Buletin Peternakan 49 (1): 70-79, February 2025

ISSTAP
Indonesian Society for Sustainable Tropical Animal Production

Bulletin of Animal Science

ISSN-0126-4400/E-ISSN-2407-876X Accredited: 36a/E/KPT/2016
http://buletinpeternakan.fapet.ugm.ac.id/

Doi: 10.21059/buletinpeternak.v%vi%i.100507

The Influence of Social Capital on The Group Dynamics of Kebumen Ongole Crossbred (PO Kebumen) Cattle Farmers, Central Java Province, Indonesia

Mochamad Sugiarto[1*] and Danang Nur Cahyo[1]

[1]Faculty of Animal Science, Universitas Jenderal Soedirman, Purwokerto, 53122

Article history
Submitted: 8 October 2024
Accepted: 24 January 2025

* Corresponding author:
E-mail: zoegic@yahoo.com

ABSTRACT

This study investigates the influence of social capital comprising trust, social networks, norms, and interpersonal relationships in the group dynamics of Kebumen Ongole Crossbred (PO Kebumen) cattle farmers in Central Java, Indonesia. Utilizing a quantitative approach with an explanatory survey design, 178 respondents were selected through multi-stage random sampling. Data analysis revealed that each component of social capital significantly impacts specific dimensions of group dynamics, including group goals, organizational structure, task distribution, training and development, cohesion, work atmosphere, group pressure, effectiveness, and hidden agendas. Trust fosters cooperation and reduces conflict; social networks enhance communication and resource sharing; norms ensure group stability and alignment with shared goals; and interpersonal relationships strengthen solidarity. These findings underscore the pivotal role of social capital in enhancing group dynamics and suggest broader implications for improving the sustainability and productivity of farmer groups. Furthermore, the results highlight the potential for leveraging social capital to drive rural development and advance Indonesia's livestock industry.

Keywords: *Cattle farmers, Group dynamics, Kebumen Ongole crossbred, Social capital,*

Introduction

Agriculture and animal husbandry are crucial sectors in Indonesia's economy, especially for rural populations that largely depend on these sectors as their primary source of livelihood. Kebumen Regency, as an agrarian region in Central Java, has significant potential in the development of Kebumen Ongole Crossbred (PO Kebumen) cattle. PO Kebumen cattle are valuable livestock assets in Central Java, providing economic and social benefits. They are known for their high adaptability to local conditions and good meat quality. However, a holistic approach incorporating technical, social, and economic aspects is necessary to optimize this potential (Sugiarto *et al*., 2021). Agriculture and animal husbandry are crucial sectors in Indonesia's economy, especially for rural populations that largely depend on these sectors as their primary source of livelihood. However, the productivity and sustainability of rural farming groups are often hampered by weak coordination, limited cooperation, and ineffective group management. Addressing these issues requires a deeper understanding of the social factors that influence group dynamics, particularly social capital.

Kebumen Ongole Crossbred (PO Kebumen) cattle farming in Kebumen has shown significant development in recent years. PO cattle farming is concentrated in the southern region of Kebumen Regency, known as the Urut Sewu area, which includes Klirong, Petanahan, Puring, Ambal, Mirit, and Bulus Pesantren districts. The development of PO cattle in Kebumen is done through a group approach, and by 2023, there are 457 Kebumen Ongole Crossbred (PO Kebumen) cattle farmers in six development centers and 29 cattle farmer groups. The development of these groups faces challenges, particularly ineffective group management. The Kebumen Ongole Crossbred (PO Kebumen) cattle farmers groups in Kebumen aim to increase productivity and welfare through cooperation and solidarity among members. Strengthening social capital among farmers is one approach to overcoming these challenges (Leul *et al*., 2023). Social capital, which includes social networks, norms, and trust, plays an important role in group dynamics, influencing cooperation and collective success (Growiec *et al*., 2022). However, the success of these groups in achieving their goals is highly influenced by group dynamics. Group dynamics include interactions among members, cooperation, and effectiveness in achieving common goals. In this context, social capital is a crucial factor that can affect the dynamics of farmer groups. Social capital consists of social networks, norms, and trust formed among

group members, which can facilitate better coordination and cooperation (Oktarina *et al*., 2022).

Previous studies have shown that social capital significantly impacts group performance. Recent studies emphasize the importance of social capital in improving group effectiveness and productivity (Jha and Kelley, 2023). Ma & Yang (2023) demonstrated how strong social networks and trust improved the adoption of innovative farming practices in China. Similarly, (He & Tang, 2023) highlighted the role of social norms in maintaining the stability of rural farming groups. These findings underscore the need to explore how different components of social capital directly impact group dynamics in the context of Indonesian farmer groups. In the context of farmer groups, social capital can enhance solidarity, strengthen cooperation, and improve group effectiveness in achieving goals.

However, research on the influence of social capital on the dynamics of Kebumen Ongole Crossbred (PO Kebumen) cattle farmers groups in Kebumen, Indonesia, is still limited. Therefore, this study aims to fill this gap by examining how social capital affects the dynamics of Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen. This study measures the level of social capital within farmer groups, analyzes group dynamics, and evaluates the extent to which social capital influences group dynamics. By doing so, the research contributes to a deeper understanding of the role of social capital in enhancing group performance and offers practical recommendations for improving the management and sustainability of farmer groups.

Understanding the impact of social capital on group dynamics enables the development of effective strategies to enhance the performance and sustainability of Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen Regency. This research also aims to contribute theoretically to the development of social capital and group dynamics concepts and provide practical recommendations for group managers to enhance cooperation and productivity.

Materials and Methods

Research Location and Schedule

This research was conducted in Kebumen Regency, Central Java, an area with a significant Kebumen Ongole Crossbred (PO Kebumen) cattle population. The study was carried out from June to September 2022, using a quantitative approach with an explanatory survey design. Although the data collection was conducted over two years ago, the insights are considered highly relevant for understanding the dynamics of social capital and its influence on the group performance of Kebumen Ongole Crossbred (PO Kebumen) cattle farmers. This design was chosen to identify and analyze the influence of social capital on the dynamics of Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen. To address the potential limitations posed by the data's timeline, the analysis has been enriched by incorporating insights from secondary sources and recent literature published between 2023 and 2024. Additionally, the stable nature of social capital components (e.g., trust, social networks, interpersonal relationships, and norms) and group dynamics suggests that the observed relationships are likely to remain consistent over time, particularly in rural agricultural settings where changes typically occur gradually.

Research Respondents

This study's population consists of all Kebumen Ongole Crossbred (PO Kebumen) farmers who were included as members of cattle farmer groups in Kebumen Regency. A sample was taken using multi-stage random sampling to ensure that every member of the population had an equal chance of being selected as a respondent. It involves selecting samples in multiple stages, often incorporating stratification and spatial information to improve efficiency and accuracy (Wu *et al*., 2023). In the first stage, the population was divided into clusters based on geographical or administrative regions (sub-districts) within the study area. From these sub-districts, specific farmer groups were randomly selected as the sampling units for the next stage. In the subsequent stages, individual respondents within the selected farmers groups were 20 percent randomly chosen to participate in the study. The sample size was 178 respondents of Kebumen Ongole Crossbred (PO Kebumen) farmers, considered representative of the population.

Primary Data Collection

Primary data were collected through questionnaires distributed to members of the Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups. The questionnaire comprised several sections measuring variables such as social capital, measured using items related to trust, social networks, and reciprocal norms among group members. Meanwhile, group dynamics were measured using items covering aspects of group goals, organizational structure, task distribution, training and development, cohesion, work atmosphere, group pressure, effectiveness, and hidden agendas.

Secondary Data Collection

Secondary data were collected from reports and related documents of the Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen. The collected data were analyzed using descriptive and inferential statistical techniques. Descriptive analysis was used to describe the characteristics of respondents and data distribution. Inferential analysis was conducted to test the research hypothesis regarding the influence of social capital on the dynamics of

Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen.

Data Analysis

The analytical techniques included descriptive statistics to describe personal, social capital, and group dynamics variables. Mean and mode approaches were used to depict the condition of these variables. Meanwhile, regression analysis was used to measure the influence of social capital on group dynamics. Ordinal data obtained were transformed into interval data using the Method of Successive Interval (MSI). The transformed data were then analyzed using parametric analysis, specifically regression analysis (Habibzadeh, 2024; Tesio *et al*., 2024), to determine the influence of social capital on the dynamics of Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups. The regression model of the study is mentioned below.

Model 1 (Simple linear regression)

$Y = a + bX$

α = Constant
Y = Group dynamics
b = Coefficient
X = Social Capital

Model 2 (Multiple linear regression)

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4$

Y = Group dynamics
α = Constant
b1-b4 = Coefficients
X1 = Trust
X2 = Social Networks
X3 = Social Norms
X4 = Interpersonal Relationship

Social capital in Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen is considered to have a significant influence on group dynamics if the calculated t-value is greater than the table t-value at 0.05 significance level ($p<0.05$). The research was conducted with ethical considerations, including obtaining consent from respondents before data collection, maintaining the confidentiality of respondents' data, and ensuring that respondents' participation was voluntary without coercion.

Results and Discussion

Description of Kebumen Ongole Crossbred (PO Kebumen) Cattle Farmers' Profile

This study involved 178 respondents who are members of Kebumen Ongole Crossbred (PO Kebumen). The characteristics of the respondents are presented in Table 1. The average age of Kebumen Ongole Crossbred (PO Kebumen) cattle farmers in is 50.41 years, indicating that many farmers have mature judgment and extensive experience in animal husbandry. Decades of experience provide them with deep knowledge and valuable practical skills. Older cattle farmers tend to show high stability and loyalty to their profession. They may have faced various challenges and changes in the livestock industry and remained committed. However, older age can impact health and productivity, necessitating improved access to health services and technologies that can ease their workload (Fletcher *et al*., 2023; Li *et al*., 2023).

Table 1. Respondent Profiles of Kebumen Ongole Crossbred (PO Kebumen) Cattle Farmer

Characteristic	Category	Frequency/Mean	Percentage (%)
Age (years)	-	50.41	-
Education	Elementary School	68	68
	High School	25	25
	Diploma/Bachelor	7	7
Main occupation	Farmer	73	73
	Non-farmer	27	27
Duration as group member (years)	-	7.8	-
Farming experience (years)	-	24.46	-

The majority of respondents, 68%, have an education level of elementary to junior high school. This indicates that most of the population studied has basic to intermediate education levels. Only 25% have completed high school, and 7% have higher education (diploma or bachelor). This distribution shows a significant disparity in education levels, with the majority having relatively low education. Despite the dominance of basic education, it is still highly understood and must be transformed into a significant potential for agricultural development. Lu *et al*. (2024) stated that farmers with low education (elementary and junior high school) can still be guided due to their adequate literacy skills. Agricultural extension aimed at improving farmers' living standards and productivity can be conducted with literate farmers.

About 73% of respondents work as farmers, indicating that agriculture is the main occupation for most respondents. This employment distribution suggests that Kebumen Ongole Crossbred (PO Kebumen) cattle farmers in Kebumen heavily rely on agriculture as their primary source of income. Tshikovhi *et al*. (2023) noted that agriculture has been the backbone of the rural economy and needs to be strengthened in its production processes and institutions to genuinely drive rural economic growth.

The average duration as a group member is an important indicator of group dynamics and

stability. The available data show an average group membership duration of 7.8 years, reflecting a high level of involvement and loyalty among farmers to their groups. This suggests that the groups provide significant benefits such as access to resources, training, and markets. Zhou *et al*. (2023) stated that the average duration of membership in a farmers group is a key indicator of group dynamics and stability, linked to better performance, cohesion, and increased trust and cooperation among members.

Kebumen Ongole Crossbred (PO Kebumen) cattle farmers have extensive farming experience, averaging 24.46 years. This indicates that group members have long-term experience in livestock farming, enabling them to develop deep knowledge and advanced skills in cattle farming practices. The skills of farmers in producing beef cattle in groups with adequate leadership can be further enhanced (Sugiarto *et al*., 2020).

Social Capital and Group Dynamics in Kebumen Ongole Crossbred (PO Kebumen) Cattle Farmer Groups

Descriptive analysis is an important initial step in understanding the characteristics of social capital and group dynamics among Kebumen Ongole Crossbred (PO Kebumen) cattle farmers. Social capital within farmer groups refers to farmers' willingness to have active relationships, including mutual trust, cooperation, shared values, and behaviors that bind each network and community member, facilitating collaboration (Guo *et al*., 2023). Using quantitative data collected through questionnaires, this descriptive analysis aims to provide an overview of the level of social capital among farmer groups and how it affects group dynamics.

Social Capital in Kebumen Ongole Crossbred (PO Kebumen) Cattle Farmer Groups

Social capital has gained significant attention in academic and policy discussions since the 1990s. It plays an essential role in understanding economic and social phenomena, emphasizing the importance of social relationships, networks, norms, and trust in facilitating cooperation and collective action for mutual benefits. Despite its growing importance, social capital remains a complex and multidimensional concept with various definitions and measurement challenges. Social capital is defined as a collective asset consisting of norms, values, trust, social networks, relationships, and shared institutions (Jha and Kelley, 2023).

Table 2 presents the social capital profile of Kebumen Ongole Crossbred (PO Kebumen) cattle farmers in Kebumen, with the main variables being trust, social networks, norms/rules, and interpersonal relationships. Social capital is measured using 40 questions divided into 15 questions for trust, 10 for social networks, 5 for social norms, and 10 for interpersonal relationships, using an ordinal scale of 1-4. Based on the Pearson correlation validity test, all statements were found to have validity with a significance value of $p<0.05$. Meanwhile, the reliability test showed that the questionnaire had a Cronbach's Alpha value of 0.944 > 0.6 (reliable questionnaire).

Table 2. Social Capital Profiles in Kebumen Ongole Crossbred (PO Kebumen) Cattle Farmer Group

Variable	Mean Score	Category
Social Capital	114.91	Medium
Trust	42.06	Medium
Social Networks	28.65	Medium
Norms/Rules	13.11	Medium
Interpersonal Relationships	31.09	Medium

The social capital level of farmers in Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen is categorized as medium, with a score of 114.91. A score of 40-80 is categorized as low, 80.1-120 as medium, and 120.1-160 as high. Each variable is measured and assigned an average score, categorized as "medium," indicating that social capital is well established but requires further development to reach optimal levels. For the trust variable, the criteria are divided into low with a score range of 15-30, medium with a score range of 30.1-45, and high with a score range of 45.1-60. The social network variable is divided into three levels: low (10-20), medium (20.1-30), and high (30.1-40). The social norms variable is categorized into three criteria: low (5-10), medium (10.1-15), and high (15.1-20). Meanwhile, the interpersonal relationships variable is divided into three criteria: low (10-20), medium (20.1-30), and high (30.1-40). The detailed explanation of each variable is as follows:

Trust

According to Table 2, trust among members and trust in the group, measured through 15 questions, has a score of 42.06, categorized as medium (30.1-45). Trust among group members is a crucial component of social capital. High levels of trust create an environment conducive to cooperation and information sharing. This trust is reflected in members' willingness to share information, experiences, and resources without fearing exploitation or unfairness. Trust also reduces the risk of internal conflicts and increases group solidarity (Schilke *et al*., 2023).

In the context of Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in

Kebumen, trust is evident in members' willingness to help each other during difficult situations, such as health issues or financial difficulties. Moral and material support provided indicates that members rely on each other and share a collective responsibility for the group's success. The "medium" category suggests that trust levels are quite good but can be further improved through steps like increasing transparency in group decisions and promoting a culture of openness and mutual respect.

Social Networks

Social networks in the context of farmer groups refer to relationships and interactions among members, facilitating information exchange, support, and resource sharing. The data indicates that most farmers possess moderately developed social networks, with an average score of 28.65. This is evidenced by the frequency of regular meetings, both in formal group activities and informal gatherings.

In Kebumen, social networks among Kebumen Ongole Crossbred (PO Kebumen) cattle farmer group members are often strengthened through regular activities such as monthly meetings, training sessions, and field visits. Modern communication tools like WhatsApp groups are also used for effective and efficient communication. These networks allow members to exchange information about new technologies, markets, and resources that can enhance their farming productivity (Tombe and Smuts, 2023). The "medium" category indicates that while social networks are present and functional, there is still room for further development through activities that strengthen social bonds, such as regular meetings, joint training, and community events.

Social Norms

Social norms are unwritten rules governing group members' behavior, encompassing values of togetherness, mutual aid, and solidarity (Gavrilets *et al*., 2024). Survey results indicate that Kebumen Ongole Crossbred (PO Kebumen) cattle farmers in Kebumen show moderate compliance with these norms (score = 13.11). High member participation in group activities and a strong sense of responsibility for collective success demonstrate this.

In Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen, social norms such as mutual respect, helping each other, and openness in sharing information are highly valued. These norms strengthen group cohesion and ensure that each member feels valued and plays an important role. For instance, all members participate enthusiastically during communal activities like repairing cattle pens or cleaning the environment.

Norms and rules serve as behavioral guidelines regulating interactions and actions among group members. Strong norms help maintain discipline, order, and compliance within the group. The "medium" category suggests that norms and rules exist and are implemented but may not be fully internalized or consistently followed by all members. To strengthen norms, groups can conduct educational sessions on the importance of norms, hold discussions about existing rules, and ensure that rules are enforced fairly and consistently.

Interpersonal Relationships

Effective interactions among group members result from a combination of trust, strong social networks, and adhered social norms. These cooperative relationships enable group members to work together toward common goals, such as increasing cattle productivity, expanding market access, and improving economic welfare (Zapata-Salas *et al*., 2023).

Interpersonal interactions in Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen score 31.09, categorized as high (30.1-40). These conditions are often seen in various forms, such as task distribution in cattle care, feed management, and marketing of livestock products. Groups also frequently organize joint activities, such as new skills training and comparative studies, to more advanced farmer groups. These activities not only enhance members' knowledge and skills but also strengthen social relationships and cooperation.

Interpersonal relationships reflect the quality of interactions and cooperation among group members. Good relationships support solidarity, mutual support, and harmonious cooperation. The "high" category indicates that interpersonal relationships are good but can still be improved. Enhancing interpersonal relationships can be achieved through activities promoting social interaction, such as gatherings, family events, or group projects involving active collaboration.

Group Dynamics in Kebumen Ongole (PO Kebumen) Cattle Farmers Groups

Group dynamics relate to conceptualizing changes within the group and understanding how these phenomena occur over time (Komarova *et al*., 2023). Group dynamics in Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen refer to the interactions and processes among group members that affect the group's effectiveness, cohesion, and productivity in achieving common goals. These dynamics include various aspects, such as group goals, organizational structure, task distribution, training and development, cohesion, work atmosphere, group pressure, effectiveness, and hidden agendas. Table 3 presents the characteristics of group dynamics among Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen.

Table 3. Profiles of Group Dynamic in Kebumen Ongole Crossbred (PO Kebumen) Cattle Farmer Group

Variable	Mean Score	Category
Group Dynamics	112.01	Good
Group Goals	8.61	Good
Group Structure	11.28	Good
Group Functions and Tasks	11.44	Good
Group Training and Development	11.36	Good
Group Cohesion	11.51	Good
Group Atmosphere	16.89	Good
Group Pressure	11.48	Good
Group Effectiveness	19.21	Good
Hidden Agenda	5.63	Good

Group Goals

Group goals are the targets or outcomes that members collectively aim to achieve, providing direction and focus for group activities. With a score of 8.61 (good category), the Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen have clear and well-defined goals. Clear goals help group members understand what they aim to achieve together and motivate them to actively participate in reaching these goals. The "good" category reflects alignment in the group's vision and mission in both the short and long term.

Group Structure

Group structure encompasses the division of roles and responsibilities among members, ensuring that each member understands and performs their tasks effectively. With a score of 11.28 (good category), the groups have organized and effective structures. A good structure facilitates coordination, reduces conflicts, and ensures that every member knows their duties and responsibilities, enabling smooth group operations.

Group Functions and Tasks

Group functions and tasks refer to the specific work and responsibilities assigned to members. With a score of 11.44 (good category), these functions and tasks are well-defined and executed effectively, ensuring that each member can contribute maximally according to their skills and abilities.

Group Training and Development

Training and development involve activities like training sessions, learning opportunities, and capacity-building initiatives for members. With a score of 11.36 (good category), the groups actively engage in training and development, enhancing members' skills, knowledge, and competencies, enabling them to adapt to changes and challenges.

Group Cohesion

Group cohesion measures the level of solidarity and togetherness among members. A score of 11.51 (good category) indicates that group members have close and supportive relationships, which is essential for creating a harmonious and collaborative working environment.

Group Atmosphere

The group atmosphere refers to the emotional and psychological environment within the group, reflecting whether members experience positive or negative working conditions. A score of 16.89 (good category) suggests a positive and conducive atmosphere in the Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen, supporting open communication, reducing stress, and increasing job satisfaction.

Group Pressure

Group pressure measures the stress and demands members feel in carrying out their duties. A score of 11.48 (good category) indicates that pressure remains within manageable limits and does not adversely affect members' performance.

Group Effectiveness

Group effectiveness assesses how well the group achieves its goals and completes tasks, reflecting cooperation and resource utilization abilities. With a score of 19.21 (good category), the groups effectively achieved set objectives, demonstrating their capability to work together, solve problems, and optimally utilize resources.

Hidden Agenda

A hidden agenda refers to intentions or goals not explicitly stated by members, potentially affecting group harmony and cooperation. A score of 5.63 (good category) indicates high transparency within the Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen, with minimal or no hidden agendas disrupting group harmony and cooperation.

Overall, the characteristics of group dynamics among Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen are categorized as good across all measured variables, suggesting a strong foundation in terms of goals, structure, functions, training, cohesion, atmosphere, pressure management, effectiveness, and transparency. Continuous evaluation and enhancement are necessary to maintain and improve these dynamics.

Good group dynamics are characterized by effective communication, active participation from all members, harmonious relationships, and the ability to adapt to changes and overcome

challenges together. For Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen, positive group dynamics are crucial for increasing farming productivity, operational efficiency, and member welfare (Yu and Gambrah, 2024).

The Influence of Social Capital on Group Dynamics of Kebumen Ongole Crossbred (PO Kebumen) Cattle Farmer Groups

Improvement group dynamics are essential for Kebumen Ongole Crossbred (PO Kebumen) cattle farmers in Kebumen as they contribute to increased efficiency, productivity, solidarity, knowledge transfer, trust, cooperation, adaptability, and member welfare. To achieve and maintain strong group dynamics, farmer groups must continuously develop their social capital, strengthen group structures and processes, and promote a culture of openness and mutual support (Oyefusi, 2022; Hou *et al*., 2023). Consequently, Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen can achieve sustainable success and improve members' quality of life.

Social capital is a crucial element in strengthening group dynamics. By enhancing trust, social networks, norms/rules, and interpersonal relationships, groups can achieve higher efficiency and productivity, reduce conflicts, and foster innovation. Therefore, it is important for farmer groups to continuously develop their social capital through various activities and appropriate interventions to achieve sustainable success and improve member welfare.

Table 4 presents the regression analysis results regarding the overall influence of social capital on the dynamics of Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen. These results include the regression coefficient (B), t-value, and significance (Sig.) for the social capital variable as a predictor of group dynamics.

Table 4. The Influence of Social Capital on the Dynamics of Kebumen Ongole Crossbred (PO Kebumen) Cattle Farmer Groups

Model	B	t	Sig.
Constant	71871	31627	.000
Social Capital (X)	.349	17722	.000

Dependent Variable: Group Dynamics

Table 5. The Influence of Social Capital Components on Group Dynamics of Kebumen Ongole Crossbred (PO Kebumen) Cattle Farmer Groups

Model	B	t	Sig.
Constant	722.19	15.092	.000
Trust (X1)	0.334	15.092	.000
Social Network (X2)	0.347	2.038	.044
Social Norms (X3)	0.353	2.275	.025
Interpersonal Relationships (X4)	0.359	1.692	.034

Dependent Variable: Group Dynamics (DK)

The constant in this regression model shows the average value of group dynamics when the social capital value is zero. With a coefficient of 71.871, this indicates that there is a relatively high baseline value of group dynamics regardless of the presence of social capital. The very high t-value (31.627) and significance level ($p<0.01$) indicate that this constant is highly significant in the model.

Overall, social capital has a coefficient of 0.349, indicating that each unit increase in social capital will increase group dynamics by 0.349 units. The t-value of 17.722 and significance ($p<0.01$) show that the influence of social capital on group dynamics is very significant. This means that social capital is a strong and important predictor for the dynamics of Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen.

These results clearly show that social capital has a positive ($p<0.01$) and significant influence on group dynamics. With a positive coefficient and a very high significance level, it can be concluded that social capital plays an important role in enhancing the group's effectiveness, cohesion, and productivity.

Partial regression analysis was conducted to measure the influence of social capital components on group dynamics. The results show that all components of social capital significantly influence group dynamics ($p<0.01$), with a contribution of 76.2% to the variation in group dynamics ($R^2 = 0.762$).

Trust is a primary component of social capital that significantly influences group dynamics. With a coefficient of 0.334 and a significance level of $p<0.01$, it is concluded that trust has a very significant positive impact on group dynamics. High trust among members creates a conducive environment for effective cooperation, encouraging open information sharing, reducing conflict risks, and enhancing group solidarity. Kanaris & Mujtaba (2024) stated that high trust among members encourages open communication, reduces conflict risks, and enhances group solidarity.

Social networks, another component of social capital, significantly influence group dynamics. With a coefficient of 0.347 and a significance level of $p<0.05$, cooperation among group members positively contributes to group

dynamics. Good cooperation allows groups to work more efficiently and effectively in achieving common goals, facilitating fair task distribution and better coordination, thereby enhancing overall group performance. Wang *et al*. (2024) stated that cooperation and coordination in heterogeneous populations with asymmetric endowments or productivities can lead to equitable contributions

Social norms are crucial aspects of social capital, significantly impacting group dynamics. With a coefficient of 0.353 and a significance level of $p<0.05$, clear rules and member compliance positively contribute to group dynamics. Clear rules regulate member interactions and behaviors, ensuring everyone understands their responsibilities and rights, reducing conflict possibilities, and creating a structured and orderly environment that supports effective cooperation. Loughmiller-Cardinal & Cardinal (2023) stated that social norms are a system for capturing and retaining information within a social network rather than just rules or conventions. Social norms are integral components of social capital, playing a crucial role in fostering cooperation and improving community quality of life.

Interpersonal relationships, another social capital component, positively impact group dynamics, though slightly less significant than other components. With a coefficient of 0.359 and a significance level of 0.044 ($p<0.05$), good interpersonal relationships among members contribute to group dynamics. Good relationships strengthen social bonds and a sense of togetherness, which is essential for creating a harmonious and cooperative environment. Positive social relationships and bonds are crucial for individual well-being and societal harmony. Strong social connections are associated with better mental health, reduced anxiety and depression, and improved overall well-being (Tunçgenç *et al*., 2023). Although the influence is significant, further improvement in interpersonal relationships can significantly enhance group dynamics.

Based on the analysis, all main components of social capital (trust, cooperation, availability and compliance with rules, and interpersonal relationships positively and significantly impact the dynamics of Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen. Trust, availability, and compliance with rules have the strongest influence, followed by cooperation and interpersonal relationships. To enhance group dynamics, farmer groups should strengthen these four components of social capital through various activities and appropriate interventions. With strong social capital, PO cattle farmer groups in Kebumen are expected to achieve higher efficiency and productivity and ultimately improve member welfare. Jha & Kelley (2023) mentioned that structurally, social capital is expected to achieve higher efficiency and productivity and improve member welfare.

Conclusion

Based on the results of this study, it can be concluded that social capital significantly influences the dynamics of Kebumen Ongole Crossbred (PO Kebumen) cattle farmer groups in Kebumen. Regression analysis shows that every increase in social capital positively contributes to improved group dynamics. The main components of social capital, including trust, cooperation, availability and compliance with rules, and interpersonal relationships, all significantly impact group dynamics. High levels of trust, effective cooperation, rule compliance, and good interpersonal relationships among group members enhance group cohesion, efficiency, and effectiveness in achieving common goals.

Conflict of interest

The authors have no conflict of interest to declare. All authors have seen and agree with the contents of the manuscript.

Author's contribution

The authors confirm their contributions to the paper as follows: study conception and design: MS, DNC; data collection: MS; analysis and interpretation of results: MS; draft manuscript preparation: MS, DNC. All authors reviewed the results and approved the final version of the manuscript.

References

Fletcher, C. M. E., L. Stewart, and K. M. Gunn. 2023. Stressors, Barriers and Facilitators Faced by Australian Farmers When Transitioning to Retirement: A Scoping Review. International Journal of Environmental Research and Public Health. 20. doi:10.3390/ijerph20032588.

Gavrilets, S., D. Tverskoi, and A. Sánchez. 2024. Modelling social norms: an integration of the norm-utility approach with beliefs dynamics. Philosophical Transactions of the Royal Society B: Biological Sciences. 379. doi:10.1098/rstb.2023.0027.

Growiec, K., J. Growiec, and B. Kamiński. 2022. It Matters Whom You Know: Mapping the Links Between Social Capital, Trust and Willingness to Cooperate. Studia Socjologiczne. 2022:59–83. doi:10.24425/sts.2022.141423.

Guo, B., L. Yuan, and M. Lu. 2023. Analysis of Influencing Factors of Farmers' Homestead Revitalization Intention from the Perspective of Social Capital. Land. 12:1–18. doi:10.3390/land12040812.

Habibzadeh, F. 2024. Data Distribution: Normal or Abnormal? Journal of Korean Medical

Science. 39:1–8. doi:10.3346/jkms.2024.39.e35.

He, Y., and P. Tang. 2023. Understanding the Role(s) of Social Networks in the Transition from Farmers' Willingness to Behavior Regarding Withdrawal from Rural Homesteads: A Research Study Based on Typical Regions of Sichuan Province. Land. 12. doi:10.3390/land12081505.

Hou, B., Q. Liu, Z. Wang, J. Hou, and S. Chen. 2023. The intermediary mechanism of social fairness perceptions between social capital and farmers' political participation: Empirical research based on masking and mediating effects. Frontiers in Psychology. 13. doi:10.3389/fpsyg.2022.1021313.

Jha, J., and E. J. Kelley. 2023. Returns to Relationships: Social Capital and Household Welfare in India. Social Sciences. 12. doi:10.3390/socsci12030184.

Kanaris, M. E., and B. G. Mujtaba. 2024. Trust shaping the social relationship of diverse learners in the online education environment. Environment and Social Psychology. 9:1–21. doi:10.54517/esp.v9i2.2197.

Komarova, S., F. Ndungu, A. Gavazzoli, and R. Mineo. 2023. Group dynamics and creativity: A research with young adults in Reggio Emilia, Italy. Creativity Studies. 16:297–314. doi:10.3846/cs.2023.17564.

Leul, S. Z., A. A. Bekele, S. T. Feleke, and A. G. Hailu. 2023. Effects of common interest groups on rural women and youth livelihood: A qualitative study from Central Ethiopia.

Li, K., C. Liu, J. Ma, and M. Ankrah Twumasi. 2023. Can Land Circulation Improve the Health of Middle-Aged and Older Farmers in China? Land. 12. doi:10.3390/land12061203.

Loughmiller-Cardinal, J. A., and J. S. Cardinal. 2023. The Behavior of Information: A Reconsideration of Social Norms. Societies. 13:1–27. doi:10.3390/soc13050111.

Lu, S., Z. Sun, and M. Huang. 2024. The impact of digital literacy on farmers' pro-environmental behavior: an analysis with the Theory of Planned Behavior. Frontiers in Sustainable Food Systems. 8. doi:10.3389/fsufs.2024.1432184.

Ma, R., and S. Yang. 2023. The Effect of Social Network on Controlled-Release Fertilizer Use: Evidence from Rice Large-Scale Farmers in Jiangsu Province, China. Sustainability (Switzerland). 15. doi:10.3390/su15042982.

Oktarina, S., A. G. Zainal, A. Kuswanti, and E. Purwanto. 2022. the Role of Human Capital and Social Capital in Agricultural Institutional Development in Rural Areas. Agricultural Social Economic Journal. 22:77–85. doi:10.21776/ub.agrise.2022.022.2.1.

Oyefusi, F. 2022. Team and Group Dynamics in Organizations: Effect on Productivity and Performance. Journal of Human Resource and Sustainability Studies. 10:111–122. doi:10.4236/jhrss.2022.101008.

Schilke, O., A. Powell, and M. E. Schweitzer. 2023. A review of experimental research on organizational trust. Journal of Trust Research. 13:102–139. doi:https://doi.org/10.1080/21 51 558120232214202.

Sugiarto, M., O. Edy Djatmiko, S. Nur, and Y. Nur Wakhidati. 2020. Investigasi kapasitas kepemimpinan dalam kelompok peternak sapi PO Kebumen di pesisir Kabupaten Kebumen. Livestock and Animal Research. 18:89. doi:10.20961/lar.v18i2.42929.

Sugiarto, M., Y. N. Wakhidati, O. E. Djatmiko, S. Nur, and D. Gandasari. 2021. Understanding Motives of Indigenous Cattle Farmers Joining Farmers Group in Brebes Regency, Indonesia. Animal Production. 23:120–126. doi:10.20884/1.jap.2021.23.2.83.

Tesio, L., A. Caronni, D. Kumbhare, and S. Scarano. 2024. Interpreting results from Rasch analysis 1. The "most likely" measures coming from the model. Disability and Rehabilitation. 46:591–603. doi:10.1080/09638288.2023.2169771.

Tombe, R., and H. Smuts. 2023. Agricultural Social Networks: An Agricultural Value Chain-Based Digitalization Framework for an Inclusive Digital Economy. Applied Sciences (Switzerland). 13. doi:10.3390/app13116382.

Tshikovhi, N., K. More, and Z. Cele. 2023. Driving Sustainable Growth for Small and Medium Enterprises in Emerging Urban–Rural Economies. Sustainability (Switzerland). 15:1–11. doi:10.3390/su152115337.

Tunçgenç, B., V. van Mulukom, and M. Newson. 2023. Social bonds are related to health behaviors and positive well-being globally. Science Advances. 9:0–10. doi:10.1126/sciadv.add3715.

Wang, X., M. C. Couto, N. Wang, X. An, B. Chen, Y. Dong, C. Hilbe, and B. Zhang. 2024. Cooperation and Coordination in Heterogeneous Populations with Interaction Diversity. Phil. Trans. R. Soc. B:1–9. doi:https://doi.org/10.1098/rstb.2021.0504.

Wu, H., H. Xu, X. Tian, W. Zhang, and C. Lu. 2023. Multistage Sampling and Optimization for Forest Volume Inventory Based on Spatial Autocorrelation Analysis. Forests. 14. doi:10.3390/f14020250.

Yu, Q., and P. P. Gambrah. 2024. Information Network Among Farmers: A Case Study in Ghana. SAGE Open. 14:1–18. doi:10.1177/21582440241228696.

Zapata-Salas, R., J. F. Guarín, and L. A. Ríos-Osorio. 2023. Trust and reciprocity norms in the analysis of social capital related to udder health. A mixed methods approach with dairy farmers and veterinarians from the

north of Antioquia. PLoS ONE. 18:1–27. doi:10.1371/journal.pone.0277857.

Zhou, L., W. T. de Vries, A. Panman, F. Gao, and C. Fang. 2023. Evaluating Collective Action for Effective Land Policy Reform in Developing Country Contexts: The Construction and Validation of Dimensions and Indicators. Land. 12. doi:10.3390/land12071401.