become an important pathway toward grassroots democratization, but has also served as a critical mechanism for advancing the modernization of China's governance system and governance capacity. However, the large-scale infusion of state resources into rural areas has gradually transformed villagers from obligation-oriented actors into rights-oriented actors. While externally allocated projects and resources have improved rural livelihoods, they have simultaneously weakened endogenous mechanisms of self-governance, giving rise to governance dilemmas such as "suspended governance" [1], "rent-sharing order" [2], "elite capture" [3], and "governance involution" [4]. During this transformation, rural society has increasingly shifted from a culturally embedded order toward one characterized by stronger political and economic attributes. The tensions generated by these overlapping logics have weakened villagers' subjectivity in public affairs and eroded the collective mobilizational foundations of self-governance [5]. Against this backdrop, strengthening rural governance has become a central state priority in contemporary China. As the institutional starting point of grassroots democratic practice in China, village self-governance is once again becoming a key policy instrument in the new developmental stage.

Existing scholarship on village self-governance has gradually shifted from macro-level institutional analyses toward micro-level interactional processes among villagers. At its core, participation in self-governance depends on social mobilization, which in turn rests on interpersonal ties [6]. Without embedded interpersonal ties, self-governance risks becoming both "rootless" and "powerless" [7]. Horizontal interaction among villagers can partially break the monopolistic power structure centered on village committees and thereby facilitate collective participation in public affairs [8]. However, the relational foundations embedded in village self-governance are far more complex than a single-layer social network composed solely of villager-to-villager ties. Rather, they involve multiple interconnected relational domains, including villagers, village cadres, clans, and social organizations. Focusing exclusively on one type of relationship risks oversimplifying the actual mobilization structure and distorting the mechanisms underlying collective participation [9].

Traditional network models face considerable difficulty in capturing the higher-order interactive effects generated by such multiplex relational systems. Conceptually, these complex interactional structures are closer to what complexity science describes as a supernetwork—a relational structure that transcends ordinary pairwise connections and incorporates multidimensional interactions across heterogeneous actors [10]. Given that rural interaction systems in contemporary China involve diverse actors embedded within multilayered relational structures, both their external manifestations and internal logics are highly consistent with the analytical framework of supernetworks. Building on this perspective, this study proposes the concept of the villagers' supernetwork: a higher-order multiplex network formed through the interconnection of diverse relational structures within the rural social system.

Although supernetwork analysis has rarely been applied to the study of village self-governance, the analytical logic of supernetworks aligns closely with the actual processes of rural mobilization. On the one hand, the self-organizing, adaptive, and self-similar characteristics of rural society require a dynamic and complexity-oriented analytical framework capable of systematically capturing collective participation processes [11]. On the other hand, the supernetwork perspective explicitly emphasizes multidimensional actor embedding and cross-relational interaction, both of which are essential for understanding contemporary grassroots governance in China [12].

The essence of mobilization in village self-governance lies in transforming individual actions into collective action [13], and this transformation fundamentally depends on the embedding and activation of advantageous resources or forms of capital [14,15]. Yet a central question remains unresolved: under conditions where traditional social capital has weakened in many rural communities, what kinds of resources can still effectively catalyze collective participation? More importantly, how do different relational resources interact to shape villagers' willingness and capacity to participate in self-governance?

The supernetwork perspective provides a productive analytical pathway for addressing these questions. Rather than treating social capital as a homogeneous and undifferentiated concept, the villagers' supernetwork operationalizes rural social capital as a stratified and internally interactive relational system. This perspective reveals that social capital in rural China is not uniformly distributed; instead, it is hierarchical, heterogeneous, and potentially synergistic across multiple relational layers. While classical resource mobilization theory primarily emphasizes the scale of available resources, the supernetwork framework highlights the importance of relational structures themselves as mobilizational resources. It further underscores the mechanisms through which cognitive integration and meaning construction facilitate the transformation of resources into collective participation. In this sense, the supernetwork approach constitutes a contextualized extension and refinement of classical resource mobilization theory within the Chinese rural governance setting.

Meanwhile, the relational foundations of rural mobilization are themselves undergoing profound transformation amid China's rural revitalization strategy and ongoing urbanization process. State-led resource allocation has increasingly reshaped local interest structures, transforming traditional rural social networks from "cultural power networks" into "interest-based power networks [16]." Simultaneously, large-scale population mobility and rural hollowing have weakened traditional acquaintance ties [17]. and disrupted the conventional differential mode of association characteristic of rural Chinese society. Yet the deepening of rural revitalization has also encouraged the return of some migrant workers, contributing to the reconfiguration of clan culture, local councils, and various rural organizations[18]. At the same time, increasing administrative embeddedness and the downward extension of governance units have reshaped cadre–mass relations and altered the balance among local interest groups [19]. Together, these transformations have generated a new mobilizational resource system unique to the contemporary Chinese countryside, thereby reshaping the mechanisms through which villagers participate in self-governance.

Against this background, this study conceptualizes a villagers' supernetwork composed of interconnected villager, cadre, organizational, and clan layers. It investigates the structural characteristics of this supernetwork and examines its influence on participation in village self-governance. By doing so, the study seeks to uncover the mobilization logic underlying contemporary rural governance in China. Beyond providing empirical and methodological support for the modernization of grassroots governance, this research also contributes to overcoming the theoretical and methodological limitations of existing rural governance studies and demonstrates the analytical potential of complexity science approaches in the study of Chinese social governance.

Literature Review

The Internal Logic of Village Self-Governance

Village self-governance is a distinctive institution of grassroots democracy with Chinese characteristics and represents an important adaptation and development of Marxist theories of social self-governance within the Chinese context. The transformation of social structure and the growing autonomy of society gradually produced a separation between the state and society, while village self-governance emerged precisely as an institutional mechanism to reconnect the two [20]. It has not only shaped the foundational order of rural society, but has also become a key component of rural democratization and the modernization of grassroots governance capacity in China. Its emergence was driven not only by the relatively relaxed political environment created by institutional reforms and by increasing demands for democratic participation under economic transformation, but also by profound endogenous social dynamics. Following the implementation of the household responsibility system, villagers themselves sought institutional innovations capable of addressing the disorder and governance vacuum that emerged in rural society. In this sense, village self-governance embodies a principle of negotiated decentralization between the state and rural society.

Village self-governance can fundamentally be understood as a process through which individual villagers' consciousness and behavior are transformed into collective action [13]. Classical Western theories — including collective action theory [22], resource mobilization theory [23], social identity theory [24], and social contagion theory [25] — have all provided important analytical perspectives for understanding the mobilization dynamics underlying villagers' participation. Building upon these theoretical traditions while incorporating China's distinctive rural social, economic, historical, and political conditions, Chinese scholars have developed a series of localized analytical frameworks, such as "creative politics," "embedded governance," "social mobilization," "institutional isomorphism," "folk belief," and "interface governance" [26,27]. These frameworks have been widely applied to explain changes in rural power structures, resource allocation mechanisms, democratic institution-building, and the effectiveness of village self-governance, thereby offering process-oriented interpretations of how grassroots governance operates in rural China.

At the center of village self-governance are villagers themselves, and effective mobilization of villagers constitutes the key to sustaining self-governance as well as

to achieving "effective governance" in rural areas [28]. Existing studies have therefore increasingly focused on how to activate villagers' subjectivity and empower them within governance processes [28,29]. This body of research has generated several influential analytical traditions—including institutionalist approaches, state–society frameworks, and governance-and-good-governance paradigms—which explore the motivational foundations, operational mechanisms, institutional effects, and practical performance of village self-governance. These studies also emphasize the complex interactions among multiple governance actors, including villagers, village cadres, organizations, and state institutions [30–32]. A growing consensus has emerged that the effectiveness of grassroots mobilization depends not merely on the capacity of individual actors, but on the coordination and integration of relationships both within and across these actor groups [33,34].

However, the contemporary rural governance landscape in China has become increasingly complicated under the ongoing influx of external resources into rural communities. The expansion of resource allocation mechanisms has intensified distributive competition among different interest groups, resulting in increasingly visible "rent-sharing orders" [4]. Such inequalities are manifested not only in uneven access to economic resources, but also in the monopolization of political resources by local elites, producing deeper forms of political and social exclusion within villages [35]. Although village self-governance can partially diffuse concentrated authority and generate secondary forms of quasi-public power distribution [36,37], traditional rural social norms rooted in kinship, locality, and blood ties have simultaneously weakened. As a consequence, villages often struggle to reconcile competing interests among different groups, leading to declining reciprocity and increasing exclusion of outsiders[6].

The differentiation of rural interests has further widened socioeconomic inequalities, intensified labor and distributive conflicts, and exacerbated tensions between cadres and villagers, thereby increasing conflict among governance actors and making collective mobilization more difficult [38]. Moreover, villagers' vertical channels for expressing interests remain institutionally constrained, limiting their ability to articulate demands effectively. In some cases, local authorities have replaced "governing on behalf of the people" with "deciding on behalf of the people," further weakening the effectiveness and legitimacy of village self-governance mobilization [39].

Overall, the evolution of village self-governance in China reflects not only broader transformations in social structure and political environment, but also profound changes in villagers' consciousness, behavioral patterns, and modes of interaction. As rural governance shifts from traditional social structures toward increasingly diversified and networked forms of governance, village self-governance has evolved from a relatively simple institutional arrangement into a highly complex process of social mobilization. Under the continuing implementation of the rural revitalization strategy, village self-governance must continuously negotiate tensions between tradition and modernity, collective interests and individual interests, and self-governance and administrative penetration. This requires a more comprehensive analytical framework capable of integrating the multiple actors and relational systems embedded in rural society. Such a framework must move beyond the examination of isolated social ties and instead systematically account for the interactions among

villagers, cadres, organizations, clans, and other governance actors within a multidimensional relational structure. Yet existing research has rarely examined the complexity characteristics of contemporary village self-governance mobilization, and even fewer studies have explored the multilayered interactional relationships underlying these processes.

Mechanisms Influencing Participation in Village Self-Governance

Research on participation in village self-governance has generally developed along two major analytical orientations: studies emphasizing villagers' "internal motivations" and studies focusing on "external mobilizing forces." Research on internal motivations primarily examines villagers' individual social attributes and has generated a substantial body of literature centered on demographic and socioeconomic characteristics, including gender, age, educational attainment, marital status, political affiliation, occupational experience, household structure, labor resources, and income level[40,41]. Some scholars further approach participation from the perspective of social psychology, arguing that villagers' psychological needs, self-identity, and perceptions of self-efficacy significantly influence their willingness to engage in self-governance[42]. Others emphasize social identity, suggesting that cultural and identity-based recognition not only catalyzes participation but also constitutes a precondition for sustained engagement in collective governance activities[43]. Through participation in self-governance, villagers may simultaneously enhance their own capacities and strengthen their identification with grassroots democratic practices, thereby further deepening their involvement in rural public affairs.

Studies emphasizing external mobilizing forces, by contrast, are generally grounded in resource mobilization theory and social capital theory. These studies have developed analytical frameworks centered on village endowments, policy incentives, organizational support, cultural guidance, and social capital[44]. From the perspective of resource mobilization theory, social capital constitutes one of the most critical resources required for collective action[45]. As a set of value relations and mutual recognition formed through long-term interaction, communication, and cooperation, social capital exerts a profound influence on participation in village self-governance [46]. Existing research has argued that the decline of traditional forms of rural social capital, combined with the absence of modern civic social capital, has weakened the effectiveness of rural norms and self-governance institutions[47]. Accordingly, rebuilding modern forms of social capital has been regarded as essential for improving the quality of grassroots governance in contemporary rural China. Some scholars have further proposed progressive analytical frameworks such as "institutional empowerment–social capital activation–effective self-governance[48]" arguing that the effectiveness of village self-governance depends heavily on the institutional activation of embedded social capital.

Regardless of whether scholars emphasize internal motivations or external mobilizing forces, participation in village self-governance does not occur within isolated individual spaces; rather, it is deeply embedded in broader relational fields of interpersonal interaction[9,18,49]. Social capital—primarily manifested through social networks, social trust, and social norms—reflects villagers' communicative capacities and social cognition, and serves as a crucial carrier of rural social

participation[50]. Existing studies have repeatedly demonstrated that both formal and informal organizational participation can facilitate information diffusion and resource mobilization through relational linkages[51,52], thereby reducing opportunistic behavior, cultivating norms of reciprocity, and stimulating endogenous motivations for self-governance [53,54].

In China's rural society, where the differential mode of association remains influential, kinship-based clan relations also continue to function as an important driving force behind villagers' participation in collective affairs[55]. Although scholars remain divided over whether clan influence is beneficial or detrimental to rural governance, clan structures undeniably continue to play a significant role in "sentiment-based mobilization" within village public affairs. In addition, studies have shown that cadre–mass relations substantially shape villagers' willingness to participate in self-governance[56,57]. Harmonious relations between villagers and grassroots cadres not only consolidate the institutional foundation of self-governance, but also facilitate rural economic and cultural development and promote higher levels of grassroots participation.

With the continuing implementation of rural revitalization and ongoing adjustments in urban–rural demographic structures, village self-governance in China is increasingly shifting away from traditional clan-centered governance toward multidimensional governance structures characterized by economic interest linkages and interactions among multiple actors. In this process, transformations in the relationships among villagers, village cadres, organizations, and clans have reconfigured the social relational landscape of rural communities[17,58]. These relational transformations, in turn, exert deeper influences on both the internal motivations and external mobilization mechanisms underlying participation in village self-governance.

Although existing scholarship has generated important insights into psychological motivations, mobilizational resources, and social capital in village self-governance, several limitations remain. Most studies continue to focus primarily on the individual level, while research on villagers' social networks has largely relied on ego-network approaches and paid insufficient attention to the structural properties of whole networks. Moreover, relatively few studies have systematically examined the multiplex relational networks formed among different governance actors such as clans, organizations, and village cadres. At the same time, transformations in the structure and nature of relational interactions in contemporary rural China have further reshaped the meaning and function of social relations, thereby creating new analytical possibilities.

Accordingly, there is a need to integrate individual attributes, whole-network structures, and cross-actor interactions into a unified analytical framework. This study therefore embeds mobilization structures within a villagers' supernetwork composed of interconnected villager, cadre, organizational, and clan layers, with the aim of systematically examining the higher-order structural effects generated by multiple categories of relational interaction and revealing new mechanisms of grassroots mobilization under conditions of urban–rural integration and rural revitalization in contemporary China.

Research Design

A Supernetwork-Based Framework for Mobilization in Village Self-Governance

The emergence of village self-governance is fundamentally aligned with the logic of collective action. Olson's discussion of the "free-rider problem" in collective action theory is particularly relevant to the governance dilemmas confronting contemporary rural China. A central question, therefore, concerns how collective participation can be effectively mobilized under conditions where individuals may prefer to free ride on the efforts of others. Existing studies suggest that resources—especially relational resources embedded in social networks—play a decisive role in overcoming this dilemma. Tilly emphasized that social networks constitute a key mechanism for mobilizing collective action resources, as they not only facilitate the formation of shared identity but also transform dispersed private resources into collectively usable resources. During mobilization processes, social networks simultaneously facilitate information diffusion and trust formation. On the one hand, villagers acquire information about village affairs through interactions with relatives, neighbors, and acquaintances, thereby lowering the threshold for information transmission. On the other hand, network ties strengthen interpersonal trust, encouraging villagers to invest greater amounts of time, effort, and material resources into collective activities.

However, ongoing urban–rural integration and social transformation have substantially reshaped the traditional rural relational order characterized by the Chinese "differential mode of association." Contemporary rural social networks increasingly exhibit declining social capital, weakened social trust, and deteriorating neighborhood relations, thereby undermining the mobilizational effectiveness of village self-governance. Under such conditions, focusing exclusively on conventional forms of social networks or social capital is no longer sufficient for identifying effective pathways to reactivate grassroots participation.

Building upon the resource mobilization tradition advanced by McCarthy and Zald, while responding to the complexity of contemporary rural multi-actor interactions in China, this study conceptualizes mobilization in village self-governance as a threefold process consisting of *member mobilization*, *capital mobilization*, and *frame mobilization*, with the villagers' supernetwork serving as the underlying structural foundation (Figure 1). Within this framework, mobilization no longer follows a simple linear diffusion process embedded in traditional single-layer networks. Instead, the supernetwork generates structural empowerment by enabling nonlinear aggregation and synergistic interaction across multiple layers and types of relational resources. Each of the three mobilization mechanisms operates through, and depends upon, the higher-order structural properties of the supernetwork.

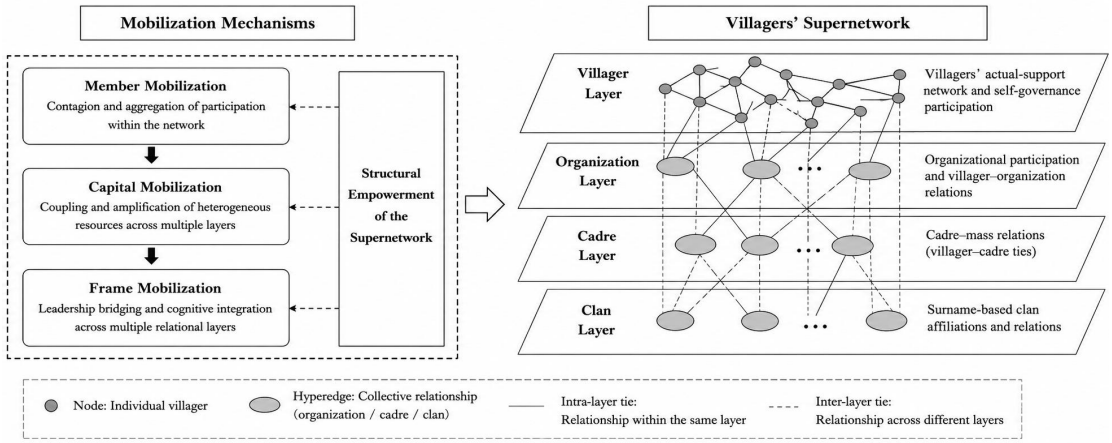


Figure 1. A Supernetwork-Based Mobilization Framework for Participation in Village Self-Governance

First, *member mobilization* refers to processes of contagion and aggregation within the supernetwork and constitutes the starting point of collective mobilization. Its core task lies in identifying potential participants and activating mutual influence among members. Existing studies indicate that grassroots cadres can identify potential supporters of collective village affairs through family networks and community ties; once effectively mobilized, these supporters may become key actors who further stimulate resource circulation and wider mobilization. Although participation in village self-governance appears, on the surface, to consist merely of the aggregation of individual behaviors, individuals within rural social settings are often unconsciously influenced by collective emotions and behaviors. Through interpersonal interaction, participation rapidly diffuses across surrounding actors, producing processes of social contagion and behavioral convergence.

Olson regarded collective action as the provision of public goods, whose nonexclusive and noncompetitive characteristics substantially reduce individuals' intrinsic incentives to participate. Yet the participation of peers can suppress purely self-interested calculations. Under these conditions, forms of bounded rationality such as learning, imitation, and social conformity become crucial mechanisms for effective mobilization. The key carrier of member mobilization remains interpersonal interaction among villagers. Despite the increasing hollowing-out of rural communities, social interaction networks among villagers—particularly among "core farmers" whose primary economic and social ties remain rooted locally—continue to serve as the most important vehicles for transforming individual behavior into broader processes of social contagion.

Second, *capital mobilization* relies on the heterogeneous coupling and structural amplification of resources within the supernetwork and constitutes the core dimension of mobilization. McCarthy and Zald argued that collective actors possessing abundant resources are better able to organize, integrate, and strategically deploy those resources to facilitate collective action. Within the Chinese rural context, capital mobilization reveals the critical role played by social capital integration in reshaping

governance capacity. The scale and quality of social resources directly determine both the breadth and efficiency of mobilization.

A growing body of literature identifies the decline of rural social capital as a major obstacle to contemporary grassroots mobilization in China, particularly because the fragmentation of relational structures within "semi-acquaintance societies" has weakened the capacity to aggregate social resources effectively. Coser emphasized that collective action depends on the mobilization of multiple categories of resources rather than a single resource type, and that the key lies in effectively integrating different forms of strong and weak ties into a coherent relational system. The villagers' supernetwork precisely embodies such a multilayered relational structure, composed of overlapping and interconnected dimensions including actual-support networks, clan affiliations, organizational participation, and cadre–mass relations.

This multilayer structure enables capital mobilization to transcend individual relational boundaries and generate heterogeneous resource coupling rather than simple resource accumulation. For example, cross-layer connections can combine clan-based trust (cultural capital embedded in clan relations) with organizational resources (institutional capital embedded in organizations), thereby enhancing both mobilization efficiency and resource reliability. The coordinated allocation of multilayer relational resources within the supernetwork produces structural effects that exceed the sum of individual resources. Such effects help compensate for the limitations of single-network mobilization under conditions of asymmetric information and collective action dilemmas, thereby enabling village self-governance to function more effectively.

Third, *frame mobilization* depends on multimodal leadership bridging and cognitive integration within the supernetwork. Unlike member mobilization and capital mobilization, frame mobilization emphasizes the formation of shared identities, meanings, and beliefs. Through the construction of discursive systems and interpretive frameworks, the values and action logics of village self-governance become aligned with participants' cognitive understandings, thereby generating broader consensus. The core mechanism lies in "frame bridging" across different categories of relationships in order to integrate otherwise fragmented interest groups.

Friedkin argued that although resources are important, emotions also play a decisive role in shaping individuals' attitudes and behavioral choices. As villagers influence one another through interpersonal interaction, their perceptions of village affairs may either strengthen or weaken their motivations to participate in collective governance. Within the highly complex rural social environment, different groups may become divided due to divergent interests or cognitive biases, thereby undermining effective mobilization. Comprehensive leaders within the supernetwork are those actors occupying highly central or bridging positions across multiple relational layers—including actual-support networks, organizational participation networks, and clan affiliation networks—and who therefore possess the capacity to bridge different relational modalities and connect diverse interpretive frameworks.

These leaders integrate multiple discursive logics—including administrative discourse, cultural ethics, and public-interest narratives—while transmitting shared value orientations across different groups through multilayer trust channels. For instance,

village opinion leaders such as village cadres may disseminate important collective goals through Party-led governance mechanisms; clan-based activities such as rituals and ceremonies may foster ideological consensus among clan members; and semi-formal or informal organizations such as councils for weddings and funerals, elderly associations, or folk performance groups may reinforce villagers' psychological identification with collective affairs. Consensus formation within village self-governance therefore emerges not simply from ordinary interpersonal trust, but from the combined operation of everyday trust, clan-based moral authority, and organizational legitimacy within the supernetwork structure. The influence of multilayer relational interactions thus lies not merely in the additive accumulation of information and resources, but in the emotional and cognitive resonance generated through the joint operation of multiple relational systems.

On this basis, this study constructs the conceptual framework of the villagers' supernetwork. The villager layer constitutes the core of the system and is interconnected with the organizational layer, village cadre layer, and clan layer. The villager layer includes both the whole actual-support network among villagers and villagers' self-governance participation behaviors. The actual-support network reflects the direct mobilization structure embedded in interpersonal support relations among villagers.

The villagers' supernetwork further incorporates interactions between the villager layer and other relational layers. Connections between villagers and village cadres are represented through cadre–mass relations, reflecting both villagers' access to institutional resources through cadres and cadres' mobilization of villagers. Relations between villagers and organizations are established through organizational participation, reflecting political and social processes generated through villagers' organizational involvement. Connections between villagers and clans are constructed through surname-based clan affiliations, reflecting the influence of clan structures on individual behavior. These three categories of interactions are represented in the form of hypergraphs, where villagers constitute nodes and cadre relations, organizational participation, and clan affiliations constitute hyperedges.

Data, Variables, and Descriptive Statistics

The data used in this study were drawn from the 2023 Rural Revitalization Social Survey conducted in County D, Shaanxi Province, by the Research Group on New Urbanization and Sustainable Development at Xi'an Jiaotong University. The survey investigated issues related to rural governance through household questionnaires as well as interviews with township officials, village cadres, and villagers. The dataset consists of two components: villager network data and villager interview data.

The villager network data were collected using cluster sampling. Based on village household rosters provided by village committees, households were randomly selected, and one respondent from each household was interviewed. In each township, one administrative village was selected for social network investigation. Ultimately, whole-network and individual-level network data were collected from four administrative villages across four townships. To better capture the principal participants in contemporary rural governance, this study focused on "core farmers," namely young and middle-aged villagers who remain socially and economically

active within village society, while excluding elderly respondents from the analytical sample. The final dataset integrates both survey responses and whole-network data from the four villages. After removing incomplete network nodes and extracting induced subgraphs corresponding to valid respondents, the study obtained 408 valid network observations.

The interview data were collected from two representative administrative villages within the same county. Interviewees consisted of permanent residents who had lived in the village for at least six months and primarily focused on ordinary villagers rather than village cadres. The interviews covered household structure, livelihood and employment conditions, participation in public affairs, and social relations. Both middle-aged and elderly villagers were included, thereby complementing the survey sample. These interview materials provide qualitative evidence that triangulates the quantitative findings and help reveal the complex mechanisms linking the supernetwork structure to village self-governance participation. A total of 94 interview cases were ultimately included in the qualitative analysis.

Dependent Variable

The dependent variable in this study is participation in village public affairs, which is used to measure the level of villagers' participation in self-governance. Specifically, respondents were asked about their involvement in six categories of village public affairs: economic affairs, political affairs, cultural affairs, elections, public welfare activities, and environmental governance.

Participation was measured across three dimensions:
(1) recognizing that the issue should be jointly discussed by villagers;
(2) willingness to participate in discussions regarding the issue; and
(3) actual participation in organizing or carrying out relevant activities.

All items were measured using a five-point Likert scale. Scores across the six categories were aggregated to form the final index of village self-governance participation.

Independent Variables

Member Mobilization
Within the dimension of member mobilization, the variable *peer participation* captures the level of self-governance participation among a villager's peers. Using social network analysis, this study calculates the average participation level of adjacent nodes (i.e., neighbors within the actual-support network) and uses this value to measure peer participation for each individual.

Capital Mobilization
Within the dimension of capital mobilization, four types of relational resources are measured across different layers of the supernetwork.
At the villager layer, *network size* measures the amount of potential social resources available to villagers within the community. This indicator is obtained by asking respondents how many close friends they have within the village.

At the clan layer, *surname proportion* measures the extent of clan-based relational resources available to villagers. Specifically, this variable is calculated as the proportion of households in the village sharing the same surname as the respondent's household head. A higher proportion indicates stronger clan-based social resources.
At the organizational layer, *organizational participation* reflects villagers' access to resources through participation in self-governance organizations or other social organizations. Respondents were asked whether they belonged to organizations such as self-governance associations, cultural groups, economic cooperatives, or rights-protection organizations. Response options included:
(1) "member";
(2) "not a member but actively participates"; and
(3) "not a member and rarely participates."

Responses (1) and (2) were coded as indicating organizational participation, whereas response (3) was coded as no organizational participation.

At the cadre layer, *cadre–mass relations* capture villagers' institutionalized connections with government and political authorities. This variable is measured based on the occupational composition of respondents' relatives and acquaintances. If respondents reported having social ties with village cadres, township officials, county-level or higher government officials, or police officers, they were categorized as possessing cadre–mass relations; otherwise, they were coded as lacking such relations.

Member Mobilization
Within the dimension of frame mobilization, this study defines four categories of leadership variables:
(1) villager–organization specialized leaders;
(2) villager–cadre specialized leaders;
(3) villager–clan specialized leaders; and
(4) comprehensive supernetwork leaders.
These variables capture villagers' capacity to mobilize resources across different identity frameworks and relational domains.
The organizational-layer network was constructed by connecting villagers participating in the same type of organization. The cadre-layer network was constructed by connecting villagers who maintained ties with cadres. The clan-layer network was constructed by connecting villagers whose household heads shared the same surname. Each of these networks was then merged with the villagers' actual-support network to form multilayer networks.
As illustrated in Figure 2, the study calculates multilayer centrality (GNorm) to identify specialized leaders within paired network combinations. Subsequently, all relational layers are integrated to construct the villagers' supernetwork, from which comprehensive supernetwork leaders are identified.

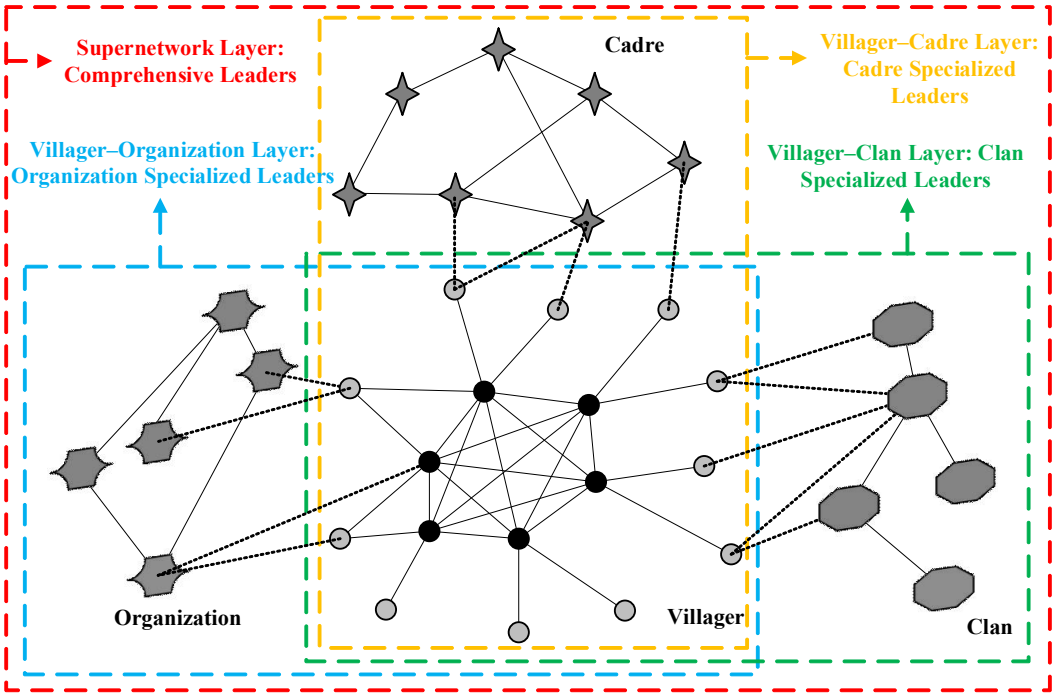


Figure 2. Schematic Illustration of Specialized Leaders and Comprehensive Leaders in the Supernetwork.

Control Variables

To account for the influence of demographic characteristics and social attitudes on participation in village self-governance, this study includes a series of control variables: gender, age, household income, migrant work experience, current village cadre status, previous village cadre experience, educational attainment, Communist Party membership, trust in neighbors, trust in government, and village fixed effects.

Sample Characteristics

Table 1 presents the descriptive statistics of the sample. Regarding the dependent variable, villagers' participation in self-governance is relatively high overall, with a mean score of 65.13 (out of 100) and a standard deviation of 17.82, indicating substantial individual variation. For the independent variables, within the dimension of member mobilization, the average level of peer participation is 66.38, slightly higher than respondents' own participation level, while the smaller standard deviation (10.92) suggests a pronounced peer effect in grassroots mobilization.

Within the dimension of capital mobilization, villagers' average network size is 24.99, though the large standard deviation (51.61) indicates highly unequal distribution of social relational resources. The mean value of surname proportion is 0.18, suggesting relatively high clan concentration in some villages. The mean value for organizational participation is 1.83, indicating that the average household participates in more than one social organization. The mean value for cadre–mass relations is 0.74, implying that most villagers maintain some form of institutional connection with government

actors. Overall, villagers currently possess relatively abundant mobilizable social resources, suggesting substantial potential for improving participation in self-governance.

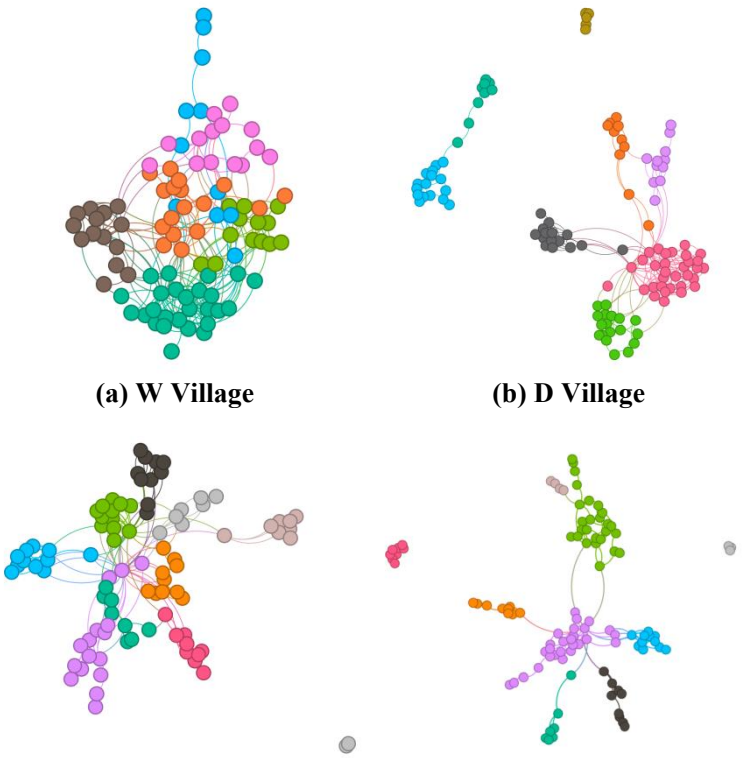
Within the dimension of frame mobilization, the mean values of the three categories of specialized leaders and the comprehensive supernetwork leaders are identical across villages due to the normalization properties of the GNorm algorithm. However, the relatively large standard deviations indicate considerable variation in villagers' positions within different network layers and in their capacities to mobilize diverse relational resources.

Table 1 Descriptive Statistics of the Sample

Category	Variable	W village	D village	L village	A village	Total Sample
Dependent Variable	Self-Governance Participation	63.66 (17.42)	64.13 (18.42)	69.15 (15.38)	63.98 (19.19)	65.13 (17.82)
	Peer Participation	65.39 (9.48)	67.15 (11.01)	69.02 (10.15)	64.08 (12.17)	66.38 (10.92)
Independent Variables	Network Size	18.11 (20.52)	19.95 (27.32)	24.61 (28.55)	37.24 (91.39)	24.99 (51.61)
	Surname Proportion	0.06(0.03)	0.19(0.17)	0.38(0.23)	0.09(0.06)	0.18(0.19)
	Organizational Participation	1.46(1.75)	1.75(1.67)	2.15(1.59)	1.98(1.82)	1.83(1.73)
	Cadre–Mass Relations	0.64(0.48)	0.75(0.43)	0.86(0.35)	0.71(0.46)	0.74(0.44)
	Villager–Clan Specialized Leaders	1(0.18)	1(0.23)	1(0.14)	1(0.21)	1(0.20)
	Villager–Organization Specialized Leaders	1(0.29)	1(0.26)	1(0.20)	1(0.24)	1(0.25)
	Villager–Cadre Specialized Leaders	1(0.30)	1(0.27)	1(0.28)	1(0.26)	1(0.28)
	Comprehensive Villager Supernetwork Leaders	1(0.24)	1(0.29)	1(0.19)	1(0.25)	1(0.25)
Control Variables	Gender					
	Male	52 (54.74%)	71 (61.21%)	51 (54.84%)	58 (55.77%)	232 (56.86%)
	Femal	43 (45.26%)	45 (38.79%)	42 (45.16%)	46 (44.23%)	176 (43.14%)
	Migrant Work Experience					
	Yes	38 (40.00%)	51 (43.97%)	47 (50.54%)	40 (38.46%)	176 (43.14%)
	No	57 (60.00%)	65 (56.03%)	46 (49.46%)	64 (61.54%)	232 (56.86%)
	Educational Attainment					
	Primary School	22 (23.16%)	21 (18.10%)	19 (20.43%)	37 (35.58%)	99 (24.26%)
	Junior High School	54 (56.84%)	74 (63.79%)	59 (63.44%)	61 (58.65%)	248 (60.78%)
	Senior High School	13 (13.68%)	18 (15.52%)	11 (11.83%)	4(3.85%)	46 (11.27%)
	Junior College	4(4.21%)	2(1.72%)	4(4.30%)	2(1.92%)	12(2.94%)
	Bachelor's Degree	2(2.11%)	1(0.86%)	0(0.00%)	0(0.00%)	3(0.74%)
	Communist Party Membership					
	No	90 (94.74%)	108 (93.10%)	84 (90.32%)	102 (98.08%)	384 (94.12%)
	Yes	5(5.26%)	8(6.90%)	9(9.68%)	2(1.92%)	24(5.88%)

Current Village Cadre					
No	94 (98.95%)	103 (88.79%)	86 (92.47%)	100 (96.15%)	383 (93.87%)
Yes	1(1.05%)	13 (11.21%)	7(7.53%)	4(3.85%)	25(6.13%)
Former Village Cadre					
No	91 (95.79%)	106 (91.38%)	80 (86.02%)	100 (96.15%)	377 (92.40%)
Yes	4(4.21%)	10(8.62%)	13 (13.98%)	4(3.85%)	31(7.60%)
Annual Household Income (10,000 RMB)	2.36(2.63)	4.51(5.50)	10.58 (7.09)	3.02(3.16)	5.01(5.82)
Trust in Neighbors	4.22(0.92)	4.21(0.78)	4.53(0.72)	4.25(1.14)	4.29(0.91)
Trust in Government	4.22(0.98)	4.41(0.97)	4.49(0.70)	4.24(1.05)	4.34(0.95)
Sample Size	95	116	93	104	408

Figure 3 displays the topological structures of the actual-support networks across the four villages. Each node represents an individual respondent, while ties represent social support relations among villagers. Node colors indicate villagers' group affiliations within the village.



(a) W Village **(b) D Village**

(c) L Village **(d) A Village**

Figure 3. Topological Structures of the Villager-Layer Networks in Four Villages

The four villages exhibit notable differences in network structure. Village W displays no obvious community segmentation; although some clustering occurs within specific villager groups, the network remains generally well connected, allowing most villagers to achieve mobilization through social ties. Village D is divided into two disconnected communities because it was formed through the merger of two natural villages, resulting in limited interaction between residents from the original settlements. Village L also exhibits a clear community structure with relatively weak

intergroup connections, though several bridging nodes connect otherwise separated communities. By contrast, Village A displays a relatively dispersed structure resembling a star-shaped network, suggesting comparatively weak potential for member mobilization.

Table 2 further reports the overall characteristics of the villagers' actual-support networks. The relatively low network density reflects the "semi-acquaintance society" characteristics of contemporary rural China. Different forms of network centralization vary substantially across villages, indicating differences in mobilization channels among village types. The relatively short average path lengths combined with high clustering coefficients reveal a pronounced "small-world" phenomenon within rural social networks. Meanwhile, the relatively high modularity values indicate strong community structures and widespread subgroup clustering within villages.

Table 2. Overall Characteristics of the Villagers' Support Network

Village	W village	D village	L village	A village
Number of Nodes	95	116	93	104
Density	0.06	0.04	0.05	0.03
Degree Centralization	0.13	0.13	0.32	0.14
Betweenness Centralization	0.10	0.23	0.58	0.62
Closeness Centralization	0.21	0.35	0.46	0.33
Average Path Length	3.10	3.38	3.23	4.65
Average Clustering Coefficient	0.24	0.33	0.36	0.19
Modularity	0.48	0.65	0.64	0.74

Empirical Results

Member Mobilization: Peer Effects in Village Self-Governance Participation

To examine whether peer participation within villagers' actual-support networks influences individual participation in village self-governance, this study first estimates a series of ordinary least squares (OLS) regression models. Table 3 presents the results for the member mobilization mechanism underlying participation in village self-governance. In Model 1, which includes no control variables, peer participation behavior embedded within the actual-support network at the villager layer exerts a significant positive effect on individuals' own participation behavior. After controlling for demographic characteristics, geographic factors, and related variables, Model 2 shows that the influence of peer participation remains significant, thereby confirming the critical role of member mobilization in the formation of village self-governance participation. Although participation in self-governance may, from

the perspective of individual rationalism, entail short-term costs to individual interests [80], the findings demonstrate that the distinctive relational field constituted by villagers' actual-support ties can effectively suppress purely short-term interest calculations, thereby generating mobilizational efficacy and producing a multilayer diffusion effect in which participation spreads progressively throughout the village community.

Table 3. Results for the Member Mobilization Mechanism

Variables	Model 1	Model 2
Peer Participation	0.18**	0.16**
	(0.08)	(0.08)
Gender (Female)		-3.16*
		(1.72)
Income		0.39**
		(0.17)
Migrant Work Experience		-0.33
		(1.68)
Current Village Cadre		4.05
		(4.10)
Former Village Cadre		2.8
		(3.77)
Educational Attainment		
Junior High School		1.67
		(1.99)
Senior High School		3.52
		(3.04)
Junior College		7.49
		(5.11)
Bachelor's Degree		5.53
		(9.67)
Communist Party Membership		-0.57
		(3.66)
Trust in Neighbors		0.84
		(1.27)
Trust in Government		6.31***
		(1.32)
Village		
D		-2.47
		(2.33)
L		-0.76
		(2.78)
A		0.58
		(2.36)
Intercept		21.81***
		(6.78)
Sample	408	

Note: *** $p<0.001$, ** $p<0.01$, * $p<0.05$

The interview materials further substantiate these findings. Within acquaintance-based rural society, participation is not an isolated individual decision,

but rather a comparative process embedded in everyday interaction. As one villager stated directly:

"Once people talk about it in the group chat and others go, you feel embarrassed not to go as well." (Interview No. 7-21-03)

Such behavioral adjustment based on observation and imitation gives member mobilization substantial practical effectiveness at the micro level. At the same time, peer effects do not emerge through spontaneous diffusion alone, but rely heavily on key nodes within village networks. Some village cadres and locally embedded "core farmers" assume important responsibilities in policy transmission and organizational coordination. As one village cadre explained:

"For those who cannot use smartphones, we go door to door to explain things. For those who can, once we post it in the group chat, everyone knows." (Interview No. 1-20-03C)

In addition, some ordinary villagers without formal positions also possess considerable mobilizational capacity. One return migrant noted that he "helps mediate conflicts and also takes the lead in organizing village sanitation activities" (Interview No. 2-20-02). Together, these actors constitute the operational foundation of member mobilization, transforming peer participation from a statistically significant relationship into an observable mechanism of collective action.

Local culture further reinforces this mobilizational structure. Ritual practices such as weddings and funerals serve as important intersections of social obligation and local identity, generating strong participation norms. As one respondent remarked:

"Every household will eventually face funerals. You simply cannot avoid participating." (Interview No. 6-20-02)

Within such cultural contexts, nonparticipation is easily interpreted as a deviation from collective norms, thereby creating additional forms of social pressure.

The effects of several control variables identified in Model 2 are likewise reflected in the interview evidence. Female respondents often reduced their public participation due to household and childcare responsibilities. One interviewee explained:

"I have to take care of the children, so I can only work a few hours a day." (Interview No. 7-22-03-DG)

By contrast, villagers with higher incomes generally displayed stronger willingness to participate, reflecting the structural influence of economic autonomy and greater temporal flexibility. Meanwhile, villagers primarily relied on informal channels for acquiring information about public affairs, particularly WeChat groups and village loudspeakers. Some respondents initially claimed that "there are no employment services," but immediately added that "there are group chats, and once announcements are made through the loudspeaker, everyone knows" (Interview No. 7-21-03). This suggests that when formal institutional provision remains limited,

acquaintance networks and locally embedded communication channels become the core infrastructure of grassroots mobilization.

Overall, the significant positive effect of peer participation on self-governance participation stems from a relational mobilization structure rooted in interpersonal trust and sustained through core farmers and everyday interaction within village society. This structure constitutes a governance resource that emerges organically through long-term coexistence rather than an externally imposed institutional arrangement, thereby providing an important perspective for understanding the formation mechanisms of contemporary rural self-governance in China.

Capital Mobilization: The Structural Effects of Multilayer Relational Resources

The self-governance system embedded within the villagers' supernetwork is not confined solely to actual-support relations among villagers; rather, it emphasizes the mobilizational functions of multilayer relational resources. Table 4 presents the effects of the capital mobilization mechanism—composed of multiple layers of relational resources—on participation in village self-governance.

As shown in Models 3 (without controls) and 4 (with controls), network size at the villager layer exerts a significant positive effect on self-governance participation. This finding indicates that villagers' interpersonal relational resources constitute an endogenous driving force in the mobilization process of rural self-governance and directly confirms the applicability of resource mobilization theory within the Chinese rural context. Specifically, the relational resources embedded in social networks emphasized by Tilly continue to play an important role in villagers' participation in self-governance in China [45]. The strong-tie networks represented by network size constitute a foundational form of capital for participation in village self-governance.

Interview materials further demonstrate that acquaintance-based relationships grounded in geographic proximity and kinship continue to form the basis of everyday mutual assistance and rapid collective response. One villager explained:

"Everyone in the village knows each other… We have village group chats, and once something is posted, we see it and participate." (Interview No. 7-21-03)

This suggests that villagers with larger networks not only possess dense offline relationships, but are also embedded in highly efficient online mobilization chains through modern communication technologies. Moreover, even when villagers possess migrant work experience, as long as core village ties remain intact, they can rapidly reintegrate into local collective life. One return migrant noted:

"I worked outside for more than ten years, but I never missed weddings or funerals back home… Now that I've returned to farming, neighbors still help one another. Whenever someone builds a house or harvests wheat, everyone lends a hand." (Interview No. 5-21-02)

Such mutual assistance extends beyond ordinary acquaintance circles into production cooperation as well. Another villager remarked:

"Part of my land has been leased out, and I still farm the rest myself… If neighbors need help, of course I'll go. We're all from the same village, and human relations matter here." (Interview No. 9-20-01)

These observations further demonstrate that everyday reciprocity constitutes the practical foundation of capital mobilization. Such continuous reciprocal practices across time and space confirm that interpersonal interaction at the villager layer is fundamentally a process of ongoing social reproduction through practice, rather than a static structural asset.

Models 5 (without controls) and 6 (with controls) show that surname-based clan affiliation at the clan layer exerts a significant positive effect on participation in self-governance, indicating that clan relations constitute advantageous resources for social capital mobilization. Clan members share common ancestors, clan norms, and collective reputations, thereby generating relatively high levels of social trust. Such trust functions as a "lubricant" facilitating participation in self-governance [81]. At the same time, traditional clan rules and family precepts often contain norms emphasizing public welfare, respect for elders, and harmonious neighborhood relations. These informal village norms exert soft constraints on villagers' behavior, helping reduce free-riding behavior and ensuring the smooth operation of collective governance affairs [82].

The clan layer also provides a culturally embedded form of identity recognition that stimulates emotional commitment and collective dedication beyond purely material interest calculations [83]. Although villagers did not explicitly emphasize clan influence during interviews, the statistical significance of surname proportion suggests that clan resources continue to function as a latent form of traditional social capital supporting village self-governance coordination. This influence is primarily reflected in trust logics organized around kinship- or locality-based relational aggregation.

When discussing individuals responsible for collective village affairs, villagers often described them in the following way:

"It's not necessarily those traditional local gentry or highly prestigious people. It's ordinary people like us—farmers with good relationships… Whenever something needs to be done in the village, everyone lets them take charge." (Interview No. 6-20-01)

Expressions such as "good relationships" and "people from the same group" implicitly reveal recognition of relational circles organized around residential clusters, which often overlap with clan distributions. Another villager vaguely remarked when discussing family size:

"Our own household is relatively small now… but there are still many people with our surname." (Interview No. 3-20-03)

This indirectly reflects villagers' psychological awareness of clan scale as a form of latent social capital. These findings suggest that clans, as a traditional structural foundation of rural society, have gradually shifted from visible organizational authority to an implicit basis of trust.

Models 7 (without controls) and 8 (with controls) demonstrate that participation in organizations at the organizational layer exerts a significant positive effect on participation in village self-governance, reflecting the important role of organizations in integrating villagers' relational resources. McCarthy and Zald argued that the success of collective action depends not merely on the quantity of available resources, but also on the degree of organizationalization and the organizers' capacity to manage those resources[23]. Within the resource mobilization process, organizational specialization is therefore critically important. Since the 1960s, social movements in the United States have increasingly shifted from grassroots spontaneous mobilization toward professionalized organizational leadership, thereby substantially improving both organizational capacity and mobilization efficiency. A similar process operates within rural grassroots governance, where organizations provide preexisting action networks that effectively reduce mobilization costs [78].

Through rules, supervisory mechanisms, and internal identity construction, organizations strengthen social trust and establish reputational mechanisms that effectively constrain free-riding behavior, thereby making participation in self-governance possible [83]. Interview materials clearly reveal the critical role played by various village organizations as institutionalized mobilization platforms. Villagers frequently referred to participation in organizations such as "wedding and funeral committees, yangko dance teams, drum bands, and village affairs councils" (Interview No. 6-20-02). One actively involved villager explained:

"When your son gets married, these people come help organize everything for you." (Interview No. 6-20-01)

These organizations not only regulate procedures for village public affairs—such as advocating for "simple and modest ceremonies"—but also institutionalize traditional norms of mutual assistance, thereby broadening the boundaries of participation. Importantly, organizational functions are becoming increasingly diversified, extending from ritual activities into public service provision and economic cooperation. For example, one villager noted:

"The village established a mutual-aid elderly care center. Even people over ninety are visited there and receive supplies." (Interview No. 8-20-01C)

Another respondent remarked:

"Some people in the village took the lead in establishing a cooperative, and I think it's a good thing… As long as it helps everyone increase their income, we're willing to follow along." (Interview No. 9-20-01)

Organizational membership is often associated with social reputations such as "having good relationships" and "being willing to manage affairs," suggesting that

organizational participation is not only an outcome of social capital accumulation, but also an important pathway through which individuals further strengthen their mobilizational capacity.

Models 9 (without controls) and 10 (with controls) indicate that cadre–mass relations exert a significant positive effect on participation in village self-governance. Cadre–mass relations are not merely institutional connections between villagers and grassroots political authority, but also represent the micro-level manifestation of state–society relations in rural China. They reflect institutionalized channels through which social capital becomes embedded within rural governance structures. As the "capillaries" through which resources penetrate downward into village society, accessible and effective institutional channels form the foundation of policy transmission and trust implementation, thereby reducing villagers' uncertainty and perceived risks associated with participation in self-governance [67].

Interview materials indicate that the value of such relationships lies not only in privileged access to information, but also in constructing trust foundations for policy understanding and implementation coordination. One township-assigned village cadre remarked:

"Thousands of lines come down from above, but everything ultimately converges on us at the grassroots level." (Interview No. 1-20-03C)

This statement highlights the role of village cadres as terminal transmitters of policy, suggesting that villagers maintaining ties with cadres possess informational advantages. More importantly, villagers' trust in cadres directly translates into willingness to participate. As one respondent explained:

"We are willing to cooperate only when village cadres handle affairs fairly… For things like minimum living allowance evaluations or housing renovation programs, once they explain them, we trust them." (Interview No. 4-21-02C)

This trust rooted in perceptions of procedural fairness constitutes the emotional foundation of functional cadre–mass relations. Villagers also demonstrated relatively clear knowledge of village governance institutions. When asked about the role of village supervisory committees, one respondent accurately replied:

"They supervise village accounts and oversee irregular practices." (Interview No. 7-20-02)

Such institutional knowledge suggests that cadre – mass interaction has increasingly shifted from personalized obligation toward institutionalized cooperation. Similarly, one village Party secretary described daily governance work as follows:

Today's meeting focused on minimum living allowance reviews, the identification of vulnerable households, public awareness campaigns against illegal sand mining, and food safety inspections…" (Interview No. 8-20-01C)

This further illustrates that village cadres function as initiators of multidimensional governance processes, while villagers maintaining stable relationships with them naturally become the earliest responders to various collective actions. This trust grounded in procedural fairness constitutes the emotional core of functional cadre–mass relations. In addition, one Party member villager noted:

"Whenever the village holds meetings, they ask us to participate… They even ask me to help notify others." (Interview No. 8-20-03)

This indicates that villagers trusted by the institutional system often become key nodes through which cadres extend mobilizational reach. Even in the absence of kinship ties, frequent institutional interaction itself constitutes a powerful form of mobilizational capital.

The four variables within the capital mobilization dimension of the villagers' supernetwork therefore correspond to four distinct forms of mobilizable capital: everyday support capital at the villager layer, traditional trust capital at the clan layer, institutionalized participation capital at the organizational layer, and institutional linkage capital at the cadre layer. Within the context of China's contemporary "semi-acquaintance society," these forms of capital overlap and reinforce one another, jointly constituting a cumulative composite of social capital. As emphasized by McCarthy and Zald, the success of collective action depends upon the capacity to integrate diverse resources [23]. Within the Chinese rural context, this integration is reflected precisely in the coordinated use of strong ties (kinship and locality) and weak ties (organizational membership and institutional connections), thereby effectively compensating for the mobilization difficulties generated by the weakening of traditional social bonds.

Table 4. Results for the Capital Mobilization Mechanism

Variables	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Network Size	0.05*** (0.02)	0.06*** (0.02)						
Surname Proportion			16.64*** (4.60)	18.29*** (5.61)				
Organizational Participation					4.10*** (0.47)	3.80*** (0.45)		
Cadre–Mass Relations							6.35*** (1.99)	3.90** (1.90)
Gender (Female)		-2.61 (1.70)		-2.74 (1.70)		-2.59 (1.58)		-2.74 (1.71)
Income		0.35** (1,67)		0.43** (0.17)		0.34** (0.16)		0.36** (0.17)
Migrant Work Experience		-0.68 (1,67)		-0.18 (1.67)		-0.53 (1.56)		-0.37 (1.68)
Current Village Cadre		4.03 (4.05)		4.26 (4.07)		0.52 (3.81)		4.41 (4.10)
Former Village Cadre		2.98 (3.73)		2.35 (3.74)		1.82 (3.48)		2.51 (3.78)
Educational								

Attainment								
Junior High School		2.24 (1.97)		1.12 (1.98)		1.12 (1.84)		1.77 (1.99)
Senior High School		4.36 (3.00)		3.65 (3.00)		4.23 (2.80)		3.67 (3.03)
Junior College		8.14 (5.06)		8.50* (5.08)		6.51 (4.72)		6.75 (5.13)
Bachelor's Degree		3.99 (9.56)		5.59 (9.59)		4.75 (8.92)		4.81 (9.67)
Communist Party Membership		-0.46 (3.62)		0.67 (3.65)		-0.09 (3.38)		-0.45 (3.66)
Trust in Neighbors		0.31 (1.27)		0.73 (1.27)		0.23 (1.18)		1.07 (1.28)
Trust in Government		6.98*** (1.32)		6.42*** (1.31)		6.60*** (1.22)		6.06*** (1.33)
Village								
D		-2.40 (2.30)		-4.71* (2.43)		-2.79 (2.15)		-2.53 (2.33)
L		-0.41 (2.74)		-6.37* (3.33)		-1.87 (2.57)		-0.81 (2.79)
A		-0.65 (2.35)		0.21 (2.34)		-1.40 (2.18)		0.09 (2.36)
Intercept	63.90*** (0.97)	30.14*** (4.82)	62.18*** (1.19)	31.00*** (4.82)	57.61*** (1.18)	27.63*** (4.51)	60.42*** (1.71)	29.67*** (4.96)
Sample				408				

Note: *** $p<0.001$, ** $p<0.01$, * $p<0.05$

Frame Mobilization: Leadership Bridging and Cognitive Integration in the Supernetwork

The multi-category interactive relationships within the villagers' supernetwork do not simply add up their individual effects on self-governance participation. Instead, they construct frame bridging after forming multiple layers of cognitive consensus. Table 5 provides statistical evidence for this frame mobilization mechanism.

Models 11 (without controls) and 12 (with controls) show that leaders who occupy bridging positions in the two-layer "villager-clan" network exert a significant positive effect on self-governance participation. Such leaders benefit from two sources of trust simultaneously: their clan identity endows them with ascribed, traditional trust from fellow villagers, while their generosity and competence within the actual-support network generate acquired, rational trust. This dual trust carrier activates social mobilization. In contemporary rural China, the formal functions of clan organizations have weakened, but clan ethics remain normatively binding in rituals such as weddings, funerals, ancestral hall activities, and lineage ceremonies—especially in sustaining the fabric of reciprocal obligations. As one interviewee stated, *"Family matters are big matters—you cannot afford not to go"(Interview 10-22-05-DG).* This reveals that clan ethics maintain their effectiveness through cultural pressure ("cannot afford not to go"). However, the individuals who actually organize, coordinate, and lead are often not the senior elders within the clan, but rather those who interact

intensively with the villager network and are able to handle clan affairs in practice. For example, the expressed desire to rebuild an ancestral hall, *"We still want to rebuild the ancestral hall… there is no place to put things anymore" (Interview 2-22-03-DG)*, reflects the role of a key node in the villager network who uses collective discourse ("our family," "everyone wants to") to translate clan matters into actionable agendas. Thus, the mobilizing effectiveness of villager-clan specialized leaders stems not from clan authority per se, but from their location at the intersection of villager-network recognition and clan-ethical authority. Villagers follow their coordination based on everyday trust; clan members respond to their mobilization based on shared cultural norms. Such leaders combine the normativity of cultural rituals with the trust embedded in villager networks, thereby reactivating clan resources in concrete governance situations.

Models 13 and 14 reveal that specialized leaders in the two-layer "villager-organization" network positively promote self-governance participation. These leaders are able to integrate public resources from organizations (project funds, policy preferences, legal identity) with private resources embedded in their personal networks (private funds, individual skills, market access) to form comprehensive resource mobilization. When formal rules clash with villagers' demands, villager-organization specialized leaders use their private connections for informal communication and mediation, softening conflicts and paving the way for formal rule implementation. Toward free-riders, they can deploy not only organizational instruments (e.g., criticism and education) but also informal sanctions (e.g., public opinion pressure, social distancing), creating a multilayered and hard-to-evade enforcement mechanism. Interview materials show that such individuals often start as ordinary villagers active in circles of personal rapport, but by taking on responsibilities in organizations such as funeral and wedding councils, yangge dance troupes, drum groups, or village affairs councils, they gain institutional platforms and public visibility. As one villager put it, *"Weddings, funerals, yangge, drum groups… everyone in our group participates"(Interview 6-20-02).* This indicates that organizational participation is not an independent structure but rather an extension of neighbor-and-group networks. Consequently, key figures in organizations often hold no formal position yet possess cross-group coordination capacity. *"I am just responsible for mediating conflicts" (Interview 2-20-02)*; "*In the village, whatever needs to be done, they ask that person to take charge—he has good *renyuan* (interpersonal rapport)" (Interview 6-20-01).* These statements reflect how villager networks delegate and endorse such roles. Goodwill and frequent interaction among villagers turn organizations into stages where these individuals expand their influence, and their coordination ability in turn strengthens villagers' trust in organizations. Some even become strongly committed leaders: *"As long as everyone is willing, I am willing to organize—very gladly" (Interview 2-22-03-DG).* This suggests that the mobilizing power of organization-layer leaders derives from recognition within the villager network, not from organizational authority per se. In other words, villager–organization specialized leaders are the institutionalized product of the spillover logic of villager social networks. They are simultaneously representatives of the villager network and executors of organizational rules, serving as the key bridge that translates villager mobilization into self-governance participation.

Models 15 and 16 show the synergistic effect between the villager layer and the village-cadre layer. The role of villager–cadre specialized leaders has a positive but

statistically non-significant effect on self-governance participation. This suggests that such individuals may act as "lubricants" in grassroots mobilization but are not necessarily actual participants in collective action. Villager–cadre specialized leaders are those who are endorsed from within the villager network and, through close interaction with cadres, become interface-type leaders between the masses and the cadre. They do not control power resources themselves. However, because they interact frequently with cadres and are trusted by them, they become transmitters of information, emotion, and action between cadres and villagers. In interviews, a village cadre described: *"All the data, everything is processed through us" (Interview 7-20-02C), while a villager said: "Whenever something happens in the village, he asks me to notify others" (Interview 8-20-03).* Together, these statements confirm that cadres rely on villagers as their "social antennae," and villagers, in turn, are willing to act because they trust the cadres. Such leaders are not appointed by the organization; rather, they earn trust from cadres based on the villager network's assessment of their reliability and reasonableness. The policy understanding and value consensus generated by cadre–mass synergy enable this type of leader to play dual roles as interpreter and coordinator in grassroots governance. Villagers' recognition of the "one-shoulder-pick" (concurrent village Party secretary and director) system—*"It is better now… before, two people would sometimes get angry with each other, and work suffered" (Interview 7-22-03)*—also implies that villagers prefer to rely on a stable authority point. Villager–cadre specialized leaders serve as a stable bridge between that authority and the masses, even though their resources within the single-layer villager network or the single-layer cadre network are not abundant.

Models 17 and 18 present the mobilizing effect of comprehensive supernetwork leaders who integrate all four layers of relational resources. The results show that comprehensive supernetwork leaders significantly promote villagers' self-governance participation. These leaders act as the "central hub" of system information: they simultaneously receive multiple streams of information—policy documents, organizational directives, clan opinions, and everyday gossip—and seamlessly translate among official political discourse, market economic logic, clan traditional discourse, and private renqing discourse, ensuring unimpeded information flow within the complex rural system. Genuine comprehensive leaders are often passively embedded in formal institutions yet actively drive affairs. This confirms the cognitive and emotional resonance generated by the "joint force" of multiple relationships. A typical example is interviewee 2-21-01: he is both an organizer of wedding and funeral affairs (organization layer), has been delegated as a coordinator because of his good *renyuan* (villager layer and clan layer), and actively participates in village elections and public activities (cadre layer). Another Communist Party member villager also holds multiple identities: *"I am a Party member. When the village holds meetings, they call us to participate… There is a specific drum group chat; when a notification goes out… no payment is involved—it's all about mutual warmth and mutual help" (Interview 8-20-03).* His influence is not conferred by any single identity but emerges from the coupling and superposition of strong ties, weak ties, and institutional identity. As one villager who has both participated in land transfer and supported cooperatives said: *"Getting rich yourself is not a skill; being able to lead everyone else to do so counts" (Interview 9-20-01).* This demonstrates the outcome of interwoven interactions. Such leaders tend to occupy structural holes in the social network, bridging heterogeneous groups and resources, thereby maximizing mobilization effectiveness.

Table 5. Results for the Frame Mobilization Mechanism

Variables	Model 11	Model 12	Model 13	Model 14	Mode l 15	Model 16	Model 17	Model 18
Villager–Clan Specialized Leaders	11.37 ** (4.45)	10.98 *** (4.19)						
Villager–Organizatio n Specialized Leaders			24.23 *** (3.32)	23.87 *** (3.09)				
Villager–Cadre Specialized Leaders					4.57 (3.20)	3.05 (2.98)		
Comprehensive Supernetwork Leaders							21.67 *** (3.43)	20.95*** (3.20)
Gender (Female)		-2.61 (1.71)		-3.70** (1.61)		-2.84** (1.72)		-2.83* (1.64)
Income		0.42** (0.17)		0.33** (0.17)		0.38** (0.17)		0.36** (0.16)
Migrant Work Experience		-0.38 (1.68)		0.95 (1.58)		-0.29 (1.70)		0.29 (1.61)
Current Village Cadre		3.81 (4.09)		1.08 (3.86)		3.95 (4.12)		1.57 (3.93)
Former Village Cadre		3.20 (3.76)		2.03 (3.53)		2.82 (3.79)		2.62 (3.60)
Educational Attainment								
Junior High School		0.90 (2.01)		1.30 (1.86)		1.78 (2.00)		0.32 (1.91)
Senior High School		3.78 (3.02)		4.03 (2.84)		4.05 (3.04)		3.63 (2.89)
Junior College		7.47 (5.09)		6.99 (4.79)		7.05 (5.15)		5.69 (4.89)
Bachelor's Degree		6.31 (9.65)		6.92 (9.05)		5.10 (9.70)		7.85 (9.24)
Communist Party Membership		0.12 (3.65)		0.28 (3.43)		-0.40 (3.43)		0.09 (3.50)
Trust in Neighbors		0.85 (1.27)		0.21 (1.20)		0.89 (1.28)		0.51 (1.22)
Trust in Government		6.24*** (1.32)		6.77*** (1.24)		6.30*** (1.33)		6.61*** (1.26)
Village								
D		-2.15 (2.32)		-1.80 (2.18)		-2.17 (2.34)		-1.81 (2.22)
L		-0.39 (2.76)		0.77 (2.60)		0.11 (2.79)		0.46 (2.65)
A		0.44 (2.35)		0.57 (2.21)		0.42 (2.36)		0.52 (2.25)
Intercept	53.76 *** (4.53)	21.54 *** (6.21)	40.89 *** (3.42)	8.81 (5.43)	60.56 *** (3.32)	28.71 *** (5.70)	43.46 *** (3.53)	11.73 ** (5.56)
Sample				408				

Note: *** $p<0.001$, ** $p<0.01$, * $p<0.05$

To address potential self-selection bias, this study further employs propensity score matching (PSM) as a robustness test. As shown in Table 6, the average treatment effects on the treated (ATT) estimated using kernel matching are broadly consistent with the baseline regression results reported in Tables 3. These findings indicate that the positive effects of the villagers' supernetwork on participation in self-governance remain highly robust across different estimation methods, thereby effectively alleviating endogeneity concerns arising from observable variables.

Table 6. Result of PSM

Variable Dimension	Variable Name	ATT	Standard Error	t-value
Member Mobilization	Peer Participation	5.77***	1.87	3.08
Capital Mobilization	Network Size	4.44**	2.60	1.71
	Surname Proportion	4.69***	2.21	2.12
	Organizational Participation	12.13***	2.46	4.93
Frame Mobilization	Cadre–Mass Relations	4.53***	2.12	2.13
	Villager–Clan Specialized Leaders	6.60**	3.60	1.83
	Villager–Organization Specialized Leaders	11.44***	2.24	5.11
	Villager–Cadre Specialized Leaders	1.37	2.51	0.55
	Comprehensive Supernetwork Leaders	5.26***	2.40	2.19

Note: *** $p<0.001$, ** $p<0.01$, * $p<0.05$

Discussion and Conclusion

Discussion

This study introduces the concept of the villagers' supernetwork into the analysis of village self-governance and systematically examines the mechanisms through which

multilayer relational structures shape participation in grassroots governance. By integrating actual-support networks, organizational participation, cadre–mass relations, and clan affiliations into a unified analytical framework, the study moves beyond traditional approaches that focus exclusively on single-layer social networks or isolated forms of social capital.

The findings reveal that contemporary village self-governance in China operates through a multilayered mobilization process consisting of member mobilization, capital mobilization, and frame mobilization. These mechanisms are not independent of one another; rather, they interact dynamically within the supernetwork structure and jointly facilitate the transformation of individual behavior into collective participation.

First, the study demonstrates that peer participation embedded in actual-support networks exerts strong diffusion effects on villagers' governance participation. This finding extends existing research on social contagion and collective action by showing that grassroots mobilization in rural China remains deeply dependent on interpersonal interaction despite the ongoing transformation from "acquaintance society" to "semi-acquaintance society." Participation in self-governance is therefore not merely an outcome of individual rational calculation, but also a socially embedded process shaped by imitation, conformity, emotional resonance, and relational observation.

Second, the study reveals that heterogeneous relational resources embedded across multiple layers of the supernetwork jointly constitute the structural foundation of grassroots mobilization. Different forms of relational capital perform complementary functions within village governance. Interpersonal networks provide informational and emotional resources; clan relations generate trust and normative cohesion; organizations facilitate coordination and collective identity; and cadre–mass relations contribute institutional legitimacy and political access. The interaction among these relational resources produces a form of structural empowerment that exceeds the mobilizational capacity of any single relational layer.

This finding contributes to ongoing debates regarding the transformation of social capital in contemporary rural China. Existing studies frequently emphasize the decline of traditional rural social capital and the weakening of collective norms under modernization. However, the present study suggests that while traditional relational structures have indeed changed, new forms of relational integration are simultaneously emerging through the interaction of organizational, institutional, and interpersonal networks. Rural mobilization capacity has therefore not disappeared entirely; rather, it has been reconfigured within increasingly complex relational structures.

Third, the study demonstrates that frame mobilization and cognitive integration have become increasingly important under conditions of social differentiation and rural transformation. Comprehensive supernetwork leaders embedded across multiple relational layers possess stronger capacities to bridge fragmented groups and construct shared interpretive frameworks. Their influence derives not solely from formal authority or resource possession, but from their structural positions within multilayer relational systems.

This finding highlights an important transformation in the logic of grassroots leadership in contemporary China. Traditional rural authority structures were often based primarily on lineage hierarchy, administrative authority, or localized prestige. In contrast, effective leadership within contemporary village governance increasingly depends on cross-boundary relational integration and cognitive coordination. Leaders capable of simultaneously mobilizing institutional legitimacy, cultural identity, organizational coordination, and interpersonal trust are more likely to achieve broad collective mobilization.

From a theoretical perspective, this study also contributes to the localization and extension of resource mobilization theory within the Chinese rural governance context. Classical resource mobilization theory primarily emphasizes resource availability and organizational capacity. By contrast, the supernetwork perspective proposed here highlights the structural properties of relational systems themselves as mobilizational resources. Mobilization capacity emerges not merely from resource quantity, but from the coupling, interaction, and integration of heterogeneous relational layers.

Moreover, the study demonstrates the analytical potential of complexity science approaches in understanding Chinese grassroots governance. Rural governance in contemporary China increasingly exhibits characteristics of complex adaptive systems, including multilayer interaction, nonlinear diffusion, and dynamic self-organization. The supernetwork framework provides a valuable methodological tool for capturing these higher-order structural dynamics.

At the practical level, the findings offer important implications for rural governance modernization under the rural revitalization strategy. Improving grassroots governance effectiveness requires not only strengthening formal institutions, but also cultivating and integrating multilayer relational resources within rural society. In particular, governance strategies should focus on identifying and empowering bridging actors capable of connecting different relational groups and facilitating cognitive integration across fragmented communities.

Conclusion

This study examined the influence of villagers' supernetwork structures on participation in village self-governance using survey data and interview materials collected from rural areas in Shaanxi Province, China. By integrating actual-support networks, clan relations, organizational participation, and cadre–mass relations into a unified analytical framework, the study constructed a multilayer villagers' supernetwork and systematically analyzed the mechanisms through which different relational structures shape grassroots mobilization.

The findings demonstrate that participation in village self-governance is fundamentally embedded within multilayer relational systems rather than isolated individual decision-making processes. Specifically, three major conclusions emerge.

First, peer participation embedded in actual-support networks significantly promotes individual participation in village self-governance. Participation behavior exhibits

clear diffusion and contagion effects within rural interpersonal networks, indicating that member mobilization constitutes the foundational mechanism of grassroots collective action.

Second, heterogeneous relational resources embedded across different layers of the supernetwork jointly enhance participation in self-governance. Network size, clan affiliation, organizational participation, and cadre–mass relations all exert significant positive effects. These different forms of relational capital perform complementary functions and together form a multilayered mobilization structure characterized by heterogeneous resource coupling and structural empowerment.

Third, frame mobilization plays a critical role in transforming fragmented participation into coordinated collective governance. Specialized leaders embedded in organizational and clan networks significantly facilitate participation, while comprehensive supernetwork leaders exert the strongest mobilizational effects. By bridging multiple relational layers and integrating diverse cognitive frameworks, these leaders promote consensus formation and collective action transformation within village society.

Overall, the study suggests that the logic of grassroots mobilization in contemporary rural China is undergoing profound transformation. Under conditions of rural revitalization, urban–rural integration, and social differentiation, village self-governance increasingly depends on the coordinated operation of multilayer relational systems rather than on single forms of authority or isolated interpersonal ties. Although traditional acquaintance-based social structures have weakened, new mobilizational capacities continue to emerge through the interaction of interpersonal networks, organizations, institutional relations, and cultural structures.

Methodologically, this study extends conventional social network approaches by introducing the supernetwork framework into the analysis of grassroots governance. The supernetwork perspective not only captures the complexity of multilayer interactions among rural governance actors, but also provides a new analytical pathway for understanding collective action and governance transformation in contemporary China.

The study nevertheless has several limitations. First, the data are drawn from a limited number of villages within a single province, and the generalizability of the findings should therefore be examined further through comparative studies across different regional contexts in China. Second, because the data are primarily cross-sectional, the study cannot fully capture the dynamic evolution of supernetwork structures over time. Future research could employ longitudinal network data to investigate how mobilization structures change throughout different stages of rural transformation. Third, while this study focuses primarily on structural relationships, future studies may further explore the interaction between network structures and villagers' subjective perceptions, emotions, and value orientations.

Despite these limitations, the findings demonstrate that multilayer relational structures constitute a critical foundation for effective grassroots governance in contemporary rural China. Understanding village self-governance through the lens of the

supernetwork not only deepens existing research on rural governance and collective action, but also provides important theoretical and practical insights for promoting governance modernization under China's rural revitalization strategy.

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