



ISSN: 2785-2997

Journal of Human, Earth, and Future

Vol. 5, No. 1, March, 2024



Investigating the Impact of Social Capital, Cross-Sector Collaboration, and Leadership on Social Innovation in Rural Social Enterprises

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Received 14 October 2023; Revised 07 February 2024; Accepted 11 February 2024; Published 01 March 2024

Abstract

Objectives: This study aims to investigate empirical evidence regarding the relationship between social capital, cross-sector collaboration, leadership, and the development of social innovation in Indonesian villages with rural social enterprises, Badan Usaha Milik Desa (BUMDes). **Methods/Analysis:** The study employed a mixed approach, combining a quantitative survey, non-participative observation, and in-depth interviews. Data were collected from 280 BUMDes directors, communities, and village governments in the West Java province, Indonesia. The quantitative data were analyzed by structural equation modeling (SEM), and the hypotheses were tested against the variables investigated. The results were strengthened through in-depth interviews with five key informants. **Findings:** The findings reveal a significant positive effect of cross-sector collaboration and leadership on social innovation in BUMDes. However, social capital was found to have no significant effect on social innovation. Additionally, the study revealed a decline in community trust in rural Indonesia. **Novelty/Improvements:** This research provides empirical evidence on the influence of social capital, cross-sector collaboration, and leadership on social innovation in the context of rural social enterprises in developing countries. It makes a significant contribution to existing theory and has the potential to influence the development of rural social enterprise and social innovation, which has not been sufficiently researched to date. From an empirical perspective, this study provides evidence from West Java, Indonesia, regarding the relationship between these variables and indicators in the context of rural social enterprises in developing countries, where the sector is still at a developmental stage.

Keywords: Social Capital; Social Innovation; Cross-Sector Collaboration; Leadership; Rural Social Enterprise; BUMDes.

1. Introduction

This paper aims to investigate the empirical evidence concerning the relationship between social capital, cross-sector collaboration, leadership, and the development of social innovation in Indonesian villages with rural social enterprises (Badan Usaha Milik Desa/BUMDes). Particularly, it examines the social innovation in rural social enterprises and discusses how these factors determine their development in rural West Java, Indonesia.

To accelerate rural development, the Indonesian government has changed its paradigm by issuing Law No. 6/2014 on Villages. This regulation has introduced a new concept of village governance in Indonesia. This law is based on the principle of subsidiarity recognition. It presents villages not only as objects of development but also as self-managing

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<https://dx.doi.org/10.28991/HEF-2024-05-01-09>

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subjects of development in the hope that they would become independent and resilient communities. In addition, one of the important provisions in this regulation confirms the right of villages to establish rural social enterprises [1]. BUMDes are an economic institution at the village level that emerges as a manifestation of economic democracy in rural areas and aims to stimulate the economy [2]. In its implementation, a BUMDes uses a business philosophy rooted in local culture and local resources [1]. The establishment of BUMDes has received tremendous support from the government in the form of several regulations aimed at strengthening BUMDes. However, the role of BUMDes in accelerating rural development is still limited.

In recent years, the concept of social innovation (SI) has been widely recognized as an important factor in rural development [3–5]. Interest in the field continues to grow rapidly, as evidenced by the popularity of academic inquiry into the concept [6]. SI is widely recognized as the generation and application of new ideas that are more effective, efficient, sustainable, practical, and collaborative in solving social problems and achieving social goals for the common good rather than individual interests [7, 8]. Meanwhile, Neumeier [6], the researcher who initiated the idea of social innovation in the context of rural development, defines this concept as a change in attitude, behavior, or perception of a group of people who join a network of aligned interests in relation to the group's horizon of experience, leading to new and better collaborative actions within and outside the group.

The literature on social innovation in rural areas widely acknowledges its significant role in supporting rural communities and contributing to their development in various ways. For example, by employing neo-endogenous strategies [6] that utilize local resources to meet the needs of the community while generating economic value [9], SI can effectively promote sustainable rural development. In practice, social innovation relies both on local resources and participation and on relationships with actors across geographic and organizational boundaries [10, 11].

Though various studies have been done on this theme, academic research on social innovation in rural contexts is still limited [10]. Generally, studies on SI processes in rural areas have focused mainly on social innovation effects and success factors (e.g., [12–15]) or on the actors and agencies [16–18]. Although these studies are valuable, there is still a lack of empirical studies [19]. Little is known about how rural contexts influence social innovation processes and outcomes.

Several researchers who have studied complex social dilemmas agree that social innovation is the result of a collaboration that combines many branches of science and specialization with various related entities, including government, civil society, enterprises, academia, and local actors [10, 20, 21]. In addition, leadership factors, whether individual or collective [16], local or external [22], top-down or shared [23], play an important role in mobilizing resources, encouraging community engagement, facilitating collaboration, and driving social innovation [16, 24].

Against this background, this article aims to examine how the interaction between social capital, cross-sector collaboration, and leadership can contribute to the development of social innovation in rural areas through BUMDes. To examine this, we utilized a mixed research approach with a sequential explanatory design. This research contributes to the discussion of social capital and social innovation in rural areas, particularly through BUMDes in Indonesia. The hypothesis of this research is that social capital, cross-sector collaboration, and leadership affect social innovation through BUMDes.

To address the gaps, we have used the widely studied social capital theory to examine the impact of social capital on social innovation. Social capital is defined as the sum of actual and potential resources embedded in, available through, and derived from the network of relationships held by individuals or social units [25], where these social resources are characterized by mutual trust [26, 27]. Meanwhile, Poon et al. [28] argue that social capital is formed from family traditions and institutions that shape social norms, routines, and practices. We chose this lens because rural areas have high levels of social capital, cohesion, attachment, and shared knowledge among rural community members, which can be drivers of social innovation [15]. This is a source of strength for rural areas, where social innovation has the potential to flourish.

As shown in the literature, social capital can facilitate social innovation [3, 6, 29]. Social capital is critical to fostering sustainable and resilient societies that can adapt to changing contexts [30]. A deeper understanding of the correlation between social innovation and social capital in rural areas is needed because there is little empirical research on the role of social capital in social innovation [31, 32]. Furthermore, no one has studied how the social capital in each village contributes to social innovation in rural areas in Indonesia. Thus, there is a need to further examine the influence of social capital on social innovation.

The structure of this research is as follows. The next section discusses the literature review on social innovation, social capital, cross-sector collaboration, and leadership. The research methodology comes after. Section 4 discusses the results, followed by the conclusion.

2. Literature Review

2.1. Social Capital

Previous research has explored the relationship between social capital and social innovation. The study by Alcaide Lozano et al. [33], which examined the effects of social capital on the social innovation ecosystem in Latin America, found a positive relationship between the two. Research on social relations creates new relevant opportunities, which

produce new resources and methods for solving social problems. This means that strengthening social relationships, bonds, trust, and shared values among entrepreneurs helps create a platform for sharing investments and market information sources.

With a specific focus on women entrepreneurs, Osei & Zhuang [34] similarly showed that structural and relational social capital positively influenced social innovation. Women entrepreneurs utilize social innovation as a resource to improve their entrepreneurial performance. In Indonesia, for instance, women in the village are regularly gathered to do communal activities that relate to family matters such as children's education, home remedies, as well as mutual assistance among community members. This finding aligns with a study from Hana & Ridha [35] emphasizing the relationship between social capital, social innovation, and organizational performance. This research encourages managers and policymakers of social enterprises to focus on the growth of social capital as an important aspect of strategic management for social rural enterprises. The study from Pansuwong et al. [36] reveals a positive direct and indirect relationship (mediation) between human capital, social capital, personal entrepreneurial competence, social innovation development, and social entrepreneurship growth in Thailand. Social interaction, trust, social identification, and shared knowledge are the main determinants of social capital that influence the development of social innovation.

Although several studies confirm the important contribution of social capital to social innovation, the study by Kamal & Azzahidi [37] reveals dynamic results. Their findings show that social capital does not contribute directly or significantly to social innovation factors in the city of Agadir, Morocco. These findings contradict the others regarding the contribution of social capital to social innovation.

In the Indonesian context, BUMDes is different from other forms of social enterprise because the village government establishes it, unlike other social enterprises, which are built based on personal or collective motives [38]. A BUMDes is formed based on the collective will of village residents, decided through village deliberations, and managed entirely by village communities in a spirit of kinship and mutual assistance (called *gotong royong*), guided by the principle 'of by and for the village' [1, 39, 40]. In this context, BUMDes are built by social capital of the community, and in its activities, it creates many innovative programs that are proposed by the people at the communities through bottom-up initiatives. Therefore, our first research hypothesis (H1) was the following:

Hypothesis 1 (H1): *Social capital (SC) has significant positive effects on social innovation (SI).*

2.2. Cross-Sector Collaboration

Social innovation requires collaboration between various actors [41]. Solving complex social problems requires the collaboration of various groups, including the government, non-profit organizations, the private sector, academia, and local entities [10, 20, 21]. Thus, successful social innovation usually involves collective action from private, public, and civil actors [42].

According to Bryson et al. [43], cross-sector collaboration is the linking or sharing of information, resources, activities, and capabilities by organizations from two or more sectors to jointly achieve an outcome that cannot be achieved by one sector alone. Cross-sector collaboration is also understood as a process in which autonomous actors interact through formal and informal negotiations, jointly creating the rules and structures that govern their relationships, actions, and decisions regarding the issues that unite them. This process involves shared norms and mutually beneficial interactions [44]. In the process, cross-sector collaboration brings together diverse organizations.

Previous research has explored the relationship between cross-sector collaboration and social innovation. A study by Krasnopolskaya & Meijs [45], which examined the factors influencing the social innovation of 850 non-profit organizations, concluded that cross-sector collaboration is very important for social innovation capacity and areas of the social innovation process. This aligns with the research of Borges et al. [46], who explored two social innovation centers in Brazil and Portugal. Their study found that collaboration and the sharing of information and knowledge between various sectors are the keys to the direction of social innovation. Another study from Rogelja et al. [14] shows that the involvement of innovators in various networks was one of the three key factors in the successful revival of charcoal burning in Slovenia. Therefore, the second research hypothesis (H2) was formulated as follows:

Hypothesis 2 (H2): *Cross-sector collaboration (CSC) has significant positive effects on social innovation (SI).*

2.3. Leadership

Leadership is essential for facing increasingly complex global and regional challenges. It is one of the critical factors of social innovation [47, 48]. Leadership is important in mobilizing resources and community involvement, as well as in encouraging collaboration and social innovation [16, 24].

Previous research has explored the relationship between leadership and social innovation. Studies by Bhatt and Richter [49, 50] show that the human capital of social enterprise founders is necessary for initiating and developing social innovation. This aligns with Avant et al.'s [51] statement that leadership is not a linear, one-way relationship. Rather, it is an interactive event, and most importantly, it is often the leader who initiates and maintains relationships and manages communication with other entities.

The criticality of the leadership factor for social innovation is also demonstrated by Vercher et al. [16], who found that for social innovation to take place in rural areas, collective leadership is needed because it can reduce the authority of power relations and increase the overall desirability of social innovation initiatives. However, the role of a core group of local leaders is the focal point of the initiative. Studies by Vázquez-Maguirre [22] show that local or external leadership is needed in the mobilization phase to organize society in pursuit of a common goal. In communities that can sustainably solve their problems, collective local leadership more easily finds the legitimacy and urgency to build social enterprises.

Another study by Pearce & van Knippenberg [23], which explores top-down and shared leadership approaches, suggests that both are critical for the success of social innovation. However, they have different uses at different times. Therefore, it is necessary to consider contextual factors when relying on top-down and shared leadership in social innovation. In the Indonesian context, the importance of leadership in facilitating social innovation was also noted by Widyaningsih et al. [52]. Their study examining two forestry communities found that community leaders could encourage and stimulate active participation throughout the community, generate ideas, and communicate effectively with community members. All this shows that social innovation requires leadership. Therefore, the third research hypothesis (H1) is proposed as follows:

Hypothesis 3 (H3): *Leadership (LE) has significant positive effects on social innovation (SI).*

2.4. Social Innovation

Social innovation refers to creating new services and activities to address social issues or meet social needs. For instance, social innovation offers innovative solutions to social issues like inequality, obstacles to medical services, and food insecurity [8, 53]. Characterized by novelty and purpose, social innovation requires strategic planning and coordination of innovative solutions to achieve a specific social change [53]. Recently, such resolutions have emerged from interdisciplinary groups comprising private businesses, governments, and non-profit organizations.

Social innovation enhances people's living conditions [54]. Adams & Hess [55] contend that the primary trait of social innovations is the emphasis on asset building rather than on needs, with communities' matters to the community. Social innovation is also defined as the process of creating and implementing fresh concepts regarding how individuals should arrange interpersonal activities or social interactions to attain one or more common objectives [56].

Social innovation has been identified as a potential solution to global issues such as pandemics, social inequalities, health crises, and education failure [57]. Increasingly, it is thought that social innovation can tackle many socioeconomic problems [58, 59]. These solutions include enhancing collective well-being and promoting sustainable development [60].

On the one hand, social innovation is acknowledged as a novel innovation wave that prioritizes systems and processes of change in social relations. On the other hand, this concerns developing and producing goods and services that tackle social issues, environmental concerns, and market inefficiencies [57]. Despite widespread belief in the potential of social innovation, a lack of long-term, structured analysis [41] and consensus regarding the concept of social innovation [53, 61, 62] has hindered its development.

3. Research Methodology

This study focuses on the causative mechanisms by which social capital, cross-sector collaboration, and leadership contribute to social innovation. To address this objective, we used a mixed-methods research approach with an explanatory sequential design [63]. This type of research commences with quantitative data collection and analysis in the initial stage through a quantitative survey, followed by qualitative analysis in the subsequent stage through an in-depth interview [63]. The results of statistical data processing, which address initial conjectures concerning the influence of one variable on others, necessitate in-depth analysis through interviews with key informants as well as field observations. Integrating mixed methods is essential to achieving a more profound comprehension of quantitative research data. The flowchart of the research methodology that was used to achieve the study's aims is shown in Figure 1.

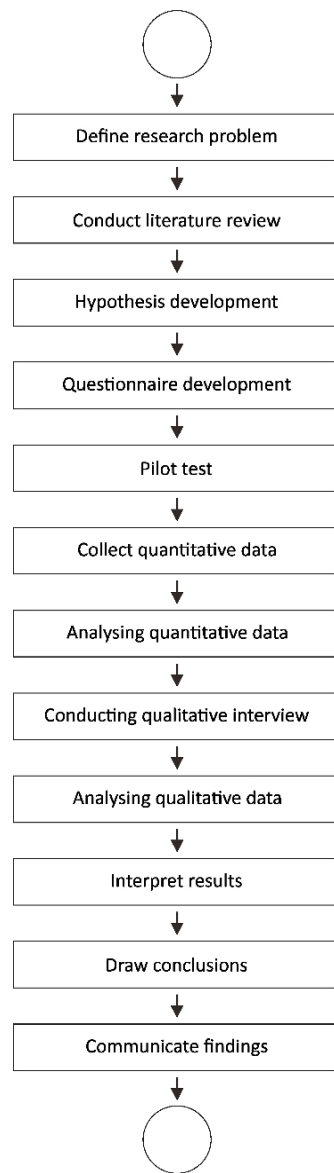


Figure 1. Flowchart of the research methodology

3.1. Measurements

The tool used for data collection was a questionnaire divided into two parts, with 14 questions about the respondents' general information and their BUMDes's general information and with 22 questions about the relationships between social capital, cross-sector collaboration, leadership, and social innovation (see Table 1). The validity, reliability, and Exploratory Factor Analysis of the research instrument construct were conducted using SmartPLS version 3.0 computer software. The item constructs used to measure social capital were adapted from Osei & Zhuang [34]. Similarly, the six items to measure cross-sector collaboration were adopted from Chiodo et al. [64]. The four items we used to measure the leadership construct were taken from Rami et al. [65] and Gallardo [66]. Finally, the six items used to measure the social innovation construct were adopted from Osei & Zhuang [34] and Dobebe [67].

Table 1. Proposed conceptual framework synthesised from the review of literature.

Construct	Indicators	Authors
Social capital	Bonding ties	Osei & Zhuang (2020) [34]
	Bridging ties	
	Frequency of interaction	
	Trust	
	Reciprocity	
	Norms	

Cross-sector Collaboration	The level of public commitment	Chiodo et al. (2019) [64]
	The existence of public-private partnerships	
	Local support organisations	
	Networking at the extra-local level	
	The number of the different assets involved	
Leadership	The presence of formal elements of integration among the resources	Rami et al. (2021) [65] and Gallardo (2019) [66]
	Extensive knowledge	
	Communication skills	
	Desire to help rural communities.	
Social innovation	Desire to motivate communities	Osei & Zhuang (2020) [34] and Dobeles (2015) [67]
	Introducing new things	
	Sustainability and effectiveness	
	From ideas to implementation	
	Providing for the needs of society	
	Solving social problems	
	Create benefits for society	

The structured questionnaire was designed based on 5-point Likert-type scale responses where ‘Strongly Agree’ corresponds to a score of (5), ‘Agree’ corresponds to a score of (4), ‘Slightly Disagree’ corresponds to a score of (3), ‘Disagree’ corresponds to a score of (2), and ‘Strongly Disagree’ corresponds to a score of (1). We chose a five-point Likert scale in the questionnaire because it has typically been used in previous social innovation studies.

To see how social capital, cross-sector collaboration, and leadership influence social innovation, this study employs partial structural equation modeling (SEM) using SmartPLS. PLS-SEM is a multivariate statistical analysis that estimates the influence between variables carried out simultaneously, emphasizing exploratory studies, prediction, or structural model development. As per Hair et al. [68], the PLS technique boasts high accuracy and capability, yielding superior results compared to other methods, which typically rely on a covariance approach. Direct and indirect structural relationship paths are estimated through bootstrapping.

3.2. Sample and Procedures

This article uses a sample of 280 responses to test the proposed hypotheses. Using a convenient sampling method, the questionnaires were distributed to BUMDes directors, communities, and village officials from BUMDes in the West Java province. While collecting research data, we tried to balance the proportion of BUMDes directors, communities, and village officials between the different regions in West Java to ensure the representativeness and reliability of the research sample.

To achieve the expected sample size, we surveyed for almost four months (from July to October of 2022). Respondents completed the questionnaire through two methods: field visits were conducted to villages in West Java, where guidance was provided during the completion process to minimize potential biases in understanding the questions, or through a Gform link distributed via email or WhatsApp, where respondents had the option to request clarification if needed. Data collection resulted in 327 responses. However, only 280 responses were included in the subsequent statistical calculations. Two respondents expressed unwillingness to participate, while nine others were deemed ineligible due to their non-West Java origins. Additionally, 34 respondents required clarification regarding the status of the BUMDes, including their affiliation with a joint BUMDes, and omitted mentioning the name of the BUMDes.

3.3. Interviews

After administering the questionnaires, we gathered data through in-depth interviews with five key informants to gain a deeper understanding of the interim findings (Table 2). These interviews were conducted to validate the results obtained through statistical analysis. The interview process spanned from October 2022 to July 2023. Five in-depth interviews were carried out, resulting in 103 pages of data transcripts.

The interviewees included BUMDes directors, village leaders, and BUMDes forum members. We selected informants to triangulate the findings, which means employing multiple methods to validate a phenomenon [69]. Source triangulation was employed to confirm and further explore the interim findings from various perspectives, ensuring an objective viewpoint.

The interview process was conducted informally, even though we developed tailored interview guidelines for each informant to ensure data quality and the use of triangulation techniques. The interviews unfolded spontaneously and naturally, with an average duration of 30 to 90 minutes. They were conducted face-to-face at the location. The interviews were conducted in Bahasa Indonesia and Sundanese, and all informants consented to the recording.

The interviews were guided by the Leiden Ethnosystem Approach, encompassing three principles: Historical Dimensions (HD), Fields of Ethnographic Study (FES), and Participant Views (PV) [70]. This approach is rooted in a classical school of sociology and sociolinguistics known as ethnomethodology. Through this approach, we tried to uncover the perceptions and perspectives of the emic view, emphasizing the informants' understanding of BUMDes based on local constructions.

Table 2. List of key informants

Informants		ID
Village head/local village leader	Village head Pilangsari	KI1
	Village head Buanamekar	KI2
Director of BUMDes	Director of BUMDes Megamendung Jaya	KI3
	Director of BUMDes Perkasa	KI4
West Java BUMDes Association	West Java BUMDes Association	KI5
		N = 5

3.4. Statistical Model Specification

Various statistical metrics were used to assess the reliability and validity of the variables in the measurement model. These metrics include composite reliability (CR), average variance extracted (AVE), and Cronbach's alpha, detailed in Table 3. The recommended thresholds for these metrics, as indicated by J.F. Hair et al. [71, 72], are also provided, comprising a composite reliability value of ≥ 0.70 , a rho A value of ≥ 0.70 , a Cronbach's alpha value of ≥ 0.70 , and an average variance extracted value of ≥ 0.50 . Cross-loading considerations, adherence to the Fornell–Lacker criteria, and ensuring an HTMT value < 0.90 were also considered. The results demonstrate the suitability of statistical measures for assessing variable reliability, with consistently high values of CR, exceeding 0.8–0.9; Cronbach's alpha values in the range of 0.7–0.8; and rho A values consistently exceeding 0.50, all meeting the established criteria.

Additionally, Table 3 provides insights into the Cronbach's alpha and R² values relating to the model. Cronbach's alpha indicates construct item validity, with values greater than or equal to 0.7 indicating strong reliability. Meanwhile, R² values indicate the model's explanatory ability, providing the proportion of variance in the dependent variable that the model can explain. In this context, the R² value of 0.643 suggests that the independent variables explain approximately 64.3% of the variance in the dependent variable related to social innovation and the performance of BUMDes.

Table 3. AVE, Composite Reliability (Cr), Cronbach's Alpha, R²

Construct	Indicator	AVE	CR	Cronbach's Alpha	R ²
Social capital	SOC1	0.504	0.859	0.803	-
	SOC2				
	SOC3				
	SOC4				
	SOC5				
	SOC6				
Cross-sector Collaboration	C.R.O.S. 1	0.654	0.919	0.894	-
	C.R.O.S. 2				
	C.R.O.S. 3				
	C.R.O.S. 4				
	C.R.O.S. 5				
	C.R.O.S. 6				
Leadership	LEA1	0.781	0.935	0.906	-
	LEA2				
	LEA3				
	LEA4				

Social Innovation	S.O.C.I.N. 1	0.718	0.939	0.921	0.643
	S.O.C.I.N. 2				
	S.O.C.I.N. 3				
	S.O.C.I.N. 4				
	S.O.C.I.N. 5				
	S.O.C.I.N. 6				

In addition, a discriminant validity assessment was conducted using the Fornell–Larcker and HTMT criteria to identify construct differences (see Tables 4 to 6). The discriminant validity assessment measures the extent to which the constructed variable or construct differs from other variables/constructs and becomes the target of statistical tests. According to the Fornell–Larcker criteria, the root mean square of the average variance extracted (AVE) should be compared with the correlation between variables. The model is considered to have good discriminant validity when the AVE root of the variable exceeds the correlation between variables. Meanwhile, the HTMT indicates the ratio between the heterotrait (average correlation among items measuring different variables) and the square root of the monotrait geometric mean (correlation among items measuring the same variable). The recommended threshold values for HTMT are < 0.85 or < 0.90 [73]. The findings of this study confirm good discriminant validity, supported by the observation that the difference between the cross-correlation and square root of AVE is minimal, and HTMT values consistently remain below the threshold of 0.90.

The final parameter used in this analysis is the loading factor (LF) value, which describes how well the item represents a variable measurement. As a rule of thumb, an LF value of ≥ 0.60 [74] or ≥ 0.70 [71] is acceptable. All items in this study have an LF > 60 and were therefore deemed valid.

Table 4. Construct Loading

Construct	Indicator	Loadings	Standard Deviation (S.T.D.E.V.)
Cross-sector collaboration	CROS1	0.755	0.041
	CROS2	0.787	0.030
	CROS3	0.795	0.031
	CROS4	0.814	0.035
	CROS5	0.841	0.029
	CROS6	0.858	0.023
Leadership	LEAD1	0.839	0.028
	LEAD2	0.885	0.022
	LEAD3	0.901	0.020
	LEAD4	0.909	0.017
Social capital	SOC1	0.670	0.061
	SOC2	0.714	0.056
	SOC3	0.734	0.041
	SOC4	0.706	0.035
	SOC5	0.708	0.038
	SOC6	0.728	0.033
Social innovation	SOCIN1	0.846	0.030
	SOCIN2	0.888	0.020
	SOCIN3	0.838	0.024
	SOCIN4	0.851	0.029
	SOCIN5	0.819	0.027
	SOCIN6	0.850	0.036

Table 5. Discriminant Validity Using Fornell-Larcker criterion

Variable Construct	CROS	LEA	SOCIN	SOC
1. Cross-sector collaboration	0.809			
2. Leadership	0.581	0.884		
3. Social Innovation	0.624	0.773	0.848	
4. Social Capital	0.704	0.637	0.620	0.710

Table 6. Discriminant Validity Using H.T.M.T

Cross-sector collaboration	Cross-Sector Collaboration	Leadership	Social capital	Social innovation
Leadership	0.640			
Social Innovation	0.680	0.845		
Social Capital	0.827	0.746	0.716	

4. Results

4.1. Demographic Profiles of the Respondents

According to the results, 75% of the 280 respondents were male (Table 7). This indicates that women's involvement in BUMDes activities remains limited. Regarding age, the highest number of respondents falls within the 35–39 age bracket, representing 17.5% of the total. Although the survey was conducted in rural areas, the predominant proportion of participants have attained a considerably high level of education—specifically, higher education—amounting to 33.57%. Additionally, most respondents in the study have completed the mandatory 12-year education program.

Table 7. Demographic Profile of the Respondent

Population Demographics	Frequency	Percentage (%)
Gender		
Male	210	75
Female	70	25
Age		
15-19 years;	4	1.42
20-24 years;	22	7.85
25-29 years;	41	14.64
30-34 years;	41	14.64
35-39 years;	49	17.50
40-44 years;	43	15.35
45-49 years;	41	14.64
50-54 years;	29	10.35
55-59 years;	6	2.14
60 years and above	4	1.42
Education Compulsory		
Not/not yet graduated from primary school	2	0.71
Primary school/equivalent	5	1.78
Junior high school/ equivalent	16	5.71
Senior high school/ equivalent	71	25.35
Vocational high school/equivalent Higher education	71	25.35
Associate degree	17	6.07
Applied bachelor	4	1.42
Undergraduate/postgraduate	94	33.57
Expenditure profile		
Less than 427.000 IDR	29	10.35
427.000 – 1.266.877 IDR	68	24.28
1.266.887 – 4.000.00 IDR	143	51.07
4.000.000 – 5.999.000 IDR	24	8.57
More than 6.000.0000 IDR	16	5.71

4.2. Hypothesis Testing

Structural equation modeling was the primary analytical tool for examining the direct influence of social capital, cross-sector collaboration, and leadership on social innovation. The results are as follows (Table 8), drawing upon the bootstrapping findings derived from SmartPLS-SEM.

Table 8. Direct Path Effect Coefficients

Hypotheses	Structural relations	Coefficients (β)	Standard deviation	t statistics	P values	Result
H1	Social capital → social innovation	0.090	0.073	1.231	0.219	Not Supported
H2	Cross-sector collaboration → social innovation	0.216	0.081	2.668	0.008	Supported
H3	Leadership → social innovation	0.591	0.085	8.749	0.000	Supported

In terms of how social capital contributes to social innovation, the results from Table 8 show that social capital does not have a statistically significant effect on social innovation. The correlation coefficient between social capital and social innovation was found to be 0.073, and the significance value of 0.219 was greater than 0.05. So, hypothesis (H1), which states that social capital has a significant influence on social innovation, is not supported.

This article also examines the impact of cross-sector collaboration on social innovation, as well as the impact of leadership on social innovation. The findings in Table 8 show that cross-sector collaboration does have a statistically significant effect between cross-sector collaboration and social innovation. The correlation coefficient of cross-sector collaboration on social innovation was found to be 0.216, and the significance value of 0.008 was smaller than 0.05. These results show that hypothesis (H2), which states that cross-sector collaboration has a significant influence on social innovation, is supported.

Additionally, the results from Table 8 show that leadership has a statistically significant effect on social innovation. The correlation coefficient of leadership on social innovation was found to be 0.591, and the significance value of 0.000 was smaller than 0.05. These results show that hypothesis (H3), which states that leadership has a significant influence on social innovation, is supported.

The outcomes detailing the direct path effects in the structural relationships among these variables, as well as the structural model, can be found in Table 8. Additionally, Figure 3 visually represents the estimation results employing PLS bootstrapping. It highlights the statistical significance of these structural relationships through t-statistics.

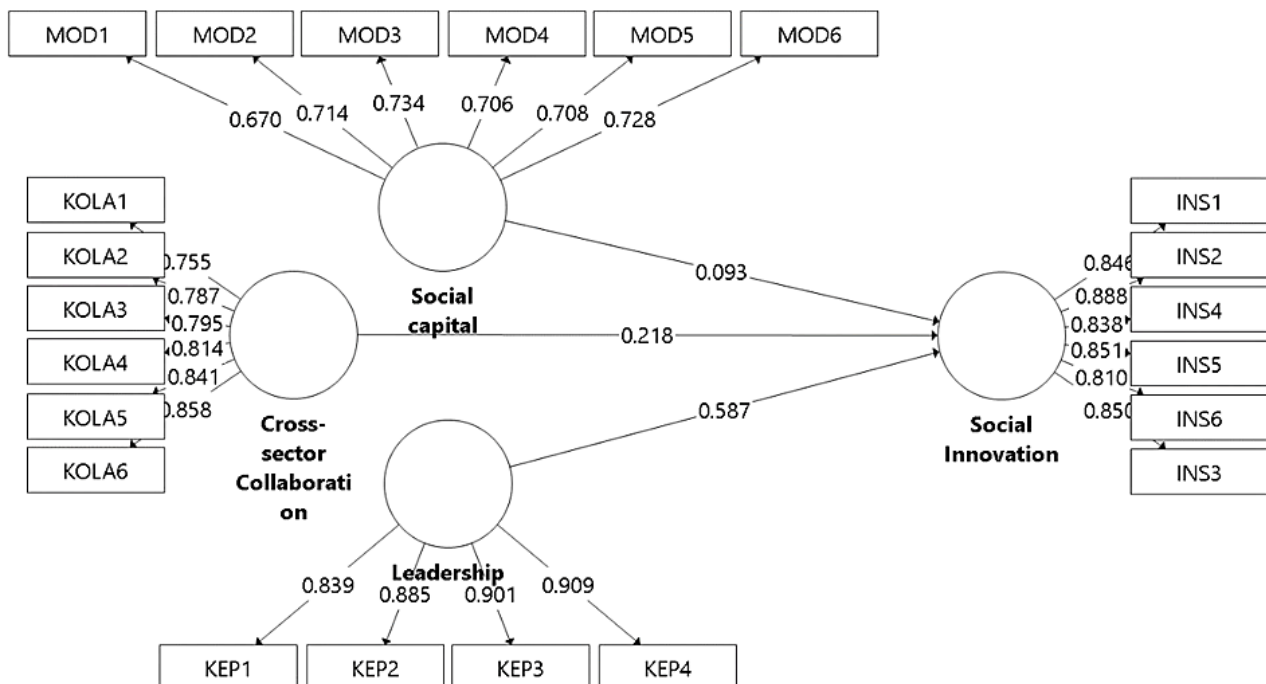


Figure 2. Measurement model with factor loadings of indicator items

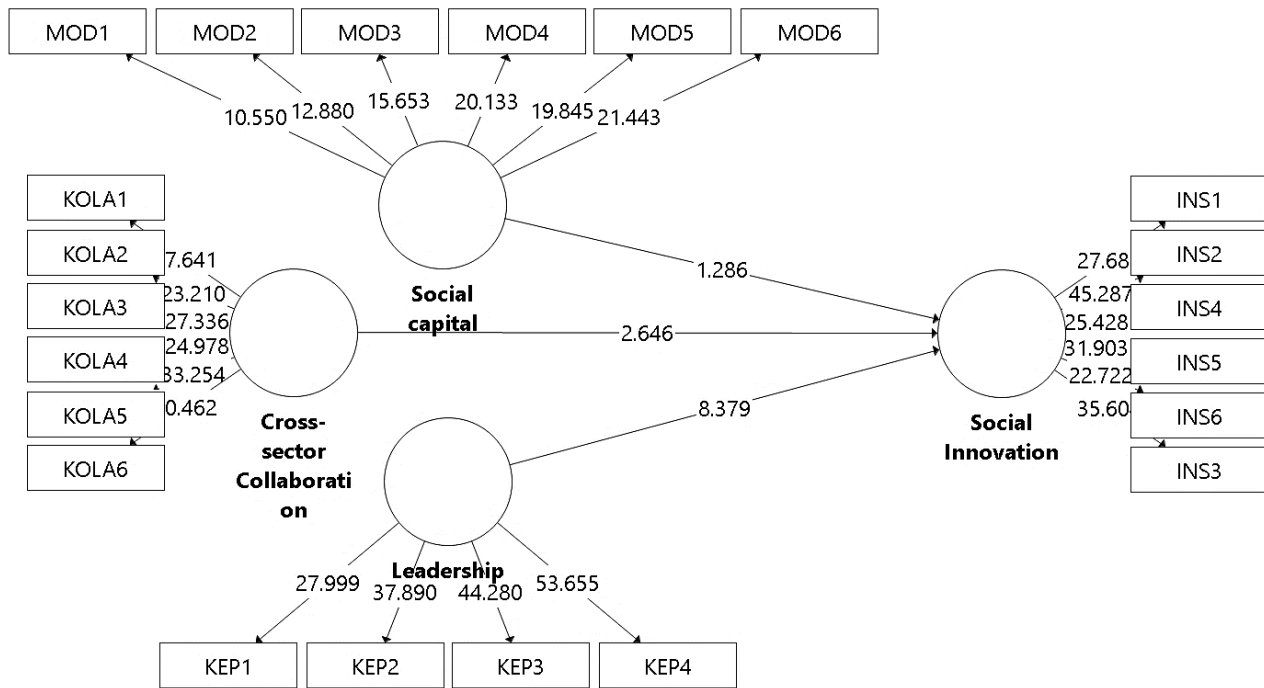


Figure 3. Structural model bootstrap weighted path diagram

4.3. Key Informant Interviews

The results of interviews with key informants were grouped into three categories. The first grouping is related to the condition of the social capital and the situation in the community, and the BUMDes. The second grouping relates to cross-sector collaboration practices in the BUMDes, and the third grouping relates to leadership conditions in the BUMDes and the community. Each is explored in turn.

Social capital conditions and trust issues:

The rural area where the BUMDes is located is described by the key informants as deceptively calm and peaceful, while at the same time very complex. On the one hand, there is still strength in rural areas related to community work ethic, community cohesiveness, togetherness, and 'gotong royong'. On the other hand, there is a decline in the community's trust in the government at the central, regional, and village levels because of dissatisfaction with government programs and services. For example, one key informant pointed out how difficult it is to obtain civil registration documents.

As a result, the BUMDes, although established through a process of village deliberation, cannot be separated from community distrust. The community still sees the BUMDes as an integral part of the village, or in other words, as a government program. The situation is complicated because the community's perception of the BUMDes's activities is influenced by the past, when the development process prioritized a top-down approach, and the community or village was only the object of development. 'In my opinion, village communities are tired; they are not trusting the government' (Interview KI1). 'The community, it's like they have been lied to' (Interview KI4).

The situation in the village is complex due to the influence of local politics. According to a key informant, there is friction with a group of people who disagree with the ideas presented by BUMDes. Although their relationship appears fine on the surface, this group may attempt to thwart BUMDes activities and spread negative information that destabilizes the organization. It is important to note that this information is subjective and should be clearly marked as such. Although their relationship appears fine on the surface, this group may attempt to thwart BUMDes activities and spread negative information that destabilizes the organization.

The urgency of cross-sector collaboration:

Key informants stated that, even though the aim of the BUMDes was to accelerate the village economy, in fact they were established with various limitations built in, such as the unavailability of quality human resources and limited funding, which could hinder the development of village independence. These limitations can nonetheless be overcome through collaboration with various parties at various levels—local, regional, and national. For example, through collaboration with state-owned enterprises (BUMN) and regional-owned enterprises (BUMD), as well as with the banking industry.

'We involve many parties in implementing this partnership initiative. The parties involved are BUMDes and private sector, the management of Sugar Factory (SF), banking, village government, and the community as farmer partners. BUMDes provides production facilities, processing services, factory maintenance, logging, and transportation. Private sector plays a role in providing land, providing training to help with farmers' cultivation systems and community sugar cane buyers, while banks, both state-owned companies and Regional Development Banks (BPD), provide funding by facilitating People's Business Credit (Kredit Usaha Rakyat/KUR) for farmer partners who are part of the partnership' (KI1). 'BUMDes need assistance due to limited village budgets and human resources. Fortunately, there is an Indonesian National Police Criminal Research Education Center established in the village. The agency helps provide doctors and nurses for health care clinic operations. We are also assisted by universities to develop good financial governance' (KI3).

This collaboration overcomes the limitations faced by the BUMDes while attempting social innovation. Apart from that, through this collaboration, the BUMDes receives, among other things, quality human resource support, financial and network support, as well as the knowledge needed to strengthen the initiatives carried out and to pave the way for developing the village economy. Apart from helping overcome the limitations, cross-sector collaboration also determines social innovation in the BUMDes because, through collaboration, the BUMDes can generate new ideas to solve the problems faced by their villages.

On the other hand, the key informants also noted the crucial importance of local organization support for social innovation in BUMDes. To this day, there is still a lack of synchronization between the village government and its institutions. In fact, it is not uncommon to find village institutions that have become obstacles for BUMDes.

'Our problem is not business, not capital. In my opinion, the biggest BUMDes's challenge is to develop understanding with the village government, its institutions, and the community' (KI5).

Leadership in the BUMDes and the community:

Our key informants also pointed out the importance of leadership in facilitating social innovation in rural areas. The motivational aspect of leaders in the progress of BUMDes is crucial. This is due to the complexity of villages, where village politics are prevalent, including various changes in the community that exacerbate the challenges faced by BUMDes. The villages in West Java have also experienced the negative impact of the top-down development process over the years, causing the villages to be increasingly marginalized. This motivates the BUMDes director to bring the BUMDes forward.

However, the BUMDes director must be not only motivated but also competent and must have access to up-to-date information pertaining not only to community conditions but also to various cooperation opportunities that can be used to support the BUMDes and the community. At the same time, the director must also understand the needs of the community, both now and in the future, and must be bold enough to take the necessary steps even if the surrounding environment opposes or questions those steps. *'The wisdom is that when we do something sincerely, it will come, even though at the beginning many people find fault, many revile, and many do not believe' (KI3). 'The struggle is like this. With this, the counterattacks are getting more and more frequent' (KI1).*

5. Discussion

We have investigated the influence of social capital, cross-sector collaboration, and leadership on social innovation in rural areas in West Java, Indonesia. We found that social capital does not significantly affect social innovation in BUMDes in Indonesia. However, cross-sector collaboration and leadership are both significant determinants of social innovation.

The research results show that social capital does not affect social innovation in BUMDes, which suggests that the social capital of rural communities has yet to play a role in social innovation. This finding also shows that the social innovation carried out by BUMDes does not optimally utilize the strength of the social capital possessed by rural communities. The findings of this research are different from previous research [34, 35], which showed that social capital does influence social innovation. Pansuwong et al. [36] even found that in Thailand, social capital, consisting of social interaction, trust, social identification, and shared knowledge, is the main determining factor that influences the development of social innovation. According to Bosworth et al. [29], social capital needs to act as a facilitator or support to trigger further action and create new economic opportunities for social innovation. Social capital, on the other hand, supports social innovation, enhancing and reconfiguring the abilities of social entrepreneurs who lead to social innovation [75].

This finding is concerning because Indonesia was previously known for its high social capital [76]. Furthermore, social capital, which was once considered Indonesia's main strength in dealing with crises such as the COVID-19 pandemic, is now beginning to decline. This finding also strengthens the notion that social changes may have eroded local values. Indonesia's strength is starting to fade, especially the sense of trust in the government, which also impacts

BUMDes. This is because, even though BUMDes were founded based on the results of village deliberations, it turns out that the community still views BUMDes as an inseparable part of village government. In other words, the BUMDes is perceived as a government program, as it had been in the past, when it had been only the object of community development. The changes occurring in rural communities align with Indonesia's central statistics agency data, which show that during the 2014–2021 period, the social capital index showed a downward trend from 76.32 to 72.05 [77, 78].

On the other hand, this study also shows that cross-sector collaboration does have a significant effect on social innovation. The results show that in the context of BUMDes, collaboration between sectors is an essential factor in the success of social innovation practices, allowing fresh ideas to overcome the challenges faced by villages. This aligns with the findings of Garcia et al. [79] that cross-sector collaboration can inspire new solutions to complex problems and can build social value.

As it is known, BUMDes were established with several limitations, including a lack of quality human resources, a limited budget, limited education, a limited workforce, and limited. However, cross-sector collaboration between state-owned enterprises (SOE), regional-owned enterprises (ROE), academics and universities, community self-help groups, and the private sector can help BUMDes overcome their limitations and initiate new solutions that benefit the community and put in place foundation for the development of the village economy. This aligns with the findings of Bosworth et al. [29] that fostering collaboration between cross-sector actors can increase innovation by removing existing barriers. The influence of cross-sector collaboration on social innovation in BUMDes in Indonesia aligns with studies that found that cross-sector collaboration is an important factor for social innovation [14, 45, 46].

In the context of BUMDes, cross-sector collaboration is a crucial factor in the success of social innovation practices. It enables the generation of fresh ideas to address the challenges encountered by the village. These findings align with [79], which suggests that cross-sector collaboration can produce novel solutions to intricate issues, establishing social worth. According to a study by Urmanavičienė et al. [80], social enterprises benefit from collaborating with the private sector to obtain financial resources, expand networks, and gain expertise, credibility, and legitimacy. Collaboration is crucial in crafting solutions that transcend narrow viewpoints and enhance the efficacy and durability of actions [46]. The research indicates cross-sector collaboration in social innovation is driven by shared values and objectives, mutual trust, steadfast determination, and bridging leadership.

Furthermore, the findings of this research strengthen the results of previous research, which found that leadership has a significant impact on social innovation. A crucial factor for social innovation in BUMDes is the ability of the director or manager to lead effectively. A qualified, self-motivated leader with high-quality networking skills is essential to success. This is in line with research conducted by Mumford & Moertl [81], Vercher et al. [82], and Richter [50], which highlights the significant impact of leadership on driving social innovation, facilitating participatory engagement, and establishing strategic relationships between rural communities and broader networks.

Based on their study of the social innovation process in indigenous social enterprises, Vercher et al. [22] propose that effective management and unity in achieving common goals during the mobilization phase require leadership from both local and external communities. However, Górriz-Mifsud et al. [83] found that community members' trust in stakeholders did not significantly change, even though they may have known each other beforehand. During the initial stages, the social innovation introduced by BUMDes faced significant resistance and scepticism from the community, as reported by the research informants. It was observed that specific communities did not actively engage or endorse the initiative.

6. Conclusions

Theoretically, this article presents structural equation modeling used to describe the role of social capital, cross-sector collaboration, and leadership in encouraging social innovation in rural social entrepreneurship in Indonesia. We found that cross-sector collaboration and leadership significantly impact social innovation. This is consistent with previous research findings, which show that cross-sector collaboration and leadership are important factors in social innovation.

Thus, BUMDes Directors and stakeholders must build local, regional, national, and international networks to increase cross-sector collaboration. Furthermore, they should encourage new approaches to answering needs and solving societal problems. Leadership skills can also be improved through training and other professional development opportunities.

On the other hand, we also found that social capital does not significantly facilitate social innovation in BUMDes. However, these results are inconsistent with previous research that postulates the crucial role of social capital in social innovation, and it is premature to conclude that social capital does not play a role at all. Additionally, in the context of rural Indonesia, there have been social changes that have eroded local values.

This research, of course, has limitations. One of the limitations of this research is that the research location and sample size are limited to BUMDes in West Java. This limits the generalisability of these findings to other contexts or countries. In addition, this research relies on data from a questionnaire survey, which has response bias. The sample size in this

study was also relatively small, with only 280 BUMDes managers, community members, and village officials participating, which may have limited the statistical power and generalisability of the results.

To overcome these limitations, future investigations could expand the sample size or include BUMDes from various provinces across Indonesia to ensure the representation of a wider range of village types. This may involve enrolling more villages from different regions. Future research should also assess the results obtained from studies that reject the hypothesis that social capital affects social innovation. In addition, further research is needed to explore cross-sector collaboration concepts, such as the Pentahelix or Hexahelix approaches, to investigate the function of each participant in social innovation, as well as to consider the ways in which leadership styles may influence social innovation in BUMDes. Future research can help clarify the direct and indirect (mediation) impacts of the development of social innovation in the context of improving rural social enterprise performance.

7. Declarations

7.1. Author Contributions

Conceptualisation, Y.K., K.S., A.Y.M.S., and Y.A.; methodology, Y.K., K.S., and A.Y.M.S.; software, Y.K. and A.Y.M.S.; formal analysis, Y.K. and K.S.; writing—original draft preparation, Y.K.; writing—review and editing, Y.K., K.S., and A.Y.M.S.; supervision, Y.A.; project administration, Y.K.; funding acquisition, Y.A. All authors have read and agreed to the published version of the manuscript.

7.2. Data Availability Statement

The data presented in this study are available in the article.

7.3. Funding and Acknowledgements

This research was funded by the DRPM of the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia through the 2022-2023 Doctoral Dissertation Research Grant Program (No. 094/E5/PG.02.00.PT/2022 and 044/E5/PG.02.00.PL/2023), and the APC was funded by Universitas Padjadjaran.

7.4. Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board (or Ethics Committee) of Universitas Padjadjaran (No.1053/UN6.KEP/EC/2021).

7.5. Informed Consent Statement

Not applicable.

7.6. Declaration of Competing Interest

The authors declare that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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Appendix I: Questionnaire

On the Topic of Social Innovation in Rural Areas

This questionnaire is part of the "Social Innovation in Rural Areas" research, particularly those initiated by BUMDes. This research aims to improve the effectiveness of BUMDes in supporting the village economy and independence. I invite you to participate in this research by completing the following research questionnaire.

This research questionnaire seeks to understand the role of social innovation influenced by social capital, cross-sector collaboration, and leadership in BUMDes. Your participation will help to provide accurate and valuable data and information on social innovation in rural areas. You were selected as a respondent because you are part of social innovation in rural areas.

If willing, you must fill in the respondent's consent form. You will then be interviewed by the researcher regarding activities in BUMDes. If there is anything you need help understanding, you can ask the researcher directly. You also have the right not to answer if you feel the question cannot and should not be answered.

The information you provide is confidential and by applicable ethical rules. Your answers are only known to the research team and will be kept confidential. Your name will not be published or given to any party.

This activity will take up about 30-60 minutes of your time. The participants in this study range from 300 to 500 people. Your participation in this research is voluntary and can be withdrawn at any time without any consequences. As a form of gratitude for your willingness to participate in this study, we will provide incentives in the form of telephone credit reimbursement.

If you need more information about this research, please contact me via W.A. or email below. Thank you for your willingness to participate and help with this research.

Research Team

Research Questionnaire Instructions:

This questionnaire is used to study the topic of social innovation in rural areas, which is separated into two parts as follows:

Part 1 is about the data on the status of the respondents and BUMDes.

Part 2 is about questions asking about your thoughts on social capital, cross-sector collaboration, leadership, and social innovation.

Part 1: Data on the Current Status of the Expert

Instructions

Please insert a tick mark into a box of that best describes your status or write down your answer that best describes your current status in the spaces provided.

A.1 RESPONDENT PROFILE

1. Name ()
2. Gender ☐ 1. Male ☐ 2. Female
3. Age

<input type="checkbox"/> 1. 15-19 yo	<input type="checkbox"/> 2. 20-24 yo	<input type="checkbox"/> 3. 25-29 yo	<input type="checkbox"/> 4. 30-34 yo	<input type="checkbox"/> 5. 35-39 yo
<input type="checkbox"/> 6. 40-44 yo	<input type="checkbox"/> 7. 45-49 yo	<input type="checkbox"/> 8. 50-54 yo	<input type="checkbox"/> 9. 55-59 yo	<input type="checkbox"/> 10. 60+ yo
4. Education

<input type="checkbox"/> 1. Not/not yet graduated from primary school.	<input type="checkbox"/> 2. Primary school/equivalent	<input type="checkbox"/> 3. Junior high school/ equivalent
<input type="checkbox"/> 4. Senior high school/ equivalent	<input type="checkbox"/> 5. Vocational high school/equivalent	<input type="checkbox"/> 6. Associate degree
<input type="checkbox"/> 7. Applied bachelor	<input type="checkbox"/> 8. Undergraduate/postgraduate	
5. Status

<input type="checkbox"/> 1. Village officials	<input type="checkbox"/> 2. BUMDes Director	<input type="checkbox"/> 3. Village community
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6. Total household expenditure in a month

<input type="checkbox"/> 1. Less than IDR 427.400	<input type="checkbox"/> 4. IDR 4.000.000- 5.999.999
<input type="checkbox"/> 2. IDR 427.000- 1.266.877	<input type="checkbox"/> 5. More than IDR 6.000.000
<input type="checkbox"/> 3. IDR 1.266.887- 4.000.000	

A2. BUMDES PROFILE

1. BUMDes Name ()
2. Name of Village ()
3. Name of Sub-district/District ()
4. Year of Establishment of BUMDes ()

Part 2: Questions regarding your thoughts on social capital, cross-sector collaboration, leadership, and social innovation.**Instructions**

Please give your opinion on each statement, with the following assessment criteria for the questionnaire:

Level 1 is a level of strongly disagree.

Level 2 is a level of disagreement.

Level 3 is a level of disagreement.

Level 4 is a level of agreement.

Level 5 is a level of strongly agree.

	Strongly Disagree	Disagree	Less disagree	Agree	Strongly agree
Social capital	1	2	3	4	5
We often interact with our neighbours, workmates, and their family					
We often interact with people from different backgrounds.					
There are regular community meetings/activities in this village.					
People in this village trust each other.					
Our neighbour in this village is ready to help in times of need.					
Villagers in this village always try to maintain good relations.					
Cross-sector collaboration					
Villagers have an exemplary commitment when working together.					
When working together, villagers have the same goals and understanding.					
Local organisations support cooperation in this village.					
Cooperation in this village involves various parties at different levels.					
There are many parties involved in cooperation.					
There is clarity of roles in the cooperation carried out in this village.					
Leadership					
Our BUMDes director equips himself/herself with the latest information or knowledge.					
Our BUMDes director is always involved in community activities.					
Our BUMDes director seeks to assist the village community.					
Our BUMDes director seeks to motivate the village community.					
Social innovation					
Our BUMDes has introduced new things in the village.					
Our BUMDes has practised new things in this village.					
New things practised by our BUMDes are more effective.					
Our BUMDes helps provide for the needs of the community.					
Our BUMDes helps solve problems faced by the community.					
Our BUMDes has created benefits for the community.					