Mysore J. Agric. Sci., 58 (4) : 288-295 (2024)

Opinion Leadership in Agricultural Communities : A Comparative Analysis of Identification Methods

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Received : July 2024
Accepted : July 2024

Abstract

Accurately identifying opinion leaders within agricultural communities is crucial for effective dissemination of agricultural innovations and improved farming practices. This study compares various identification methods, sociometric survey, key informant's method, self-designation and observation to highlight their respective advantages and limitations. The sociometric survey, while time-intensive, emerged as the most reliable method, identifying opinion leaders based on community nominations and social network metrics. The key informant's method, although practical, showed a 66 per cent overlap with sociometric results, indicating potential biases from informants. Self-designation revealed a subset of quasi-leaders who view themselves as influential but are not recognized by their peers, while the observation method proved less feasible due to time constraints and investigator familiarity with the community. The study also examined the socio-personal characteristics of identified opinion leaders, finding them to be older, better educated and wealthier in terms of landholding compared to the general farmer population. The application of Social Network Analysis (SNA) provided deeper insights into information dissemination patterns, revealing that opinion leaders rely more on formal sources like extension agents and universities and digital platforms such as smartphones and WhatsApp, whereas general farmers depend primarily on fellow farmers and input dealers.

Keywords : Opinion leaders, Sociometric survey, Social network analysis (SNA), Communication strategies

Opinion leadership, according to Rogers (2003), is 'the degree to which an individual is able informally to influence other individuals' views or overt conduct in a desired way with relative frequency.' According to this description, the opinion leadership technique for purposeful dissemination may be defined as a communicative method that employs significant others who can influence or assist others in making decisions to accept new technologies (Thakur *et al*., 2016). In the modern day scenario, several opinion leaders have become influential members of online communities and are recognized as key sources of advice for other consumers. In other words, they act as the bridge that connects the change agents and farmers within an agricultural community. It is quite often found that while making the decision to adopt a particular innovation, followers are more likely to follow the opinion of these leaders rather than traditional methods (Hinz *et al*., 2014, Narayan *et al*., 2011 and Risselada *et al*., 2014). To identify opinion leaders in society, one can utilise traditional features of opinion leaders that have been described by various research and discover persons that fit into the categories (Bhandari *et al.,* 2003).

The sociometric technique stands out as a widely employed method for identifying opinion leaders, it offers a systematic approach to gather data on

community leaders. Originating from the pioneering work of Hiss *et al*. (1978), sociometric analysis involves interviews, observations and diary entries to ascertain an individuals' perceptions of leadership within a community. Studies of Sen (1969) in Indian villages and Van (1964) in Dutch farming communities exemplify the application of sociometric methods in identifying opinion leaders based on features like advice-seeking behavior and regular contact. In contrast, the informant's rating method, as illustrated by Mancuso (1969) and Kelly (1991), relies on key informants to identify influential figures within specific social groups. Kelly's approach, particularly in targeting opinion leaders among rural LGBT populations, emphasizes the importance of selecting informants strategically to ensure the accuracy of data collection. Additionally, snowball sampling emerges as a valuable tool, especially in identifying 'hidden groups' like homeless individuals or drug users, as highlighted by Faugier and Sargeant (1997) and Morrison (1988). This method, recognized for its effectiveness in non-random data collection, has been instrumental in studies addressing sensitive or marginalized population.

The observation method, though less common in opinion leadership research, provides valuable insights into leadership dynamics within specific contexts. Studies like that of Macrk *et al.* (2000) in Italian corporations and Tsmitri *et al.* (2015) in rural Greek communities utilize participant observations and self-designation approaches to identify opinion leaders and categorize them into distinct groups. While Rogers (2003) notes the observation technique's limited use, its employment in studies like these underscores its relevance in understanding opinion leadership dynamics. Overall, the different methodological approaches highlight the complexity of identifying opinion leaders and illustrates the importance of employing different strategies to capture the social dynamics within communities.

Social Network Analysis (SNA) is a methodological approach that examines the relationships and structures within a network, focusing on how information flows among different actors. In agricultural research, SNA is particularly valuable for understanding how farmers and opinion leaders access and disseminate information (Thuo, 2012). By mapping and analyzing the connections between various information sources, researchers can identify key influencers and the most effective channels for communication. This approach allows the understanding of the social dynamics and informational sources within farming communities in an era where social media has become one of the most popular source of information sharing (Dishant, 2023). The effectiveness of various attempts by government agencies and universities should also be taken into account like 'Village Adoption Program (VAP) which aims at agricultural production and encouraging farmers to practice more scientific farming (Shivashankar, 2023). In the context of this study, SNA helps to highlight the differences between farmers and opinion leaders regarding their information sources. It reveals the extent to which opinion leaders, considered more cosmopolitan, rely on formal and digital sources compared to the general farming population. By identifying central nodes, such as extension agents and digital tools, SNA can inform strategies to enhance the dissemination of agricultural knowledge and innovations, ultimately supporting more effective agricultural practices and decision-making.

METHODOLOGY

This study focuses on identifying the opinion leaders within different communities employing different strategies such as sociometric, self-designation, observation method and key informants rating method. The opinion leaders identified through the different methods have been compared to understand the accuracy of each method and ascertain which method is the most suitable in identifying the leaders in varying scenarios. Social network analysis has been used to identify the differences between the farmers and opinion leaders taking into account degree centrality, betweenness centrality and closeness centrality. The study was conducted in Ludhiana district of Punjab, where three villages were randomly selected as the study locale. All the respondents in

the villages were selected as respondents making a total sample size of 214 farmers.

Results and Discussion

Results of Different Methods of Identification of Opinion Leaders

In the baseline survey we identified the opinion leaders based on different methods such as sociometric survey, key-informant method, observational method and self-designation. Furthermore, we compared the results obtained through each method and identified the pros and cons of each method.

Sociometric Survey

During the sociometric survey, each farmer was given three choices to identify the person they consider as the opinion leaders. After sociometric survey, the results were dichotomised and a social network analysis was done in order to identify the closeness, betweenness and eigenvector centrality of each farmer based on the opinions received. From this data, a total of five opinion leaders were selected from each village totaling to 15 leaders. Later on, the physical accessibility, ease of contact and level of relationship of these farmers with the selected opinion leaders were studied. From sociometric survey it was shown that respondents 24, 25, 6, 55 and 42 had the most number of nominations from the Village 1. Similarly, respondents 6, 2, 17, 12 and 37 from village 2 and 12, 11, 9, 7 and 17 from village 3 had the most number of nominations. Although the time taken for sociometric survey was more, the results yielded were mostly accurate.

Key Informants Method

While sociometric method has given somewhat satisfying results, it is evident to note that every time the investigator may not have the necessary resources and time to through the laborious process of a sociometric survey. Here, key informant method comes into play. The ADO (Agriculture Development Officer), Village head and other members of the gram panchayat were taken as the key informants for this method.

Out of the 15 farmers who were selected through sociometric method, we got 10 respondents as the same through key informant method also. This leaves us with a 66 per cent similarity in terms of results. The key informant method is heavily dependent upon the nature of the informant and depends upon the bias of the informant. It was a common pattern to notice the informants recommending farmers close to them as opinion leaders thinking of potential benefits they would gain.

Self-designation of Farmers

The Table 2 shows the percentage of farmers who consider themselves as the opinion leader. This type of self-designation reflects the confidence of the farmer in terms of their superiority and influence over other farmers.

Here 21 (9.81%) farmers designated themselves as opinion leaders while only 15 leaders were selected on the basis of nominations received. While it may be worthwhile to note that all the opinion leaders who were selected on the basis of sociometric survey did not consider themselves as leaders while there were farmers who had considered themselves as an

Table 1

Selected opinion leaders according to sociometric and key informants method

Method used	Village 1	Village 2	Village 3
Nominated Respondents (Sociometric)	24,25,6,55 and 42	6,2,17,12 and 37	12,11,9,7 and 17
Nominated Respondents (Key Informants method)	4,25,6,32 and 42	6,2,11,12 and 15	12,60,9,7 and 17
Percentage of similarity	60 per cent	60 per cent	80 per cent

TABLE 2

Frequency of opinion leaders expressed as a percentage of all those who regard themselves as opinion leaders (Self-designation)

Village 1 (n1=69)	Village 2 (n2=74)	Village 3 (n3=71)	Total (N=214)
9 (12.16)	7 (7.44)	5 (7.04)	21 (9.81)

opinion leader were not selected on sociometric survey. The latter were called as quasi leaders of the village.

Observation Method

The observation method was found to be inappropriate to find the opinion leaders in this particular study. As the time frame of the study was limited and the investigator was not native to the locality, it was physically not practical to identify the opinion leaders in the limited time span.

Characteristics of Opinion Leaders

The comparison between farmers and opinion leaders based on their socio-personal characteristics reveals distinct differences in gender, age, marital status, education and landholding. Both groups are predominantly male, with 97.97 per cent of farmers and 100 per cent of opinion leaders being men. Age distribution varies significantly; while farmers are relatively evenly spread across the age brackets, opinion leaders are generally older, with 86.66 per cent being between 39-67 years. Marital status shows a similar pattern, with a high percentage of both groups being married, though slightly higher among opinion leaders (86.66%) compared to farmers (82.41%). Educational attainment highlights a

TABLE 3

Distribution of respondents (farmers) and opinion leaders according to their socio-personal characteristics

Parameters	Categories	FarmersTotal (n=199)		Opinion Leaders Total (n=15)	
		f	(%)	f	(%)
Gender	Male	191	(97.97)	15	(100)
	Female	8	(2.03)	-	-
Age	(25-38)	77	(36.36)	2	(13.33)
	(39-52)	64	(32.66)	6	(40)
	(53-67)	58	(29.64)	7	(46.66)
Marital status	Single	35	(17.59)	2	(13.33)
	Married	164	(82.41)	13	(86.66)
Education	Primary education	19	(9.54)	-	-
	Secondary Education	18	(9.45)	-	-
	Matric Education	84	(42.21)	3	(20)
	PUC	52	(26.13)	9	(60)
	Graduation	26	(13.06)	3	(20)
Land Holding	Marginal (<1 ha)	26	(13.06)	-	-
	Small (1-2 ha)	75	(37.68)	-	-
	Semi-medium (2-4 ha)	55	(27.63)	1	(6.66)
	Medium (4-10 ha)	22	(11.05)	4	(26.66)
	Large (>10 ha)	21	(10.55)	10	(66.66)

marked disparity: opinion leaders are better educated, with 60 per cent having completed PUC and 20 per cent holding graduation degrees, whereas the majority of farmers have only matriculated or possess lower educational qualifications. Regarding landholding, opinion leaders are predominantly large landowners, with 66.66 per cent owning more than 10 hectares, contrasting with farmers who mostly have small to semi-medium holdings, with only 10.55 per cent having large landholdings. These differences suggest that opinion leaders are typically older, more educated and wealthier in terms of land ownership compared to the general farming population.

Understanding Sources of Information of Opinion Leaders and Farmers

Another important point of consideration is the source of information between these 2 respondents. The opinion leaders are considered to be more cosmopolite than other farmers within the community. We performed a social network analysis with 2 node network to identify the major source of information for them.

Table 4 presents the centrality measures of various information sources in the information network of farmers. Degree centrality, which indicates the number of direct connections a node has, is highest for fellow farmers (0.854) and input dealers (0.844), suggesting that these sources are the most directly connected within the network. Smartphone usage also shows high degree centrality (0.759), indicating its widespread direct use among farmers. Closeness centrality, measuring how quickly information can spread from a node to all other nodes in the network, is again highest for fellow farmers (0.789) and input dealers (0.778), emphasizing their roles in efficiently disseminating information. Betweenness centrality, which reflects the extent to which a node lies on the shortest path between other nodes, is notably high for fellow farmers (0.236) and input dealers (0.230),

TABLE 4

2-Mode Centrality Measures for information network of farmers

Source	Degree Centrality	Closeness Centrality	Betweenness Centrality
Extension Agent	0.724	0.664	0.124
University	0.663	0.618	0.102
Smartphone	0.759	0.693	0.129
Print Media	0.095	0.376	0.002
Fellow Farmer	0.854	0.789	0.236
Input Dealer	0.844	0.778	0.230
WhatsApp	0.538	0.541	0.052
YouTube	0.613	0.585	0.070
Facebook	0.417	0.483	0.027
Apps	0.241	0.418	0.008

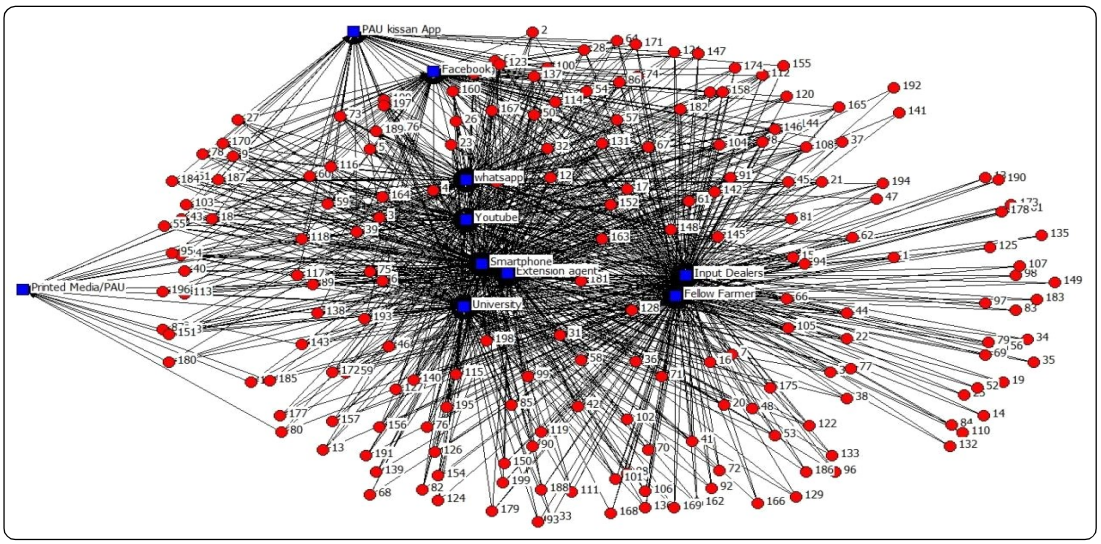

Fig. 1 : Network analysis of Farmers

indicating their critical role as intermediaries in the information flow. Interestingly, traditional sources like print media show very low centrality measures across all metrics, suggesting limited influence. Digital platforms such as Whats App, YouTube, and Facebook have moderate centrality scores, reflecting their emerging but still secondary role in the information network.

Table 5 provides the centrality measures for various information sources in the information network of opinion leaders. Extension agents have the highest degree centrality (0.933), closeness centrality (0.943), and betweenness centrality (0.145), indicating they are the most connected, efficient and influential intermediaries in disseminating information among opinion leaders. Smartphones also have high degree (0.867) and closeness centrality (0.892), highlighting their extensive use and efficiency in information dissemination. Universities and WhatsApp show significant centrality measures, with both having degree and closeness centralities at 0.800 and 0.846, respectively, underscoring their importance as major information sources. Print media, while lower than digital sources, still shows a moderate degree (0.467) and closeness centrality (0.673), indicating a notable role, though less central compared to digital and direct sources. Fellow farmers and input dealers have lower centrality measures, particularly in degree and betweenness, indicating they are less central in the information network of opinion leaders compared to their roles in the general farmer network. This analysis reveals that opinion leaders rely heavily on formal sources like extension agents and universities, as well as digital tools like smartphones and WhatsApp, highlighting their cosmopolitan nature and diverse information sources compared to general farmers.

TABLE 5

2-Mode Centrality Measures for information network of opinion leaders

Source	Degree Centrality	Closeness Centrality	Betweenness Centrality
Extension Agent	0.933	0.943	0.145
University	0.800	0.846	0.095
Smartphone	0.867	0.892	0.099
Print Media	0.467	0.673	0.059
Fellow Farmer	0.333	0.623	0.010
Input Dealer	0.400	0.647	0.048
WhatsApp	0.800	0.846	0.079
YouTube	0.667	0.767	0.043
Facebook	0.533	0.702	0.025
Apps	0.467	0.673	0.020

This research points out the complexity and significance of accurately identifying opinion leaders

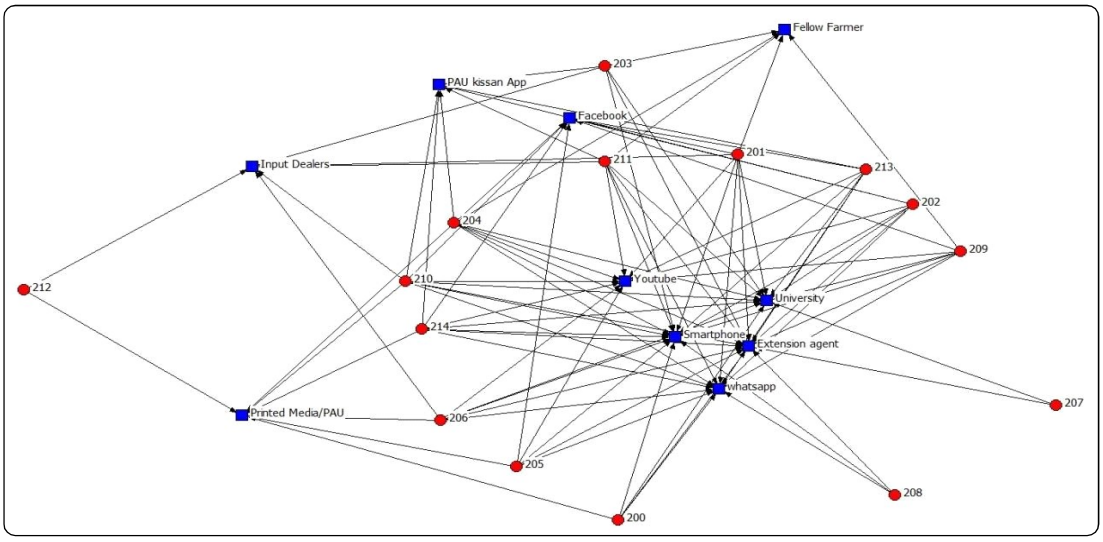

Fig. 2 : Network analysis of opinion leaders

within agricultural communities. Through a comparative analysis of various identification methods-sociometric survey, key informant's method, self-designation and observation-distinct advantages and limitations of each approach were identified. The sociometric survey, despite being time-intensive, yielded the most reliable results, highlighting key opinion leaders based on community nominations and social network metrics. The key informant's method, while more practical, showed a 66 per cent overlap with the sociometric results, suggesting some reliability but also susceptibility to biases from informants. Self-designation revealed a subset of quasi-leaders who perceive themselves as influential but are not recognized as such by their peers, indicating a discrepancy that warrants further exploration. The observation method, constrained by time and the investigator's familiarity with the community, proved less feasible in this context.

The socio-personal characteristics of identified opinion leaders diverged markedly from the general farmer population, with opinion leaders being predominantly older, better educated and wealthier in terms of landholding. This demographic profile aligns with their role as key influencers within their communities. The application of Social Network Analysis (SNA) provided deeper insights into the information dissemination patterns among farmers and opinion leaders. The analysis revealed that opinion leaders have a more cosmopolitan nature, relying heavily on formal sources like extension agents and universities, as well as digital platforms such as smartphones and WhatsApp. In contrast, general farmers primarily depend on fellow farmers and input dealers for information. These findings have practical implications for agricultural extension programs and policy-making. By leveraging the strengths of different identification methods and understanding the information networks within farming communities, more effective communication strategies can be developed. These strategies can facilitate the dissemination of agricultural innovations, ultimately supporting improved farming practices and decision-making.

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