Role of Social Capital Between Slum and Non-Slum Areas

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Abstract: The Gresik Regency is a region that boasts significant potential for rapid growth within the Surabaya Metropolitan Area. It is situated in close proximity to the center of the provincial capital of East Java and is predominantly characterized by its northern coastal area. Given its strategic location, the Gresik Regency is widely recognized as a vital contributor to the national economy and is therefore included in the East Java Mainstay Area, GERBANGKERTOSUSILA. The economic potential of Gresik Regency has led to a substantial influx in population, resulting in the emergence of two distinct settlement patterns, namely slum and non-slum. The residential environment in question is believed to be shaped by the interplay of relationships and values upheld by the community. This contributes to the creation of a comfortable and high-quality living space, and is considered a form of social capital. The aim of this study is to investigate the impact of social capital on the quality of residential environments in two distinct types of settlements - slum and non-slum - located in Gresik Regency. The research will employ a quantitative approach known as Social Network Analysis (SNA). This method identifies influential community members to aid in developing effective programs. The sample has two types: location (slum and non-slum) and 602 respondent samples (poverty and non poverty) with purposive sampling technique. The result showed that slum areas have higher social capital than non-slum settlements which has medium RoP (16% slum, 11,1% non-slum), high Density (0,8% slum, 0% non-slum), and high Centrality (33,3% slum, 11,1% non-slum). This happens because almost all of the people in slum area participate in institutional activities and know each other. These groups facilitate easy access to assistance programs offered by the Gresik Regency government.

Keywords: Slum - Non-slum areas, Social-Capital, residential-environments

1. Introduction

The Sustainable Development Goal on the first and eleventh SDG, as cited in The Global Goals: For Sustainable Development Goals (2021), adds that the first and eleventh SDG target is essentially to poverty alleviation and sustainable cities and communities. Poverty is an event of an individual's inability to meet needs, primary needs such as access to health, education, clean water and sanitation[1]. One of the consequences of poverty is the emergence of slums. According to Law No. 1 of 2011 on PKP, slums are settlements that are uninhabitable, characterized by building irregularities, high building density and the quality of buildings and facilities and infrastructure do not meet the requirements. It has been observed that individuals residing in this condition often encounter substandard living due to their immediate environment, which in turn has a detrimental effect on the overall welfare of a nation. Consequently,

some slums in Indonesia have undertaken the initiative to restore their environment by leveraging their social capital. This includes organizing community service activities and other self-initiative activities to enhance their living conditions and promote a better quality of life. According to data sourced from the Central Statistics Agency, Indonesia's social capital has observed a notable increase over the years. The recorded figures for social capital value in 2009 ranged between 65.53 to 71.82. However, as of 2021, Indonesia reports an estimated social capital value ranging from 70.54 to 72.37.

Social capital is capital that is needed in development, where in social capital there is a relationship formed from networks, based on trust and norms[2]. Meanwhile, social capital is a medium for sharing power within the group[3]. Social capital owned by the community is a power that can be used to stimulate other members to take collective action[4]. Social networks are a part of social capital that consists of networks of cooperation between people[4].

Networks are formed from the same region, similarities in political or religious beliefs, genealogical relationships, and others[4]. Good social capital makes it easier for actors to work together[5]. It is noteworthy that the social capital in Indonesia, particularly in the region of Java, holds a significant value as it is demonstrated by the absence of conflicts and disintegration issues.

Gresik Regency is one of the regencies in Java. Based on the Gresik Regency Regional Regulation No. 6 of 2018 on the prevention and quality improvement of slum housing and slum settlements, it states that the typology of slum housing and slums is based on the geographical location. Based on Gresik Regent Decree No.: 050/228/HK/437.12/2023 concerning the amendment of Regent Decree No.: 050/281/HK/437.12/2021 concerning the location of slum housing and settlements in Gresik Regency, it is stated that slum areas in Gresik Regency are spread in Karangturi, Kebungson, Kemuteran, Kroman, Lumpur, Pekelingan, Sukodono, Tlogopojok, Kramatinggil, Sidorukun, Ngipik and Tlogopatut villages. The slums in question are linked to poverty rates that are determined by the number of individuals receiving government assistance. During the period of 2018-2020, there was a notable increase in poverty rate by 154,000 to 164,000 in Gresik Regency. Currently, there is still a significant concentration of poor individuals within identified slum areas.

Poverty alleviation is not only from the physical but also from the non-physical such as the social capital of the community. The linkages between communities are important to understand for holistic poverty alleviation. Good relationships between communities can make it easier for communities to find information and resources, which can improve the quality of communities[6][37]. Therefore, it is necessary to control poverty alleviation based on social capital. In Indonesia, social capital has been shown to play a role in reducing poverty[7][36]. As per the findings of Susenas (2012) and Podes (2011), social capital, alongside human, financial, and physical capital, exhibits a positive influence on the per capita expenditure of a household, thereby leading to a decrease in poverty. The objective of this study is to carry out a comparative analysis of the value of social capital between slums and non-slums. Furthermore, the study aims to determine the extent to which the indicator contribute to the value of social capital with SNA technique.

2. Methods

In this study, the urgency of research includes the characteristics of slum areas and non-slum areas using descriptive analysis. Descriptive analysis is an explanation that describes what happens in the field[8]. In addition, the Rate of participation, density and centrality were calculated using social network analysis. The variables in this study use affiliation data such as community membership, participation in institutions, number of institutions, and institution data.

Data collection was conducted using primary survey techniques and secondary data. Primary data collection is data that is provided directly to the data collector[9]. Primary data is obtained directly from the source by taking measurements, observations, and interviews[10]. Secondary sources are sources that do not provide data directly to data collectors, such as through other people or documents[10]. This research uses secondary data consisting of government policy documents, notices and reports, laws and regulations, previous study reports, census report data sets[11]. In this study, data was collected through questionnaires based on four indicators of SNA. The questionnaire's feasibility was tested using validity and reliability tests.

Basically, the questionnaires research uses purposive sampling[12] where in the sample of respondents is chosen between 21 sub-districts as can be seen in Table 1. This sampling method was purposive to study social capital in poor and non-poor individuals within slum and non-slum areas, resulting in a non-random sample selection. The data relates to: a) Membership of institutions, b) Institutional participation, c) Number of institutions involved, d) Institutional data

Based on Open Data Gresik Regency, the number of households in Gresik Sub-District is 25,758, so that based on Slovin Formula, the total number of samples are 602. There are 9 sub-districts categorized as non-slum areas, and the rest 12 sub-districts are the slum areas referring to Gresik Regent Decree No.: 050/228/HK/437.12/2023 concerning the amendment of Regent Decree No.: 050/281/HK/437.12/2021 concerning the location of slum housing and settlements in Gresik Regency. The present decree makes use of National Slum Indicators, specifically pertaining to building regularity, environmental road conditions, drinking water supply, environmental drainage, waste management, and fire protection.

Table 1. Number of Samples for each Urban Area/Rural

No	Urban area/rural	No. of Samples	Samples of Poverty	Samples of Non-Poverty
1	Pekauman	19	10	9
2	Sukorame	46	20	26
3	Bedilan	20	5	15
4	Gapurosukolilo	16	3	13
5	Sidokumpul	61	5	56
6	Pulopancikan	27	6	21
7	Trate	49	31	18
8	Tlogobendung	12	0	12
9	Karangpoh	19	4	15
10	Tlogopojok	38	9	29
11	Ngipik	9	0	9
12	Tlogopatut	18	3	15
13	Sukodono	7	0	7

No	Urban area/rural	No. of Samples	Samples of Poverty	Samples of Non-Poverty
14	Lumpur	58	26	32
15	Kemuteran	15	7	8
16	Karangturi	70	48	22
17	Kramatinggil	15	1	14
18	Pekelingan	14	5	9
19	Kebungson	17	6	11
20	Sidorukun	33	8	25
21	Kroman	39	19	20
	Total	**602**	**216**	**386**

2.1 Social Network Analysis

Social network analysis is defined as the mapping and measurement of relationships and interactions within a local unit that includes people, community groups, information, and also different social services[6]. Social network analysis studies the structure of relationships that link individuals or other social units, as well as dependencies in behavior or attitudes related to the arrangement of social relationships[13]. Social network analysis can also mean an illustration of the interaction between actors and other actors in social interaction. Network analysis can describe the role of each actor who is a member of each actor who is a member of one group who is also a member of another group called a bridge[14]. Depending on the way of looking at it and also the results to be obtained, these interactions can be different from each other. The process of mapping and measuring the flow of these interactions with the analysis of interaction flow patterns can be interpreted as social network analysis[15]. To measure social capital, this research referred dissertation of the first author where by the formula was developed based on the concept of social capital and methods from Scott and Wasserman & Faust[16–18]. Academic researchers have developed a set of indicators that are assessed using variables that are derived from social network analysis (SNA). These indicators are being sought are : a) Membership of institutions, b) Institutional participation, c) Number of institutions involved, d) Institutional data.

Measuring social capital that is consists of density, rate of participation, and centrality (degree – betweenness – closeness). Centrality analysis can be done by degree centrality to find out the central figure based on the number of respondent networks, betweenness centrality to find out the central figure that bridges interactions between respondents and closeness centrality to find out the central figure based on the closest relationship between respondents[19].

❖ Rate of Participation

$$\bar{a}_i \frac{\sum_i^g X_{ij}^N}{g} \qquad (1)$$

Information:
$\bar{a}_i$ = Participation rate

g = Respondents of clean water users in Gresik Sub-District

h = Existing institutions in Gresik Sub-District

X_{ij}^N = Primary matrix from respondent i to respondent j containing the matrix of community participation in institutions

In this study, the RoP level is divided into three levels: low, medium, and high, so that the results obtained can compare the RoP between villages[20]

Table 2. Classification Rate of Participation

Class Interval	Classification
0 - 1,33	Low
1,34 - 2,66	Middle
2,67 - 4	High

❖ Density

Network density is the ratio of the number of ties to the number of possible ties[21].

$$\Delta(N) = \frac{\sum_{i=1}^{g} \sum_j^h X_{ij}^N}{g\,(g-1)} = \frac{2L}{g\,(g-1)}; \; i \neq j \qquad (2)$$

Information:

$\Delta(N)$ = density value/density relationship

g = nodes/respondents who have network affiliations with other respondents

g – 1 = nodes/respondents who have no affiliation with other respondents

X_{ij}^N = primary matrix of respondents i to j

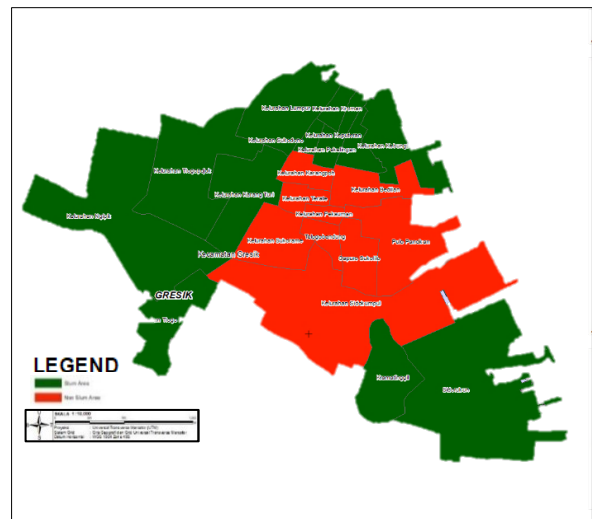L = number of lines connecting respondents

Fig. 1: Map of Slum and Non-Slum Areas of Gresik Sub-District

Table 3. Classification Density

Class Interval	Classification
0 - 0,33	Low
0,34 - 0,66	Middle
0,67 - 1	High

❖ Centrality

The centrality index is used to determine the central actors in a community through their affiliations with existing institutional groups[6]. Actors who have the most activities or networks will automatically have a high degree value and are declared as central actors or main actors[22]. Closeness centrality is the most prominent actor who has the shortest path to other actors in a network[6]. In the context of social network analysis, closeness centrality represents a person's ability to spread information to all other people in the social network[14]. Betweenness centrality calculates how often an actor is bypassed by other actors to get to a particular actor in the network[23]. The application of social network analysis (SNA) methods can provide an overview of the level of social capital between poor and non-poor residents in slum and non-slum neighbourhoods under each government development program in Gresik Regency.

3. Result and Discussion

3.1 Characteristics of Study Area

Gresik Regency Regional Regulation No.6/2018 states that the criteria for slum housing and slum settlements are reviewed from:
1. Building;
2. Neighborhood road;
3. Supply of drinking water;
4. Environmental drainage;
5. Waste water management;
6. Solid waste management; and
7. Fire protection.

Gresik Sub-District is the capital of Gresik Regency. It categorized as a non-slum area because these 9 areas are the location of the center of government, commercial and services and cluster housing.

Based on Gresik Regent Decree No.: 050/228/HK/437.12/2023 concerning the amendment of Regent Decree No.: 050/281/HK/437.12/2021 concerning the location of slum housing and settlements in Gresik Regency, it is stated that slum areas in Gresik Regency are spread in Karangturi, Kebungson, Kemuteran, Kroman, Lumpur, Pekelingan, Sukodono, Tlogopojok, Kramatinggil, Sidorukun, Ngipik and Tlogopatut villages. Meanwhile, non-slum areas are located in the villages of Gapurosukolilo, Bedilan, Karangpoh, Pekauman, Sidokumpul, Sukorame, Terate, Pulopancikan and Tlogobendung.

In Gresik Regency, slum areas are located on the edge of Gresik Regency. While the non-slum area is located in the center of Gresik Sub-District which is the capital of the sub-district, in the non-slum area there are commercial areas and settlements. The village with the largest slum area is Sidorukun Village, which covers 116.02 ha, and the non-slum area is Sidokumpul Village, which covers 126.24 ha.

3.2 Institutions in Study Area

Each village in Gresik sub-district has a different organization. The institution that must exist in every village is the PKK, both the PKK RT and RW or PKK Kelurahan. In Gresik Sub-District, the villages with the most institutions are Pekauman village and Sukorame village with 13 institutions. The villages with the least number of institutions are Pulopancikan village and Sidorukun village with 3 institutions.

Table 4. Institution in Gresik Regency

No	Urban Area/Rural	RT Level	RW Level	Urban Area/Rural Level	Sub-District Level
1	Pekauman	**PKK** (*Empowering Women for Family Welfare*), **RT** (*neighborhood association*), **Karang Taruna** (*youth organization*)		**PKK, Posyandu** (*Integrated Service Post*), **Muslimat/Fattayat/Aisyiah** (*woman organization*), **BKM and LPMK** (*community empowerment institutions*), **POKJA** (*community working group*), **Bank Sampah** (*waste bank*), **HIPPAM** (*drinking water group*)	
2	Sukorame	PKK, RT, Karang Taruna, Bank Sampah	PKK, RW, BPNO	**Yasinan** (*religious worship groups*), **PROKLIM** (*The National Movement for Community-Based Climate Change Control*), **Karang Werda** (*Formation and Empowerment of Elderly Organization*), LPMK, Posyandu, HIPPAM	
3	Bedilan	PKK		PKK, Muslimat, Fattayat, HIPPAM	
4	Gapurosukolilo	PKK		PKK, LKMD, LPMD, BPD, POKJA, KOPWAN (*Women's cooperative*), HIPPAM	
5	Sidokumpul	PKK		PKK, Karang Taruna, **UPZ** (*Zakat collecting community*), HIPPAM	

No	Urban Area/Rural	RT Level	RW Level	Urban Area/Rural Level	Sub-District Level
6	Pulopancikan	PKK		PKK, HIPPAM	
7	Trate	PKK, RT		PKK, Karang Taruna, BKM, LKMK, **POKDARWIS** (*Travel awareness community*), KOPWAN, HIPPAM	
8	Tlogobendung			PKK, Karang Taruna, BUMDES, KOPWAN, Muslimat, HIPPAM	
9	Karangpoh			PKK, LKMK, Karang Taruna, HIPPAM	
10	Tlogopojok	PKK, RT	RW	Posyandu, Bank Sampah, Karang Taruna, Sanitasi, HIPPAM	
11	Ngipik	PKK, RT	RW	Posyandu, LKMK, Karang Taruna, BKM, HIPPAM	
12	Tlogopatut	PKK, RT		LKMK, **LINMAS** (*community protection group*), Karang Taruna, HIPPAM	
13	Sukodono	PKK		PKK, Karang Taruna, HIPPAM	
14	Lumpur	PKK		LPMK, LINMAS, HIPPAM	
15	Kemuteran	PKK, Karang Taruna		BKM, ANSHOR, HIPPAM	
16	Karangturi	PKK, RT, Karang Taruna		PKK, **Poswindu** (*Erlderly Service Post)*, Posyandu, Bank Sampah, Paud, HIPPAM	PKK
17	Kramatinggil	PKK		PKK, LKMD, BPD, HIPPAM	
18	Pekelingan			PKK, BKM, Karang Taruna, KOPWAN, HIPPAM	
19	Kebungson			PKK, KOPWAN, POKDARWIS, Posyandu, HIPPAM	
20	Sidorukun	PKK		Karang Taruna, HIPPAM	
21	Kroman	PKK		PKK, LKMK, Karang Taruna, KOPWAN, HIPPAM	

According to the table 4, non-slum (white column) areas follow many institutions, not only at the lowest level (RT) but up to the village level. Pekauman follows two different levels of institutions, three at the RT level and ten at the village level. Sukorame follows more different levels of institutions, four institutions at RT level, three institutions at RW level and six institutions at village level.

In slum areas, Karangturi is the only village following institutions down to subdistrict level and the village following the most institutions in slum areas, three RT level, six village level and one subdistrict level. Most of the activities carried out in each institution are "arisan", meeting or gathering and religious activities (pengajian).
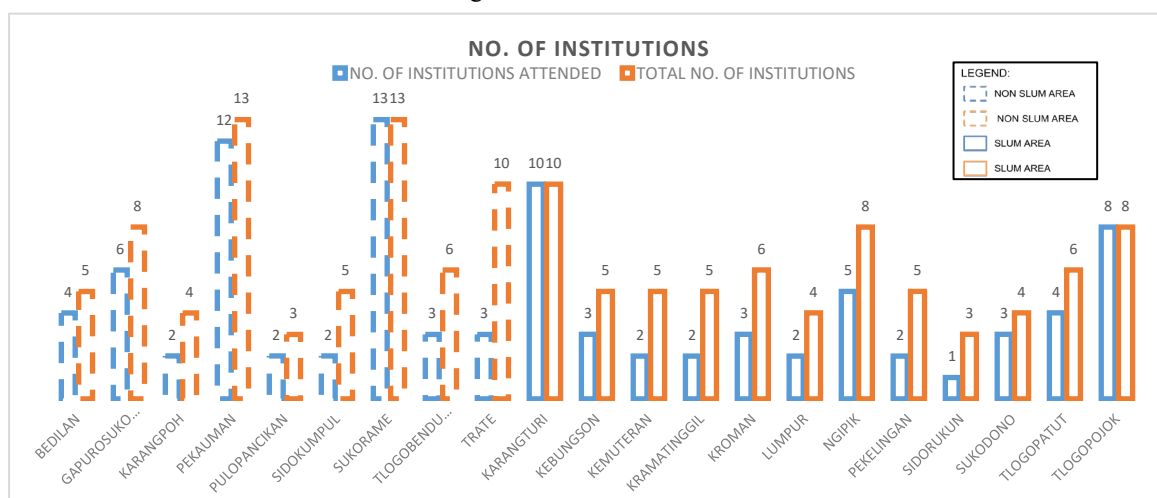

Fig. 2: No of Institutions

In non-slum areas, Sukorame is the village with the highest level of institutional participation. All institutions (13 institutions) in Sukorame Village are participated in by some residents/families. Pekauman Village is second to Sukorame Village in terms of the number of participating institutions, with 12 out of 13 institutions. While in slum areas, Karangturi is the village with the most institutions followed (10 institutions). The second place is in Tlogopojok with a total of 8 institutions and all of them are followed by Tlogopojok residents.Based on the graph, villages in non-slum areas have more institutions than villages in slum areas.

3.3   Characteristics of Respondents

The village in the non-slum area that has more poverty households than non-poverty households is Trate Village with 31 poor families and 18 non poverty households. Meanwhile, in the slum area, the number of poverty households is higher in Karangturi Village with 48 poverty households and 22 non poverty households.
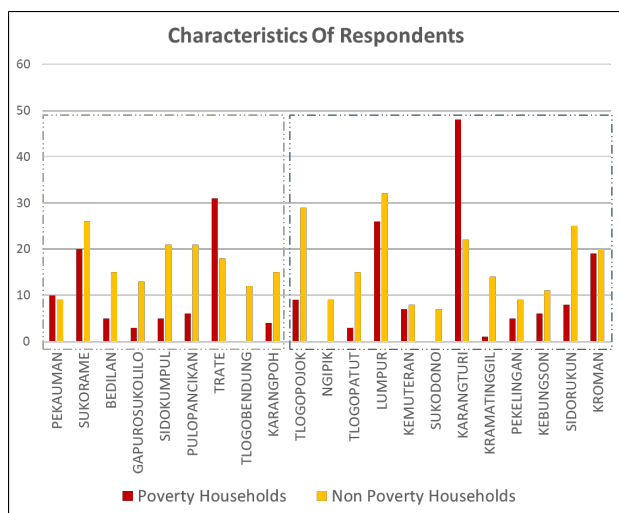

Fig. 3: Characteristics of Respondents

When people are part of social capital, they can work together, especially when there is mutual trust between them[24]. The families in non-slum areas that participated in the most institutions were in Pekauman Village with 79%. Compared to the number of institutions followed in Pekauman Village, it can be interpreted that not all families participate in institutions, but there are families who participate in several institutions. Meanwhile, in the slum areas, the families who participated in the most institutions were in Ngipik Village and Tlogopatut Village with 100%. This indicates that although all families follow certain institutions, not all institutions are followed in both villages. The level of social capital in Gresik Regency is determined by gender and age. Typically, individuals over the age of 35 are more involved in various institutions due to their greater availability of free time. Men are more dominant in their involvement as the existing institutions

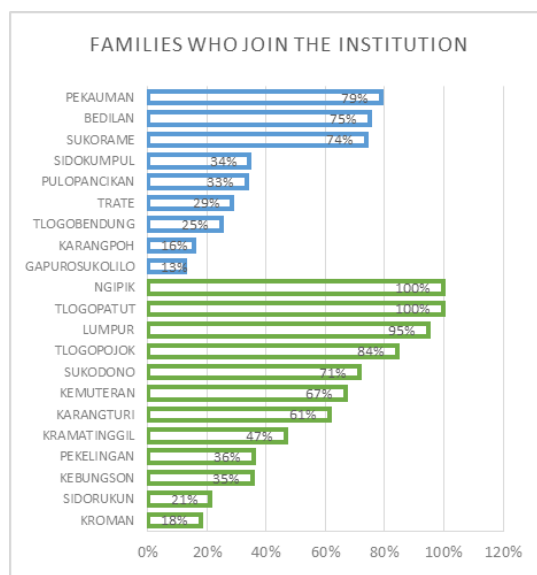are mostly related to development programs that require physical activity.

Fig. 4: Percentage of Members in Institutions

3.4 Rate of Participation (RoP)

The purpose of this analysis is to obtain an overview of the participation level of the entire population in the study area through the data of the respondents' affiliation to each program in each village[25]. Table 5 shows the calculation of the participation level of the population in Gresik Sub-District. The classification of the participation level is divided into three categories (low, medium, and high), with different numbers of institutions and families in each village.

Table 5. Rate of Participation of Gresik Sub-District

No	Urban area/rural	Rate of Participation			Classification
		Poverty	Non-Poverty	Totals	
1	Pekauman	0,579	1,000	1,579	Middle
2	Sukorame	0,696	0,413	1,109	Low
3	Bedilan	0,300	0,650	0,950	Low
4	Gapurosukolilo	0,000	0,375	0,375	Low
5	Sidokumpul	0,016	0,328	0,344	Low
6	Pulopancikan	0,037	0,296	0,333	Low
7	Trate	0,122	0,163	0,286	Low
8	Tlogobendung	0,000	0,250	0,250	Low
9	Karangpoh	0,000	0,211	0,211	Low
10	Tlogopojok	0,237	1,237	1,474	Middle
11	Ngipik	0,000	1,444	1,444	Middle
12	Tlogopatut	0,167	0,889	1,056	Low
13	Sukodono	0,000	1,000	1,000	Low
14	Lumpur	0,414	0,552	0,966	Low
15	Kemuteran	0,400	0,533	0,933	Low

No	Urban area/rural	Rate of Participation			Classification
		Poverty	Non-Poverty	Totals	
16	Karangturi	0,443	0,443	0,886	Low
17	Kramatinggil	0,067	0,400	0,467	Low
18	Pekelingan	0,214	0,214	0,429	Low
19	Kebungson	0,000	0,412	0,412	Low
20	Sidorukun	0,000	0,212	0,212	Low
21	Kroman	0,128	0,051	0,179	Low

The highest level of participation in non-slum (white column) areas is in Pekauman Village with a participation value of 1.579, which is classified as medium. Meanwhile, the lowest level of participation is in Karangpoh Village with a participation value of 0.211, which is classified as low. In the slum areas (orange column), the highest level of participation is in Tlogopojok Village with a participation value of 1.474, which is classified as medium. The lowest level of participation in the slum areas is in Kroman Village with a participation value of 0.179, which is classified as low. The majority of RoP values in non-poor communities are higher than those in poor communities. This may be because the amount of institutional information from outside the poor community is less than that of the non-poor community. The poor spend more time working or meeting their daily needs, so they have less time to search for institutional information outside their daily routines. Another influencing factor is that the scope of work is the same or equal, so institutional information is limited to the same scope. Meanwhile, the non-poor have a uniform working time, so time outside the daily working hours can be used to search for institutional information. A wider scope also allows the non-poor to obtain information that is different from their daily habits. In addition, the non-poor have a more open mind, so they are more receptive to new and different information. In the context of poverty alleviation, it has been observed that non-slum neighborhoods with a high degree of community participation can play a significant role in assisting the government to minimize the number of poor individuals. This can be achieved through the provision of assistance information, which is possible through existing institutions.

Thus, the percentage of each participation level classification can be divided into 4, namely non slum-middle by 5%, non slum-low by 38%, slum-middle by 10% and slum-low by 48%. Figure 7 shows the results of the mapping of each village based on the condition of the area and the classification of the level of participation that has been calculated previously.
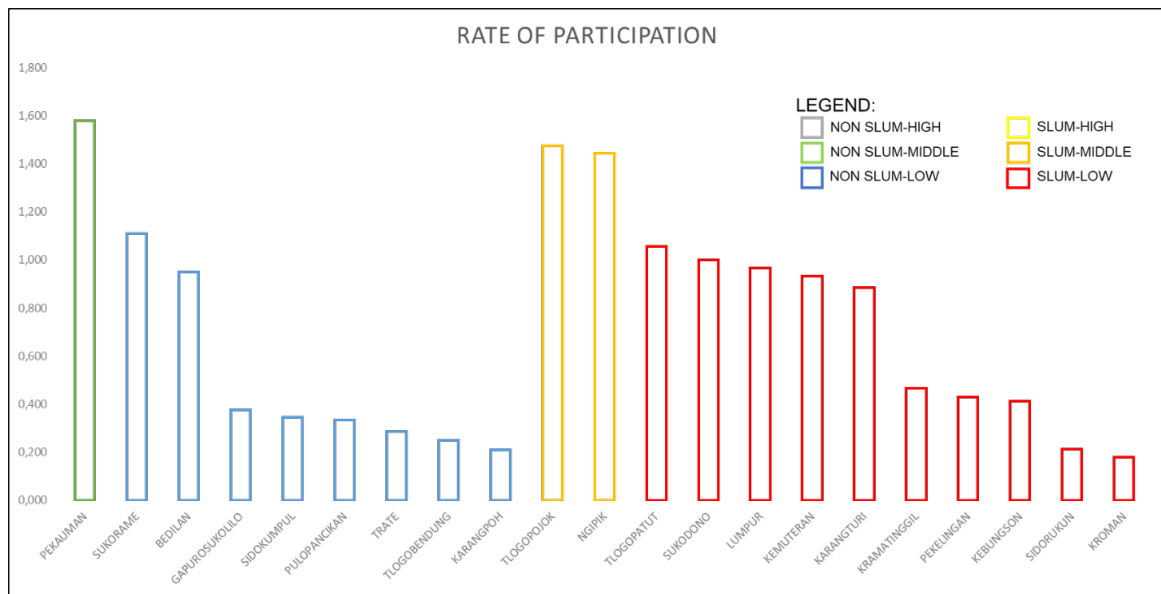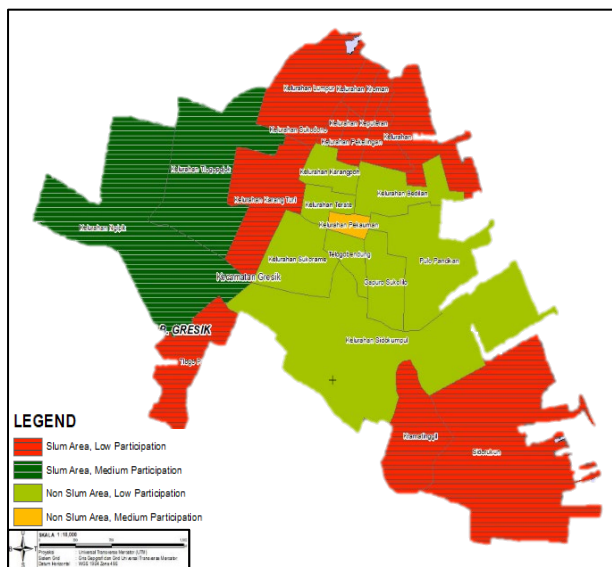

Fig 5: Rate of Participation

Fig. 6: Comparison Map of Slum Area and Rate of Participation in Gresik Sub-District

3.5 Density

The purpose of the density analysis is to get a clear picture of how dense the informal community network is in each institution in the village[25]. Density values range from 0-1 and are divided into three classifications: high-medium-low.

Density levels with a high classification are found in Lumpur Village, which are villages located in slum areas. Lumpur Village is the village with the highest density level in Gresik Subdistrict with a value of 0,898. Therefore, community interaction in Lumpur Village is more active than in other villages. The highest density level in non-slum areas is in Bedilan Village with a density value of only 0,371. Meanwhile, the lowest density level is in Gapurosukolilo and Tlogobendung villages, both of which are in non-slum areas with a density value of 0%. Therefore, the interaction between communities in these two villages is very low.

High social networks allow communities to interact more easily and smoothly when sharing information and resources among community members[6]. The density value in slum areas is higher than in non-slum areas because ownership of basic public infrastructure and facilities, such as communal toilets, is communal. Whereas in non-slum areas, the majority of communities have their own basic infrastructure and facilities. As a potential solution for improving infrastructure in slums, community-based programs implemented by the government can be highly effective. Such programs can enhance the intensity of meetings and engagement, leading to a stronger community density in slums.

Table 6. Density of Gresik Sub-District

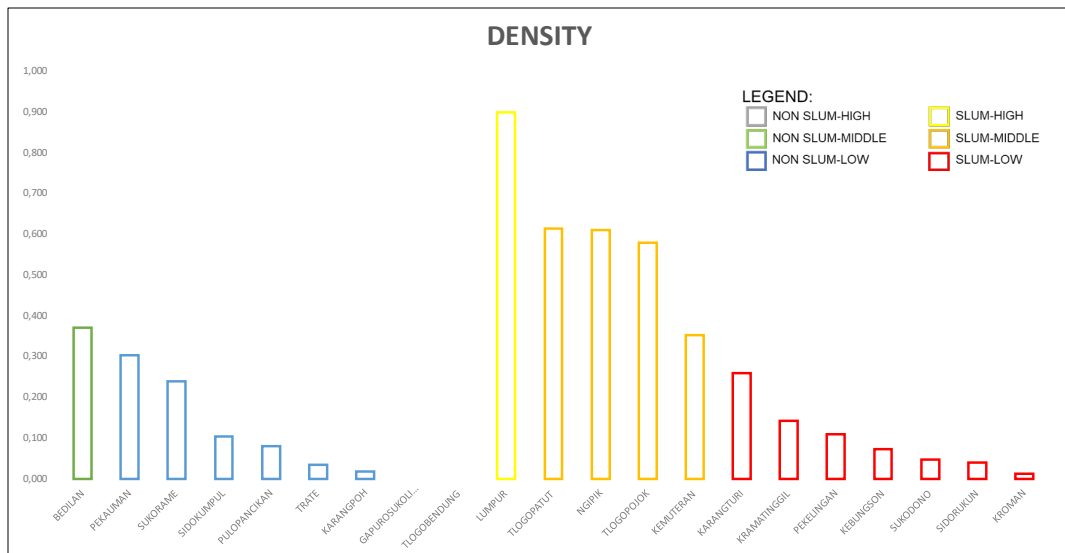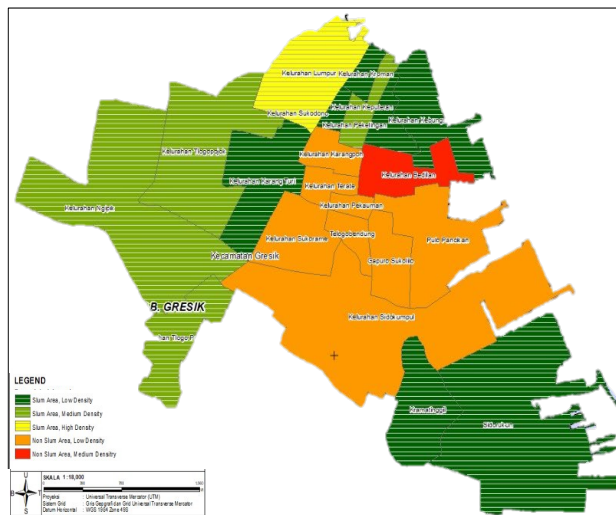| No	Urban area/rural	Density			Classification
		Poverty	Non-Poverty	Totals	
1	Bedilan	0,300	0,429	0,371	Middle
2	Pekauman	0,267	0,333	0,304	Low
3	Sukorame	0,763	0,058	0,239	Low
4	Sidokumpul	0,000	0,111	0,104	Low
5	Pulopancikan	0,000	0,100	0,080	Low
6	Trate	0,015	0,085	0,034	Low
7	Karangpoh	0,000	0,029	0,018	Low
8	Gapurosukolilo	0,000	0,000	0,000	Low
9	Tlogobendung	0,000	0,000	0,000	Low
10	Lumpur	0,849	0,938	0,898	High
11	Tlogopatut	1,000	0,552	0,614	Middle
12	Ngipik	0,000	0,611	0,611	Middle
13	Tlogopojok	0,333	0,655	0,579	Middle
14	Kemuteran	0,333	0,321	0,352	Middle
15	Karangturi	0,212	0,351	0,259	Low
16	Kramatinggil	0,000	0,110	0,143	Low
17	Pekelingan	0,300	0,028	0,110	Low
18	Kebungson	0,000	0,182	0,074	Low
19	Sukodono	0,000	0,048	0,048	Low
20	Sidorukun	0,000	0,070	0,040	Low
21	Kroman	0,018	0,005	0,013	Low

Fig. 7: Density

Fig. 8: Comparison Map of Slum Area and Density in Gresik Sub-District

So that the percentage of each density classification can be divided into 5, namely non slum-middle by 5%, Non slum-Low by 38%, slum-high by 5%, Slum-Middle by 19% and slum-low by 33%. Figure 8 is the result of mapping each village based on the condition of the area and the density classification that has been calculated previously.

3.6 Centrality

Social capital is a resource consisting of network access, solidarity relationships, norms, laws, sanctions, and political cooperation and participation[26]. In the research, there are three types of centrality, namely degree centrality, closeness centrality, and betweenness centrality. These three types of centrality were measured to find the dominant village in following the institution. Just like the density, the centrality value is divided into three (low-medium-high).

Table 7. Degree of Gresik Sub-District

No	Urban area/rural	Degree						Classification
		Poverty		Non-Poverty		Totals		
		Value	No. of People	Value	No. of People	Value	No. of People	
1	Pekauman	0,667	1	0,750	1	0,722	1	High
2	Bedilan	0,500	3	0,643	10	0,632	4	Middle
3	Sukorame	1,000	2	0,200	2	0,578	2	Middle
4	Sidokumpul	0,000	5	0,327	19	0,317	20	Low
5	Pulopancikan	0,000	6	0,300	7	0,269	8	Low
6	Trate	0,100	4	0,235	5	0,167	9	Low
7	Karangpoh	0,000	4	0,143	3	0,111	3	Low
8	Gapurosukolilo	0,000	3	0,000	13	0,000	16	Low
9	Tlogobendung	0,000	0	0,000	12	0,000	12	Low
10	Lumpur	0,920	24	0,968	31	0,947	55	High
11	Ngipik	0,000	0	0,875	1	0,875	1	High

| No | Urban area/rural | Degree | | | | | | Classification |
| | | Poverty | | Non-Poverty | | Totals | | |
		Value	No. of People	Value	No. of People	Value	No. of People	
12	Tlogopojok	0,625	2	0,857	13	0,838	1	High
13	Tlogopatut	1,000	3	0,714	11	0,765	14	High
14	Kemuteran	0,667	1	0,571	3	0,643	4	Middle
15	Karangturi	0,468	1	0,619	3	0,565	3	Middle
16	Kramatinggil	0,000	1	0,308	5	0,357	6	Middle
17	Pekelingan	0,500	3	0,125	2	0,308	5	Low
18	Kebungson	0,000	6	0,400	5	0,250	5	Low
19	Sidorukun	0,000	8	0,250	7	0,188	7	Low
20	Sukodono	0,000	0	0,167	2	0,167	2	Low
21	Kroman	0,111	3	0,053	2	0,105	5	Low

Degree centrality analysis is used to measure the number of networks of an actor in relation to other actors in the network to identify the most popular actors in the network[25]. In Gresik Sub-District of non-slum areas, the village with the highest degree value is in Pekauman. The highest degree value in the poverty community is 0,667 as many as one person, and in the non-poverty community is 0,750 as many as one person. This indicates that the person is the most prominent central figure and participates in many institutional activities. A key factor in the success of poverty alleviation development programs is the presence of a central figure who is perceived by the community to possess persuasive communication capabilities. This figure effectively serves as a conduit between the government and the community, facilitating the adoption of these programs by the wider community. By utilizing their excellent communication skills in their interactions with local institutions, the central figure helps to build trust and acceptance of the program in the community.

Meanwhile, the degree value is higher in slum areas than in non-slum areas. The highest value is in Lumpur Village, where the poverty community has a degree value of 0.920, 24 people, and the non-poverty community has

a degree value of 0.968, 31 people. The number of people
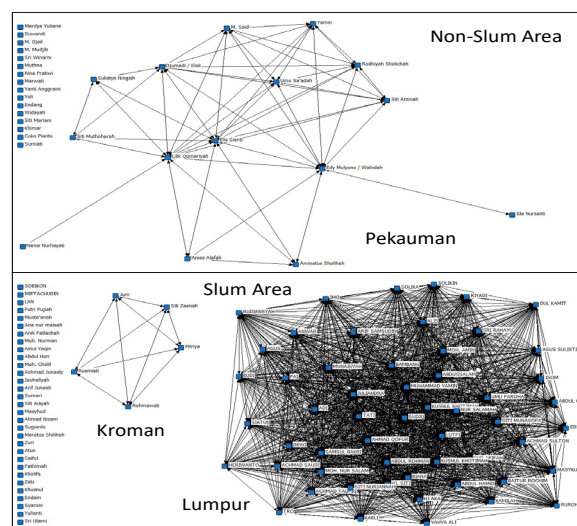
who have a high value makes the absence of a central figure in Lumpur Village, because almost all people participate in institutional activities. So that the village that has a central figure is in Ngipik Village with a degree value of 0,875 as many as one person.

Fig. 9: Comparison Netdraw of Slum Area and Not-Slum Area

Table 8. Closeness of Gresik Sub-District

| No | Urban area/rural | Closeness | | | | | | Classification |
| | | Poverty | | Non-Poverty | | Totals | | |
		Value	No. of People	Value	No. of People	Value	No. of People	
1	Sidokumpul	0,000	5	1,000	19	1,000	20	High
2	Pulopancikan	0,000	0	1,000	7	1,000	8	High
3	Bedilan	1,000	3	1,000	10	1,000	4	High
4	Karangpoh	0,000	0	1,000	3	1,000	3	High
5	Pekauman	1,000	1	0,875	1	0,933	1	High
6	Trate	0,714	4	0,700	5	0,722	9	High
7	Sukorame	1,000	2	0,448	2	0,717	2	High
8	Gapurosukolilo	0,000	3	0,000	13	0,000	16	Low

No	Urban area/rural	Closeness						Classification
		Poverty		Non-Poverty		Totals		
		Value	No. of People	Value	No. of People	Value	No. of People	
9	Tlogobendung	0,000	0	0,000	12	0,000	12	Low
10	Lumpur	1,000	24	1,000	31	1,000	55	High
11	Sidorukun	0,000	0	1,000	7	1,000	7	High
12	Kramatinggil	0,000	1	1,000	5	1,000	6	High
13	Pekelingan	1,000	3	1,000	2	1,000	5	High
14	Kebungson	0,000	0	1,000	5	1,000	5	High
15	Kroman	1,000	3	1,000	2	1,000	5	High
16	Kemuteran	1,000	1	1,000	3	1,000	4	High
17	Sukodono	0,000	0	1,000	2	1,000	2	High
18	Ngipik	0,000	0	1,000	1	1,000	1	High
19	Tlogopojok	1,000	2	1,000	13	1,000	1	High
20	Karangturi	0,700	1	1,000	3	0,857	3	High
21	Tlogopatut	1,000	3	0,813	11	0,842	14	High

Closeness centrality analysis is used to explain the actor that has the closest distance to other actors in the network, which refers to how quickly the main actor spreads information and resources to other actors in the existing network.[25]. In non-slum areas, the highest closeness value is in Sidokumpul village with a value of 1,000 for 19 person in the non-poverty community. This may be because the person has a close relationship with many other people in the village.

Meanwhile, in the slum areas, the highest closeness value is in Lumpur Village with a value of 1,000 for 24 people in the poverty community and 1,000 for 31 people in the non-poverty community. The number of people who have a high proximity score in Lumpur Village indicates that almost all people in Lumpur Village know each other. So the most prominent person who has the highest closeness value and has closeness to others is in Ngipik Village with a value of 1,000 as many as one person in the non-poor community. And it can be interpreted that the majority of them know each other and have almost the same influence to share information and resources with others[25].

Table 9. Betweeness of Gresik Sub-District

No	Urban area/rural	Betweeness						Classification
		Poverty		Non-Poverty		Totals		
		Value	No. of People	Value	No. of People	Value	No. of People	
1	Pekauman	0,250	1	0,339	1	0,155	1	Low
2	Sukorame	0,132	2	0,020	2	0,095	2	Low
3	Bedilan	0,000	5	0,000	15	0,012	4	Low
4	Sidokumpul	0,000	5	0,000	56	0,000	61	Low
5	Trate	0,000	31	0,000	18	0,000	49	Low
6	Pulopancikan	0,000	6	0,000	21	0,000	27	Low
7	Karangpoh	0,000	4	0,000	15	0,000	19	Low
8	Gapurosukolilo	0,000	3	0,000	13	0,000	16	Low
9	Tlogobendung	0,000	0	0,000	12	0,000	12	Low
10	Ngipik	0,000	0	0,214	1	0,214	1	Low
11	Tlogopojok	0,054	2	0,007	13	0,051	1	Low
12	Kemuteran	0,200	1	0,016	3	0,022	4	Low
13	Karangturi	0,019	1	0,016	3	0,018	3	Low
14	Lumpur	0,000	26	0,000	32	0,000	58	Low
15	Kroman	0,000	19	0,000	20	0,000	39	Low
16	Sidorukun	0,000	8	0,000	25	0,000	33	Low

No	Urban area/rural	Betweeness						Classification
		Poverty		Non-Poverty		Totals		
		Value	No. of People	Value	No. of People	Value	No. of People	
17	Tlogopatut	0,000	3	0,000	15	0,000	18	Low
18	Kebungson	0,000	6	0,000	11	0,000	17	Low
19	Kramatinggil	0,000	1	0,000	14	0,000	15	Low
20	Pekelingan	0,000	5	0,000	9	0,000	14	Low
21	Sukodono	0,000	0	0,000	7	0,000	7	Low

Betweenness centrality aims to see the superior actors that can be seen through their position as a link for the flow of information and resources to other actors in the network[25]. When the degree and closeness values in an area are high, the betweenness value is low. This was also the case in Gresik Sub-District. In Lumpur Village, the degree value is 0.947 and the closeness value is 1.000, while the betweenness value is 0.000. This can happen because almost all communities participate in institutional activities and know each other, so there is no intermediary for people to get to know each other with new people.

Overall, the result showed that slum areas have higher social capital than non-slum settlements which has medium RoP (16% slum, 11,1% non-slum), high Density (0,8% slum, 0% non-slum), and high Centrality (33,3% slum, 11,1% non-slum). This happens because almost all of the people in slum area participate in institutional activities and know each other. These groups facilitate easy access to assistance programs offered by the Gresik Regency government. In order to ensure successful implementation of poverty alleviation programs in the targeted location, it would be beneficial for the government to identify influential actors and institutions with strong community relationships. By engaging these key players, the government can increase the likelihood of community acceptance and support for the programs.

Social Capital can be seen as a cooperation between citizens to produce collective action for a common goal[27][34]. Social capital in Gresik Sub-District is seen based on community membership, participation in institutions, number of institutions, and institution data. The results of the analysis state that slum areas have higher social capital values than non-slum areas which has medium RoP (16% slum, 11,1% non-slum), high Density (0,8% slum, 0% non-slum), and high Centrality (33,3% slum, 11,1% non-slum). As in Lumpur Village which has high RoP, Density and Centrality values. This happens because almost all of the people in Lumpur Village participate in institutional activities and know each other. However, the institutions followed by the community in Lumpur Village are not diverse, the majority only follow the PKK at the RT level because information related to institutions is limited. The community residing in Lumpur Village endeavors to enhance its membership relations by conducting regular meetings and engaging in various activities. This practice has proven to be an effective means of optimizing the community's institutional followings. In contrast, Pekauman Village in the non-slum area participates in many types of institutions, although not all communities participate in the same institutions because they have the opportunity to seek more information related to institutions, thus encouraging their communities to participate in different institutions. The pursuit of a diverse range of activities holds the potential to facilitate frequent interactions among members and thereby foster stronger inter-member relationships.

High community social relations indicate that there is no central actor that is superior because community members have a relationship[6][35]. Local people are aware of the importance of social capital, but they do not understand how to increase social capital or what factors increase social capital[28]. Communities that actively participate in institutions can provide opportunities for communities, especially in slum areas, to improve welfare and reduce social problems such as poverty. Social capital facilitates poverty households receiving benefits from their membership in social groups[29].

However, it is better to approach them through community leaders who can be trusted by other members, making it easier to communicate information that is considered important for social welfare and improving the quality of communities in slum area. In some instances, the person holding the position of chairman in an elected institution may be perceived to exert a significant amount of influence over every decision that is made Economic development is one of the important goals of human society[30]. So that the increase in people who are active in institutions can also improve the economy in the community through their relationships among members of the community[31]. Individuals who satisfy the eligibility criteria and participate in all activities will receive official confirmation of the government's provision of assistance. In other words, social capital may play a significant role to enhance community welfare in together with the other developments of capital, especially physical development programs and activities. Aligned with the Sustainable Development Goals, the goal of poverty reduction is being pursued through an array of programs, including those aimed at the protection of marginalized groups as well as the promotion of equal and just development across regions[32][33]. To complement this study, researchers can further identify which social capital indicators have a

major influence in poverty alleviation, especially in improving ease of access to adequate infrastructure in slums.

4. Conclusion

Gresik Regency's economic potential has resulted in a significant increase in population, giving rise to two distinct settlement patterns: slum and non-slum. The home environment in question is said to be shaped by the community's ties and ideals. This helps to create a comfortable and high-quality living area and is considered a sort of social capital. Gresik Sub-District is the capital of Gresik Regency. It is classified as a non-slum area since these nine locations are located in the core of government, commerce and services, and cluster housing.

The findings revealed that slum neighborhoods had more social capital than non-slum communities, which have a medium RoP, high density, and high centrality. This is because practically everyone in the slums participates in institutional activities and knows each other. These groups provide simple access to the support services supplied by the Gresik Regency government.

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