The Role of Stakeholders in the Management of Jurang Jero Nature Tourism Object in Mount Merapi National Park, Central Java, Indonesia

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Abstract

National parks, as an ecosystem protection function, are also encouraged to support local economic development. Meanwhile, community-based tourism (CBT) in the utilization zone is identified as a viable strategy to improve livelihoods for local communities and support the conservation of the national park. This research aimed to identify stakeholders and their roles in the management of the Jurang Jero Nature Tourism Object (JJNTO) in Mount Merapi National Park (MMNP). There were 16 existing stakeholders, including government officials, community members, and the private sector, from the two villages adjacent to JJNTO, who were interviewed using an open-ended interview guide. The data were analyzed using social network analysis (SNA) with the software NodeXL Basic, followed by network visualization with Kumu.io software. The results showed that the strength and closeness of the relationship among all stakeholders were at a moderate level, approaching 57% of network density. Centrality analyses identified the Head of Jurang Jero Tourism Group, the Head of Randu Ijo Forest Farmer Group, and the Head of Srumbung Resort as the three most important stakeholders. Therefore, the role of all stakeholders still needs to be improved to support the management of CBT and MMNP conservation efforts, specifically from the private sector, the environment, and tourism agencies, by improving communication and joint commitments to create cooperation and partnerships.

Keywords: centrality analysis, community-based tourism, community livelihoods, conservation areas, social network

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Introduction

The utilization of forest resources in Indonesia is conducted by various stakeholders according to their interests (Massiri et al., 2020), and the pressure to use the resources increases, causing a negative impact on quality and quantity (Wassie, 2020; Maja & Ayano, 2021). This can be reduced by managing and utilizing forests while maintaining and improving their quality through conservation activities (Christanto, 2014). The existence and establishment of conservation areas are forms of strategy in forest resource conservation activities. This is because it has an important role in preventing and minimizing damage to resources (Leberger et al., 2020). Furthermore, national parks (NP) are part of conservation areas with efforts to protect biodiversity, specifically the remaining native vegetation (Marselle et al., 2019; MacKinnon et al., 2020). Besides having a primary mandate for nature conservation and biodiversity protection, one of the objectives of establishing NP is to contribute to the economies of local communities through tourism (IUCN, 2022).

Mount Merapi National Park (MMNP), located in central Java Island, has a unique ecosystem with natural and human disturbances (Umaya et al., 2020) in the form of volcanic activity from Mount Merapi and settlements in the vicinity. These are factors that cause the destruction of the original ecosystem in MMNP (Akmalia et al., 2020; Sulaksono et al., 2022). The two disturbances created a phenomenon, one of which was the activity of mining eruption material in the form of sand carried out by individuals, including surrounding communities and companies. Sulaksono and Hadiyan (2015) mentioned that there were material mining activities in several spots in the MMNP area, such as in the *blok* Jurang Jero. Mining activities carried out by these individuals are prohibited due to their negative impact on the environmental and socioeconomic aspects of the surrounding community (Kuswijayanti et al., 2007; Varhan & Taufiq, 2019; Nurwati et al., 2020).

The management of JJNTO in Srumbung Resort is carried out by the MMNP Center through Srumbung Resort and the Jurang Jero Tourism Group (JJTG). JJNTO has several attractions for tourists, such as natural scenery in the form of slopes of Mount Merapi, *Pinus merkusii* stands, the existence of sabo dams with historical value, trails for downhill and jeep adventure tourism, outbound and camping

activities, rock climbing boards/walls, and fauna diversity, as seen in Figure 1. To support the potential and attractions of JJNTO, the development of facilities and infrastructure was carried out. Furthermore, facilities and infrastructure in a natural tourist attraction do not have to be luxurious but should be clean and tidy as the main and supporting elements of tourist attractions (Rizal, 2021). The existence of tourist facilities and infrastructure is expected to be one of the indicators of increasing satisfaction and providing experiences (Kanwal et al., 2020). Furthermore, the existence of satisfaction and a good impression can increase the potential of tourists for repeat visits (López-sanz et al., 2021). Facilities and infrastructure in JJNTO include information and administration offices, prayer rooms, parking lots, pavilions, gazebos, food stalls, and bathrooms, as seen in Figure 1.

An alternative solution from the local government is to involve local communities in the management of nature tourism objects (NTO) using the community-based tourism (CBT) concept. CBT is a development concept where local communities are empowered and participate in NTO management activities (Yanes et al., 2019). This alternative is hoped to provide other livelihoods for the surrounding community to increase income while empowering the residents. Support and participation from the local community are very important in efforts to protect and conserve forest resources (Edwin et al., 2017; Hanum et al., 2018).

Heslinga et al. (2019) reported that the management of an NTO needs the role, cooperation, and participation of all stakeholders, including local communities, the government, and the private sector. This participatory management is to realize sustainability in social, economic, and environmental aspects (Roxas et al., 2020). Roles, cooperation, and participation can be realized through the process of interaction and communication between stakeholders. Furthermore, an overview of the identification of stakeholders and interaction patterns between stakeholders in a network of JJNTO management in Srumbung Resort, MMNP, can be achieved through social network analysis.

Social network analysis (SNA) is used to identify stakeholder interactions and networks (Pollack & Matous, 2019). SNA emphasizes functional entities and their possible connections (Stanton et al., 2012). Evaluation of interaction and communication in a network is carried out by measuring network density, degree centrality, closeness centrality, and betweenness centrality (Rahmani et al., 2022; Drasospolino et al., 2023). The application of the SNA method in the context of tourism, specifically the management of CBT, is not widely performed and is relatively new (Casanueva et al., 2016). This is a good opportunity to conduct SNA research in the context of CBT management. Therefore, this research aimed to identify stakeholders and their roles in the management of the JJNTO in MMNP.

Methods

The approach used in this research is a mixed qualitative-quantitative method. Quantitative analysis maps and measures networks by simplifying social relationships into numerical data. Meanwhile, qualitative analysis emphasizes

Figure 1 Attractions and facilities at the JJNTO include *Pinus merkusii* stands (a), campgrounds (b), mosques/prayer rooms (c), and gazebos (d).

the explanation and exploration of social relationships in a network (Edwards, 2010). Data collection was conducted from July to August 2022 in three ways: observation, in-depth interviews, and literature studies. The interview guide was utilized to conduct the interviews, but additional follow-up questions were also utilized to obtain responses to confusing or incomplete replies. The interview guide includes a set of questions divided into three main sections: self-identity, general perspectives, and specialized perspectives. The general perspective is to determine whether the informants have sufficient expertise on the study issue. Meanwhile, the specific perspective is to learn what roles have been played and who the stakeholders have connections to. The data entered in the software NodeXL only includes stakeholders and their relationships. The research tools and materials needed were maps of JJNTO, village demographic data, interview guides, and voice recorders. Field data were collected from Ngargosoko and Tegal Randu Villages, Srumbung District, Magelang Regency, Central Java (Figure 2). JJNTO is included in the utilization zone of Srumbung Resort, MMNP. This research location was selected as one of the natural attractions that have received a cleanliness, health, safety, and environment sustainability (CHSE) certificate. Second, it is one of the natural attractions in the NP area, built with the concept of CBT through business licenses. In developing NTO, JJNTO faces the problem of arranging stakeholder roles and stakeholder interactions.

The selection of informants uses several criteria to focus on certain characteristics of a selected scope to answer research questions (Rai et al., 2015). The criteria used include subjects intensively involved in the management of NTO, subjects still fully involved and active in the management of NTO, and subjects who have enough time and opportunity and can explain a question asked or provide information to answer research objectives. In addition, the 16 stakeholders interviewed consisted of 6 government officials, 1 private sector member, and 9 community members, as seen in Table 1.

SNA studied the connectivity between different actors in a social process (Borg et al., 2015), and from a fundamental perspective, individuals gain access to information, social support, and other resources through ties (Agneessens et al., 2017). This method can provide an overview or visualization down to the smallest relationships between individuals on the network (Bohn et al., 2011), as shown in Figure 3. The data required by SNA is the relationship of a stakeholder with other stakeholders. SNA describes these stakeholder relationships in the form of a numerical matrix. This matrix includes the information exchange or relationship between stakeholders, with '1' used to indicate there is an information exchange and '0' when there is no information exchange (Purnomo et al., 2017). SNA has several network components to map relationships in a network, including nodes, edges, average degree, diameter, and average path length. Nodes represent the position of actors in a network (Supriyadi, 2020), while edges reflect the relationship between actors (Alamsyah & Peranginangin, 2013). The average degree is the value of the relationship between all actors in a network (Lovrić et al., 2020), while the diameter is the farthest distance between two adjacent nodes (Sosa et al.,
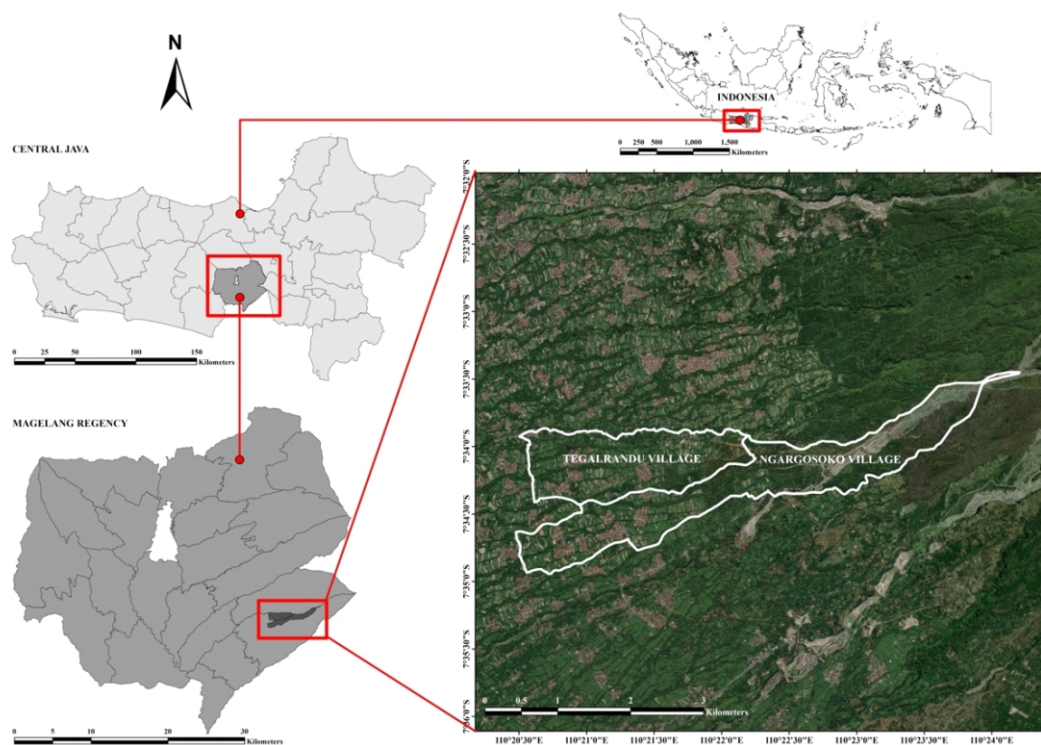

Figure 2 Map of research study on Ngargosoko and Tegal Randu Village, Magelang Regency, Central Java.

Table 1   Description of nodes and stakeholders in the network of the JJNTO management in Srumbung Resort, MMNP

| Node	Stakeholders
	Government officials
1	The Forest Ecosystem Controller (PEH) of MMNP Center
2	The Head of National Park Management Section (SPTN) Region I
3	The Head of Srumbung Resort
4	The Head of Tourism, Youth and Sports Agency of Magelang Regency
5	The Head of Environment Agency of Magelang Regency
6	The Head of the Community Welfare Section of Srumbung District
	Community members
7	The Head of Ngargosoko Village
8	The Head of Tegal Randu Village
9	The Head of Jurang Jero Tourism Group
10	The Head of Pesona Magelang
11	The Head of Jurang Jero Asri Forest Farmer Group
12	The Head of Randu Ijo Forest Farmer Group
13	The Director of *BUMDes* Ngargosoko
14	The Head of the Village Consultative Council (BPD) of Ngargosoko Village
15	The Head of Village Consultative Council (BPD) of Tegal Randu Village
	Private sector
16	ASTINDO
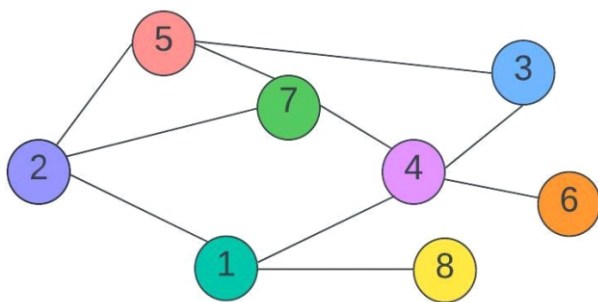
Figure 3   Social network with 8 actors and 10 relationships.

2021). The average path length is the average path taken to connect two nodes (Webber & vander Wal, 2019).

SNA uses NodeXL, which serves as an open source, is able to download data, and can describe the type of data needed (Fernandez et al., 2015). It measures centrality to determine the most instrumental actors in a social network (Mincer & Niewiadomska-Szynkiewicz, 2012). Evaluation of interaction and communication in a network can be conducted by measuring network density, degree centrality, closeness centrality, and betweenness centrality (Rahmani et al., 2022; Drasospolino et al., 2023). Network density refers to the overall level of relationships between stakeholders in a network. This metric illustrates how close the connections between network stakeholders are (Zhang et al., 2021). The relationship between stakeholders in a network is related when the value is closer to 1. The network density formula for a directed graph is shown in Equation *[1]* (Scott, 2017).

$$D = \frac{\sum 1}{n(n-1)} \qquad [1]$$

note: D = network density, $\sum 1$ = total number of edges, n = total number of nodes

The degree centrality value is indicated by the number of edges connected in one node, meaning stakeholders with many connections may have a great influence on a network (Huang et al., 2019). The higher the degree of centrality value, the more popular or influential the stakeholder in the network (Ekasari et al., 2020). The following Equation *[2]* calculates the degree of centrality of a stakeholder (Freeman, 1977).

$$C_D(n) = \sum \frac{di}{N-1} \qquad [2]$$

note: C_D = degree centrality of nodes, di = number of relationships of nodes, N = total nodes in a network, n = nodes.

Closeness centrality is the number of relationships required by one stakeholder to reach targeted stakeholders in a network. It also indicates the extent to which a stakeholder is not controlled by other parties (Zhu et al., 2022). The following Equation *[3]* is used to calculate the closeness centrality of a stakeholder (Freeman, 1977).

$$C_c(n) = \frac{N-1}{\sum_{t \neq \epsilon} d_{f(v,t)}} \qquad [3]$$

note: d_f = the shortest distance between two nodes (from v to t), N = number of relationships of nodes, n = nodes.

A stakeholder has the highest betweenness centrality value as a dependent distance from others in a network. This variable is used to identify stakeholders who are information brokers (Mbaru & Barnes, 2017), and can be expressed in the following Equation *[4]* (Freeman, 1977).

$$C_B(n) = \frac{\sum \sigma_{st}(n)}{\sum_{s \neq n \neq t} \sigma_{st}} \qquad [4]$$

note: σ_{st} = total number of shortest links, $\sigma_{st}(n)$ = number of shortest links including n, n = nodes.

Results and Discussion

The data analysis uses a directed graph from the NodeXL software, which is represented in the form of Figure 4. The directed graph is shown by adding arrows to each line/relationship. A directed graph has the unique feature that the path from one vertex to another can only follow the direction of the edges (de Andrade & Rêgo, 2018). The arrow shows the direction of the relationship between stakeholders in the network graph. The overall results of the role mapping metrics in the management of JJNTO in Srumbung Resort, MMNP using social network analysis are shown in Table 2. There are 16 nodes, indicating that this analysis has 16 stakeholders with 137 edges or relationships. The stakeholders include government officials, community members, and private elements. In addition, the maximum geodesic distance or diameter is 3. This shows that 3 stakeholders are at the furthest distance from the target. The average geodesic distance is 1.2422, indicating that there is only a distance of one to two stakeholders to reach the target.

Network density Network density is the overall level of real relationships between stakeholders in a network (Li et al., 2022). This measure illustrates the close relationship between stakeholders in a network (Zhang et al., 2021). The network density value is directly proportional to the cohesiveness, and the circulation of information in the network can also have a greater impact on decision-making and behavior (Zhu et al., 2022). The network density value shows more than 50%, which is 0.5708 or 57.08%, implying that the connection between 16 stakeholders is quite strong. However, the network needs a more intense social or individual approach from the stakeholders, specifically the private sector. In this network, the private sector is only represented by Astindo, and as seen in Figure 4, Node 16 is the most distant interacting with node 9 (The Head of JJTG), node 11 (The Head of Jurang Jero Asri Forest Farmer Group), and node 12 (The Head of Randu Ijo Forest Farmer Group). This is because Astindo's interests are only related to cooperative efforts to bring tourists to JJNTO.

Degree centrality Degree centrality shows that individuals with more connections or relationships in a network have a

greater influence. A node's degree of centrality is a number that indicates the number of nodes that are directly connected to this node (Das et al., 2018). Table 3 shows that the highest degree centrality value of 14 is owned by node 3 (The Head of Srumbung Resort), node 9 (The Head of JJTG), and node 12 (The Head of Randu Ijo Forest Farmer Group). Node 3 is from the government, while nodes 9 and 12 are from the community with a positive influence of interacting with others. This situation should be an advantage for the management authority in assuming joint responsibility for managing JJNTO in a conservation area where government and community elements have equal influence scores. According to Zeb et al. (2019), there are benefits from improved communication and joint natural resource management between the government and the community. Communication between stakeholders can be improved by organizing formal and informal meetings. Communication can also be improved by moving the meeting from the meeting room to the field (Fieldsend et al., 2020). Innovation, trust, and knowledge are built through participation and communication among stakeholders. Through knowledge building, information sharing, and active engagement, trust helps strengthen relationships within and across communities (Banerjee et al., 2019). Furthermore, joint management of NTOs between the government, communities, and the private sector can be realized.

Nodes 3, 9, and 12, as seen in Figure 5a, have the largest circle size and the same color, with the strongest communication and the most network control. In Figure 5, the same color and size of the circles indicate that these stakeholders have the same centrality value. A role is a characteristic pattern of behavior that an individual has in a specific job or position (Rumbewas et al., 2018). JJNTO was built with the concept of CBT, which is tourism development to create and maximize opportunities and benefits for local communities (Curcija et al., 2019). In line with this concept, the degree centrality analysis places nodes 9 and 12 as stakeholders from community elements with the highest value. Therefore, the community actively participates as the main actor in the management of JJNTO.

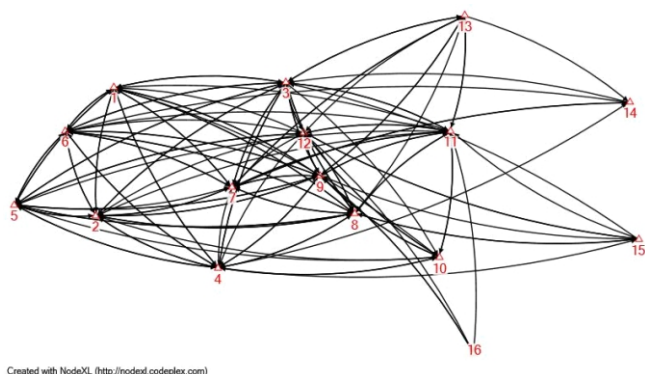Node 9, as a business license holder, certainly has a very

Figure 4 Sociogram mapping of 16 stakeholders in the management of JJNTO in Srumbung Resort, MMNP using NodeXL Software.

Table 2 The results of the calculation of metrics in the network of the JJNTO management in Srumbung Resort, MMNP

Graph metric	Value
Graph type	Directed
Vertices	16
Unique edges	137
Edges with duplicates	0
Total edges	137
Connected components	1
Maximum vertices in a connected component	16
Maximum edges in a connected component	137
Maximum geodesic distance (Diameter)	3
Average geodesic distance	1.2422
Graph density	0.5708

Table 3   Results of centrality analysis in the network of the JJNTO management in Srumbung Resort, MMNP

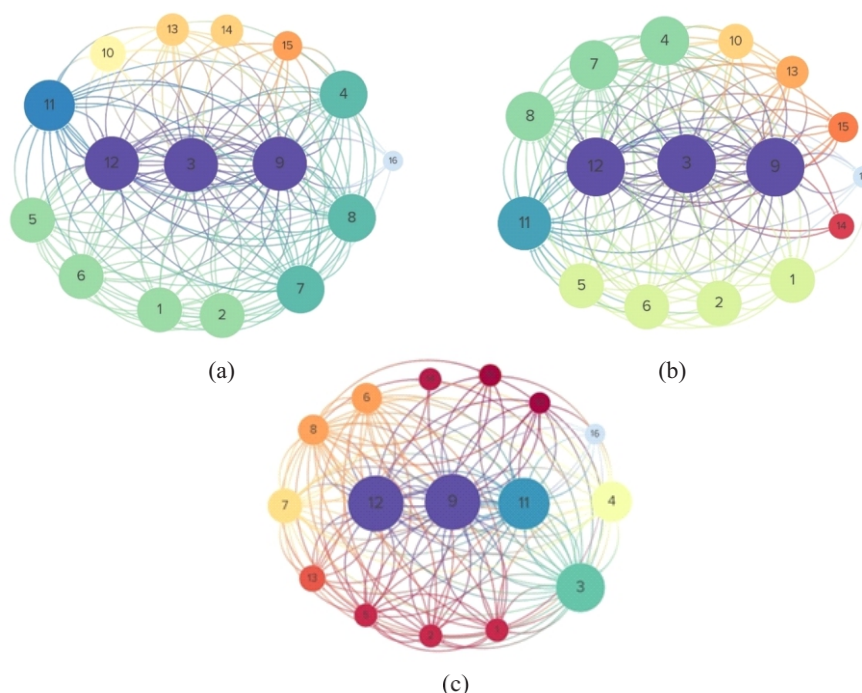| No	Stakeholders	Degree centrality	Closeness centrality	Betweenness centrality
1	The Forest Ecosystem Controller (PEH) of MMNP Center	11	0.0526	0.932
2	The Head of National Park Management Section (SPTN) Region I	11	0.0526	0.932
3	The Head of Srumbung Resort	14	0.0625	11.146
4	The Head of Tourism, Youth and Sports Agency of Magelang Regency	12	0.0556	7.802
5	The Head of Environment Agency of Magelang Regency	11	0.0526	0.932
6	The Head of the Community Welfare Section of Srumbung District	11	0.0526	3.810
7	The Head of Ngargosoko Village	12	0.0556	5.429
8	The Head of Tegal Randu Village	12	0.0556	3.868
9	The Head of Jurang Jero Tourism Group	14	0.0625	13.898
10	The Head of Pesona Magelang	8	0.0455	0.182
11	The Head of Jurang Jero Asri Forest Farmer Group	13	0.0588	12.240
12	The Head of Randu Ijo Forest Farmer Group	14	0.0625	13.898
13	The Director of *BUMDes* Ngargosoko	7	0.0435	2.129
14	The Head of the Village Consultative Council (BPD) of Ngargosoko Village	7	0.0385	0.619
15	The Head of Village Consultative Council (BPD) of Tegal Randu Village	6	0.0417	0.182
16	ASTINDO	3	0.0357	0.000

(a)

(b)

(c)

Figure 5 Sociogram of degree centrality (a), closeness centrality (b), and betweenness centrality (c) of 16 stakeholders in the management of JJNTO in Srumbung Resort, MMNP using Kumu.io Software.

important role in the management of JJNTO in Srumbung Resort, MMNP. These stakeholders directly participate actively from planning activities to monitoring and evaluation activities. Their roles include creating annual activity plans and reports, direct monitoring in the field, and night patrols. Furthermore, Node 12 has a role in supporting environmental sustainability in the JJNTO area by conducting reforestation, protection, and security activities during the cooperation agreement. Node 3 has several roles in its working area, including the protection and security of the area, controlling the impact of damage to biological natural resources, developing and utilizing environmental services, and empowering the community. These roles are carried out as a form of assistance to the JJTG in monitoring

and evaluating the management of the JJNTO.

The stakeholder with the lowest degree centrality value of 3 is the private sector or Astindo. This stakeholder has very little interaction with others in the network. Even though JJNTO was built under the CBT concept, that emphasizes community involvement as the main actor, the role of the private sector is needed to encourage the successful management of JJNTO. The private sector can contribute to the management of CBT by investing in infrastructure and human resource development, such as direct coaching that can be done through discussion lectures, education and training, workshops, competitions, and others (Arintoko et al., 2020; Sayuti, 2023). This is consistent with the principle of good tourism governance, in which there is coordination and synchronization between existing stakeholders and the involvement of synergistic active participation between government officials, the private sector, and community members (Sunaryo, 2013; Roxas et al., 2020; Eyisi et al., 2021).

Closeness centrality Stakeholders are said to be related when they are very close to one another within a network. This refers to the shortest relationship, which can be measured by the closeness centrality value. A node's closeness centrality is the average of the shortest paths from the node to all other nodes in the network (Purnomo et al., 2021). The results are similar to the degree centrality analysis, namely nodes 3 (The Head of Srumbung Resort), 9 (The Head of JJTG), and 12 (The Head of Randu Ijo Forest Farmer Group) with the highest closeness centrality value of 0.0625. These three nodes are trusted by other stakeholders and have a strong obligation to manage and develop JJNTO. Closeness centrality can increase network development through trust as a fundamental element in the idea of social capital. Giurca & Metz (2018) mentioned that trust, dependence, mutual respect for authority, and shared norms should be part of the formation and development of a network.

Resort is a non-structural position that has duties and responsibilities in conducting protection and security as well as spearheading overcoming various forms of disturbance to conservation areas. The location of the Srumbung Resort office with the JJNTO area, which is quite close, makes it easier for the agency to implement its duties and functions to the community from the district to the village level. Therefore, these stakeholders are considered close to the community elements. This is in line with the results of the closeness centrality analysis and is certainly an advantage for the agency to implement a policy. Nodes 9 and 12 are the community elements that are closest to other stakeholders. They actively interact with government and private elements related to policies and tourist visits. Meanwhile, nodes 14 and 16 have the two lowest closeness centrality values. These two stakeholders have the smallest circle size and the same color of two when viewed in Figure 5b.

Betweenness centrality Betweenness centrality can be used to identify stakeholders who play a connecting role in a network. A stakeholder obtains access to resources from both groups by linking various populations (Saqr & López-Pernas, 2022). The stakeholder has a high betweenness centrality value as the only communication path. Furthermore, the stakeholder who has the highest betweenness centrality value acts as the best link between others in the network (Negara et al., 2021). Based on Table 3, nodes 9 (The Head of JJTG) and 12 (The Head of Randu Ijo Forest Farmer Group) as elements of the community are ranked as the two highest betweenness centrality values. The two stakeholders have the same circle size and color when viewed in Figure 5c.

The head of JJTG plays an important role in connecting all stakeholders in the social network. This role is also assisted directly by The Head of Randu Ijo Forest Farmer Group to convey to group members and the community, related to policies decided by the MMNP Center. The two nodes are trusted by the community and the government as the management authority of the JJNTO in Srumbung Resort, MMNP. The relative balance of power between nodes is very important to ensure good governance (Purnomo et al., 2017). Furthermore, the role of nodes 9 and 12 as mediators reflects that participatory conservation is well-established at the community level. These two stakeholders have a direct relationship with the government and are also concerned with any decisions relevant to the issue. Aldashev and Vallino (2019) mentioned that participatory conservation is a strong idea to be built into national and international development initiatives on balancing economic growth with nature conservation.

The third rank is occupied by node 11, which serves as the head of the Jurang Jero Asri Forest Farmer Group. Node 11 is a vital member of the community, and its role is comparable to node 12, which involves connecting the members of the Ngargosoko Village community, specifically those in the Jurang Jero Asri Forest Farmer Group, with the various entities of the government. Furthermore, node 3 (The Head of Srumbung Resort) as an element of the government ranked fourth. The node becomes an intermediary between the community and the structural agencies (The National Park Management Section/SPTN Region I and the MMNP Center). For example, when the Jurang Jero Asri Forest Farmer Group submits a proposal for the development of facilities and infrastructure in the Ngargosoko Tourism Object (JJNTO), the process is facilitated through the Srumbung Resort. Conversely, when there is a new policy from the central government (Ministry of Environment and Forestry) concerning conservation areas, node 3 conducts socialization and approaches the community. Meanwhile, node 16 (Astindo) has a betweenness centrality value of 0, indicating that the stakeholder hardly functions as an intermediary and is often scattered at the edge of the network. The Jurang Jero's Tourism Group's cooperation with private partners is very minimal, which is limited to bringing in tourists. This is due to the fact that JJNTO is located within a conservation area, which necessitates some adjustments. For example, attention should be paid to the requirements in MoEF Regulation No. P.13/Menlhk/Setjen/Kum.1/5/2020 when there are private partners who want to cooperate by building facilities and infrastructure in JJNTO, MoTCE Regulation Number 9/2021 on sustainable tourism destination

guidelines, and MoEF Regulation P.85/Menhut-II/2014 concerning the procedures for cooperation in organizing natural sanctuaries and natural conservation areas.

Based on the results of the social network evaluation of the three centralities, it show that the interaction and role of stakeholders from related agencies and the private sector are still less influential in the development of JJNTO. The interaction and role of both elements of stakeholders are still needed, even though JJNTO is built under the CBT concept. This is supported by the findings of previous studies: (Arintoko et al., 2020) mentioned that community participation and cooperation with private stakeholder elements determine the success of tourism development with the CBT concept; (Manaf et al., 2018) noted that local communities cannot work alone but other stakeholders such as the government, private sector, NGOs, and academics are needed in the development of CBT; and (Gantina et al., 2019) mentioned that the development of ecotourism in conservation areas must be operated through an integrative and systemic approach by all stakeholders, namely paying attention to macro- to micro-oriented planning as a manifestation of harmonization of all aspects in a unified system.

The interaction and role of all stakeholders in the development of JJNTO need to be improved through face-to-face dialog. The current face-to-face dialog is still fragmented and conducted incidentally when there are problems. It would be better if all stakeholders could regularly gather together to discuss current issues, the course of the collaboration process between stakeholders, and corrective actions that would be implemented if things did not go according to plan. Mutual respect, understanding, trust, and commitment among stakeholders in the collaboration process will arise through the face-to-face dialog process (Ansell & Gash, 2008). The commitment of stakeholders is related to and has a positive impact on tourism development, such as increasing the number of tourist visits, empowering local communities, and helping to secure the boundaries of tourist areas (Roxas et al., 2020; Zaenuri et al., 2021; Wiratno et al., 2022). The joint commitment built by all elements of stakeholders is intended to create cooperation and partnerships. Furthermore, it is hoped that the purpose of establishing JJNTO can be realized, namely to improve the welfare of the community and preserve the environment. Patterns or mechanisms of institutional cooperation need to be designed so that stakeholders can more easily organize and integrate themselves into a strong partnership (Widaningrum & Damanik, 2018). In the end, collaboration from all elements of stakeholders in the development of JJNTO can be responded to positively and constructively.

Conclusion

The JJNTO management network in Srumbung Resort and MMNP consists of 16 stakeholders, which include government officials, community members, and the private sector. The role and interaction of all stakeholders must be improved to support CBT management and MMNP conservation efforts, especially from the private sector, environment, and tourism agencies, by improving communication and joint commitment to create cooperation and partnerships. The Head of the Jurang Jero Tourism Group

and the Head of the Randu Ijo Forest Farmer Group have an important influence on the network, as evidenced by their high scores on the three centrality values, namely closeness, betweenness, and degree. Meanwhile, the Head of Srumbung Resort has an important influence on the network, which is reflected in the high central values of closeness and degree, as analyzed. The three stakeholders consist of government and community elements; this situation should be an advantage for the management authority in assuming joint responsibility for managing JJNTO with the CBT concept in the conservation area. The MMNP center, as an element of the government that has the authority to make policies and facilitators in the conservation area, needs to encourage the involvement of all stakeholders and provide the main interests for the community and the private sector through each of its sustainable policies. The head of the Jurang Jero Tourism Group as a business license holder and main operator needs to encourage regular face-to-face meetings to increase trust between stakeholders so that they become solid, especially attracting private parties to the management of JJNTO.

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