

Structural Positions and Financial Performances of Rural Banks in Central Java Network (CJ-Net): A Social Network Analysis Perspective on APEX-Rural Banks Scheme

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Abstract. This research exploits social network analysis to examine the relationships of structural positions and financial performances of rural banks in the Apex-Rural banks scheme. In the scheme: regional banks are assigned as Apex banks and are mandatory to facilitate and support the rural banks within their operational area. This study uses Central Java Network (CJ-Net) as subject of the investigation. Relations in the scheme designate consultation or discussion between members. Structural positions are measured by three centrality indices: degree centrality, closeness centrality and structural holes, whereas financial performances are quantified by Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), Operating Expense/Income Ratio (OER), Return on Assets (ROA), Return on Equity (ROE), and Non Performing Loan (NPL). The research indicates that structural positions have significant effects on financial performances. The three centrality measures have significant and negative effects on OER and NPL. Through consultation or discussion, members of scheme gain the improved financial performances proved by the decreased OER and NPL.

Keywords: social network analysis, apex-rural banks scheme, structural positions, financial performances

1. Introduction

According to Banking Act #10, 1998, Indonesian banking systems discern two types of banks: Commercial Banks and Bank Perkreditan Rakyat (BPR) or People Credit Banks, hereinafter referred to as rural banks. Commercial banks provide full services of banking, while rural banks provide limited banking service such as loans and deposit, but are not allowed to do service in payment business. The position of rural bank is considered very strategic related to the local economic development since they serve as the most important finance provider for micro and small and medium enterprises (MSME) in Indonesia. Although most rural banks operate at local level, in restricted regency/city area and on a very small scale; their market is very vast since more than 99% businesses in Indonesia are categorized as MSME.

Improving the performances of rural banks undeniably lead to an increasing number of MSME served. Effusively supporting this proposition, in December 2011 Bank Indonesia launched guidelines on establishing the Apex-Rural banks models. The scheme involves two parties: (1) commercial bank as Apex – which loosely translated to Indonesian language as caretaker and (2) rural banks as members. The main roles of Apex bank are focused on pooling funds, giving financial assistance and technical support to the members of the scheme. In the guidelines, Bank Indonesia particularly assigned six Regional Banks in six regencies/cities as Apex Bank and all the rural banks in the allotted regency/city which has registered member of the Association of Indonesian Rural Banks (Perbarindo) as member of the scheme.

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Furthermore, the Apex-Rural banks scheme aims to administer the competition between commercial banks and rural banks on the microfinance market (Bank Indonesia, 2011). However, competition issue and lack of trust between rural banks and Apex bank might hamper the establishment of the scheme. Since the initiation of the program in 2011 to date no significant occurrence has happened. In 2014, only two Regional Banks adopt the scheme. Interviews with the authority of Association of Indonesian Rural Banks reveal that most of the rural banks presume that the involvement of commercial bank as Apex in the scheme signified the interest of the Apex Bank to access the microfinance market. Instead of as a caretaker – that facilitates the members with credit linkage, information technology and managerial initiatives – Apex bank is considered as competitor. To promote the establishment of the scheme, rural banks should be affirmed that Apex bank would not open the microfinance.

2. Structural Positions and Financial Performances

The term structural position used in this study is an alternative to the term of structural embeddedness used by several experts (e.g. Gnyawali and Madhavan, 2001, Moran, 2005). Structural position of a node in a network includes centrality measures and structural holes. According to Burt's structural holes theory, ties are redundant to the degree that they lead to the same actors (nodes). Structural hole is the measure of (the lack of) connectivity. Structural hole occurs if an ego (node) is connected to several alters that are not connected to each other. For a node, high number of structural holes means access to various information (Ahuja, 2000). Moreover, managing number of structural holes leads to effective and efficient size of the network. Under the shade of social capital, structural holes are commonly related to firm and personal performance (Burt, 2004, Rodan, 2010).

Degree centrality is the number of relations an actor owns. This measure signifies the activeness of actors. The central actor must be the most active in the sense that they have the most relations with other actors in the network. Closeness centrality equates the minimum distance. In information flows, closeness centrality is simply associated with the time-until-arrival of information (Borgatti, 2005). Closeness centrality depends not only on direct relations, but also on indirect relations, especially when any two nodes are not adjacent. Betweenness centrality is a measure of "interpersonal influence" in term of the capability of an (ego or focal) actor to connect the disconnected alters (Wasserman and Faust, 2009).

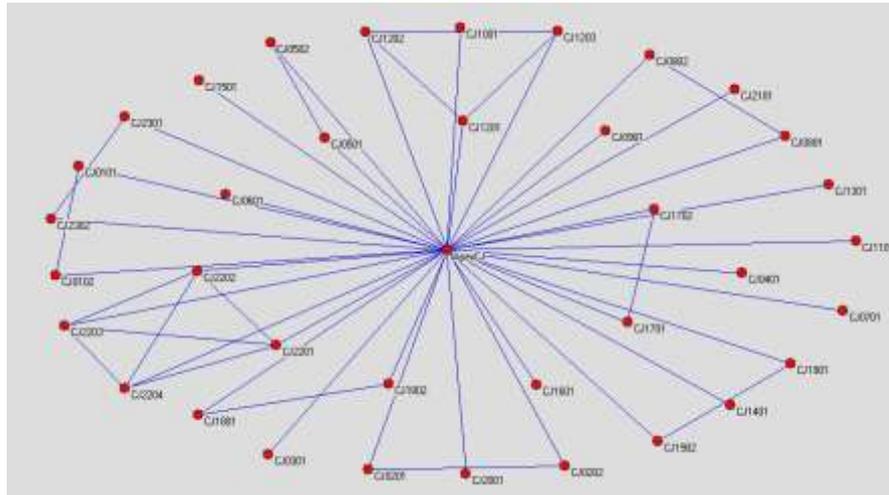
In the perspective of social network analysis, Apex-rural banks scheme is simply a network with star typology. Apex bank is the most central and the most important node. Solely detected are all relations between Apex and Rural banks, while relations between rural banks remain concealed. To balance the scheme, exploration on other possible relations is performed. The first probable relationship that connect rural bank with the Apex and also with other rural bank is administrative proximity. This relation is a substitute for the geodesic distance normally used between two nodes in social network analysis. Administrative proximity represents the operational area of rural banks that is mostly limited to a particular regency/city. Eventually, this relation is not included in the analysis since administrative proximity is only portrayed the location of the bank and regarded unrelated to the financial performances.

Further, another relation is identified namely consultation or discussion relation. Consultation or discussion relation is included in the analysis due to its non-directionality attribute. Consultation or discussion may be considered as interaction where every participant actively and equally contributes and exchanges ideas. As the nodes and edges (relations) for the network have selected, the next stage is selecting the network. Due to limitation of the operational area of rural banks, the objective network examined in this research is the isolated one, secluded from other network, not related to any other network.

2.1. CJ-Net Centralization Measures

Central Java Regional Bank (CJRB) is one of the two regional banks that have commenced establishing the Apex-Rural banks scheme. CJRB has successfully delivered 36 of rural banks in its operational area to the list top 100 rural banks (based on total assets). Thirty-six rural banks in the province of Central Java subjugated more than 1500 other rural banks all over the country. These successful rural banks are incorporated in the examined network, and from which the network got its name – Central Java Net (CJ-Net). The Apex bank of the CJ-Net is Apex-CJ which inspired by but not fully referred to CJRB.

Using Pajek (Nooy, Mrvar and Batagelj, 2011) CJ-Net is generated. The network is equipped with nodes and network centrality. Network and network centralization measures are given in Fig. 1. One of the primary uses of centrality measures in social network analysis is to identify of the “most important” actor in a network (Wasserman and Faust, 2009). Value of all the network centralization measures of CJ-Net are high, almost equal to 1. These measures signify the network partly connected topology, the mesh topology, very close to the star topology where only a node dominates the network. The most dominant node in the network is Apex-CJ. This domination is indicated by the equivalence of Apex-CJ node centrality measures and network centralization measures. As the most dominated node, Apex-CJ has influence and resources to manage and direct the technical and managerial discussion occurred in the network.



Network Degree Centralization = 0.9730
 Network Closeness Centralization = 0.9860
 Network Betweenness Centralization = 0.9730

Fig. 1: Central Java Network (CJ-Net)

2.2. Centrality and Financial Measures of Rural Banks

Table 1 shows the descriptive statistics of centrality and financial measures. Using Mean, Mode and Median of centrality measures as cut points, 13 rural banks are categorized as “important node” and have strong structural positions, whereas the other 23 are denoted as “less important node” with weak structural position. The mesh or partially connected topology of the CJ-Net is sustained by the high values of structural holes of the nodes. Nodes in the network tend to have disconnected partners. This condition reveal the opportunity of exchange various information between members.

Table 1: Descriptive Statistics (Bank Indonesia, October 2014)

	Degree	Closeness	Struc. Holes	CAR	LDR	OER	ROA	ROE	NPL
Means	1.9444	0.5140	0.8584	0.2051	0.8415	0.7993	0.0287	0.3098	0.0613
St. Dev.	0.9545	0.0071	0.1247	0.0404	0.0395	0.0847	0.0063	0.0843	0.0156
Mode	2	0.5070	0.8266	0.1779	0.8541	0.8683	0.0221	0.3487	0.0752
Median	2	0.5143	0.8266	0.2040	0.8503	0.7829	0.0292	0.3228	0.0652
Minimum	1	0.5070	0.6291	0.1349	0.7524	0.6698	0.0142	0.1045	0.0309
Maximum	4	0.5294	1.0000	0.3304	0.8997	1.0358	0.0402	0.4592	0.0927

The financial performances of the rural banks in CJ-Net are measured by Capital Adequacy Ratio (CAR), Loan to Deposit Ratio (LDR), Operating Expense/Income Ratio (OER), Return on Assets (ROA), Return on Equity (ROE), and Non Performing Loan (NPL). The relationships between structural positions and financial performance of rural banks are elaborated in to the pairwise correlations of centrality measures and financial measures as shown in Table 2.

Tabel 2: Correlations between Structural Positions and Financial Performances

	Degree	Closeness	Stru_holes	CAR	LDR	OER	ROA	ROE	NPL
Degree	1	0.8294** (0.0000)	0.7142** (0.0000)	-0.0378 (0.8266)	-0.0452 (0.7935)	-0.1991* (0.0244)	0.0786 (0.6488)	0.0233 (0.8928)	-0.3759* (0.0238)
Closeness		1	0.9830** (0.0000)	-0.1273 (0.4593)	0.0122 (0.9438)	-0.4312** (0.0086)	0.2475 (0.1456)	0.0148 (0.9317)	-0.5151** (0.0013)
Stru_holes			1	-0.1568 (0.3610)	0.0331 (0.8480)	-0.4761** (0.0033)	0.2774 (0.1015)	0.0189 (0.9130)	-0.5150** (0.0013)

Notes: (**) Double asterisks denote a significant correlation at 1% level

(*) An Asterisk indicate a significant correlation at 5% level

Figures in brackets indicate the significance level of the correlations test

As indicators of structural position, degree centrality, closeness centrality, and structural holes are significant, positively and firmly related. High degree centrality, high closeness centrality, and high structural holes jointly construct a strong structural position, vice-versa for the weak position. A rural bank with strong structural position is the rural bank that actively participates in consultation or discussion with in the scheme, takes advantage of the discussion with others to quickly gain information and to have access to the diverse information.

Analysis of the correlations concludes that strong structural positions are associated with high or better financial performances; though only two – OER and NPL - out of six proposed financial measures are significantly related to the measures of structural position. Through consultation and discussion, every rural bank in the scheme may get information on how to efficiently operate the business and to undergo loan portfolio/customer assessment which consecutively yields in lowering OER and reducing NPL.

3. Conclusions

CJ-Net has already pictured the essence of Apex-Rural banks scheme devised by Bank Indonesia. With consultation or discussion as relations in the network, Apex-CJ, the caretaker, proved to be the most dominant party. Apex-CJ has authority to control the process and content of consultation or discussion. The research results conclude that for the time being the content of consultation or discussion is predominated by topics relate-to-(reducing) OER and NPL.

Considering the dominance of the Apex bank, it is recommended that the Apex bank introduces more various topics of consultation or discussion to the network, to maximize the effect of the relations and to endow a totally improved financial performances for the rural-banks. For example, topics related to investment may be introduced since they may affect the ways rural banks enhance their ROA and ROE.

Social Network Analysis captures the relations between rural banks that are overlooked by the Apex-Rural Banks scheme. Using consultation or discussion as relations, social network analysis on the scheme succeeded to quantify the structural positions of every rural bank in the network. Strong structural positions lead to high financial performance in term of reduced OER and NPL.

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